GROUND INVESTIGATION, BASEMENT IMPACT ASSESSMENT & GROUND MOVEMENT ASSESSMENT REPORT

FOR

138-140 HIGHGATE ROAD
HIGHGATE
LONDON
NW5 1PB

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EXECUTIVE SUMMARY

Design Ventures Highgate Ltd commissioned Jomas Associates Ltd to undertake a Geo-environmental and Geotechnical ground investigation, Basement Impact Assessment & Ground Movement Assessment, at the site 138-140 Highgate Road, Highgate, London, NW5 1PB.

The principle objectives of the study were as follows:

- To determine the nature and where possible, the extent of contaminants potentially present at the site;
- To establish the presence of significant pollutant linkages, in accordance with the procedures set out within the Environment Agency (EA) report R&D CLR11 and relevant guidance within the National Planning Policy Framework (NPPF);
- To assess whether the site is safe and suitable for the purpose for which it is intended, or can be made so by remedial action; and,
- To obtain geotechnical parameters to inform preliminary foundation design;
- To utilise the information from this investigation and the previously undertaken Desk Study / Preliminary Risk Assessment to carry out a Basement Impact Assessment, and Ground Movement Assessment.

It should be noted that the table below is an executive summary of the findings of this report and is for briefing purposes only. Reference should be made to the main report for detailed information and analysis.

Site History and Ground Investigation	
Current Site Use	The site is currently utilised as an operational fuel filling station and MOT test centre.
Proposed Site Use	It is understood that the proposed development will involve the demolition of the existing building and construction of a new three-storey residential development. The new development will include a lower ground floor (half of which is basement due to slope of ground) and a full single-storey basement below.
Desk Study Overview	A Desk Study report has been produced for the site and issued separately (Jomas – March 2018). A brief overview of the desk study findings is presented below. Reference should be made to the full report for detailed information. Earliest historical maps (1872) indicate that the site consists of an undeveloped agricultural field. Few major changes occur to the site until 1936 when an industrial-style unit was constructed on site, in the NW boundary of the site. By 1952 the industrial-style unit on site was identified as a garage which was demolished by 1970. By 1974 another garage was constructed in the NE of the site. The canopy above the forecourt are also appears to have been constructed at this time. The site appears to have remained in this configuration until present-day. The surrounding area has been utilised predominantly for residential use with limited industrial uses noted including railway, garages, various works and manufactories and an oil processing plant. The British Geological Survey indicates that the site is directly underlain by solid deposits of the London Clay Formation. No artificial deposits are reported within the site. A review of the EnviroInsight Report indicates that there are no source protection zones within 500m of the site. There are no groundwater, surface water or potable water abstractions reported within 500m of the site.

Site History and Ground Investigation	
	There are 2No. surface water features within 250m of the site, the nearest identified 182m east. There is a culvert 271m south-west of the site identified as a detailed river network.
Intrusive Investigation	The ground investigation was undertaken on 12th & 13th February 2018, and consisted of the following: • 7No. window sampling boreholes, drilled up to 5.45m below ground level (bgl), with associated in situ testing and sampling; • 2No. cable percussive boreholes, drilled up to 24.95mbgl, with associated in situ testing and sampling; • Laboratory analysis for chemical and geotechnical purposes, • 4No. return visits to monitor ground gas concentrations and groundwater levels have been completed.
Ground Conditions	The results of the ground investigation revealed a ground profile comprising Made Ground up to 1.20mbgl overlying London Clay Formation to the base of the borehole at 24.95mbgl. Groundwater was not encountered during drilling of any of the exploratory holes, though water was noted to seep into WS2 at 1.1mbgl and WS4 at 4.5mbgl. During return monitoring groundwater was reported at depths of between 1.64m and 4.66m bgl within WS2, WS3, WS4 and WS5. No water was reported within WS1 or BH1 during any monitoring visit. Such variance suggests the water may be surface water ingress as oppose to groundwater.
Environmental Considerations	Following generic risk assessments, elevated concentrations of lead, naphthalene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(ah)anthracene and C21-C35 aromatic hydrocarbons were detected in soils in excess of generic assessment criteria for the protection of human health within a 'residential with plant uptake' end-use scenario. Asbestos in the form of chrysotile and amosite - loose fibres were detected in 3No. samples analysed in the laboratory. These were quantified to <0.001%, less than the 0.1% fibre content where arisings are considered hazardous for the purpose of disposal. Given the locations of the soil exceedances in relation to the location of suspected underground fuel tanks, it is considered likely that underground tanks are the source of the contamination in soil. Removal of these tanks and associated impacted soil will be required to partly address these risks. A basement is proposed under the majority of the site. As a result, soils will be removed down to approximately 5.0-8.0m bgl. This removal of soil is likely to also remove any contaminated soils too. Due to the presence of asbestos, any areas of proposed soft landscaping should comprise at least 600mm of clean imported soil placed on a marker layer. A 200mm break layer may form part of this cover. Groundwater analysis has reported no concentrations of contaminants above the laboratory detection limit. Due to several installations reported as 'dry' and the underlying geology (London Clay - unproductive strata) it is considered that the water encountered represents surface water ingress as oppose to groundwater. Of greater concern is the "free product" reported to be floating on the surface of the water within WS2 and WS5. The source of this product is likely to be water migrating though the contaminated Made Ground. Any product encountered during the tank removal works will also have to be removed. Due to the underlying London Clay, identified as unproductive

Site History and Ground Investigation	
	strata, the product and contaminants within soil are unlikely to migrate to impact off-site controlled waters receptors. Calculating the Gas Screening Value using worst case results indicates Characteristic Situation 1. However, concentrations of methane are raised in a single well (WS5) in close proximity to the underground tank locations, with product also reported within the installation. Although raising the site to CS2 must be considered it is possible that following remediation of the site and removal of the underground tanks, future monitoring may be able to reduce the level of gas protection required. Given the levels of potentially volatile contaminants identified within soil, a vapour resistant membrane may be required within the proposed structures. A remediation strategy and subsequent verification report will be required. As with any ground investigation, the presence of further hotspots between sampling points cannot be ruled out, and caution must be exercised during construction works. Should any contamination be encountered, a suitably qualified environmental consultant should be informed immediately, so that adequate measures may be recommended.
Geotechnical Considerations	Based upon the information obtained to date, it is considered that a cantilever retaining wall installed may be constructed with an allowable bearing pressure of 120kPa at 5.0mbgl If a greater allowable bearing capacity is required then a piled foundation solution within the underlying London Clay should be considered. If a cantilever retaining wall is utilised, then a well reinforced ground bearing floor slab could be used. Such a slab would prop the retaining walls and prevent buckling from the lateral pressures imposed by the cantilever retaining walls. The wall would need to be constructed on a suitable thickness of engineered granular material. Any groundwater encountered during construction works could be addressed by conventional pumping from a sump. It is recommended that the stability of all excavations should be assessed during construction. Attention is also drawn to the provisions of the Health and Safety at Work Regulations, which state that the sides of any excavations greater than 1.2m depth, into which personnel are required to enter, should be fully supported or battered back to a safe angle. Based on the results of chemical testing, the required concrete class for the site is DS-5 assuming an Aggressive Chemical Environment for Concrete classification of AC-4s in accordance with the procedures outlined in BRE Special Digest 1.

Basement Impact Assessment	
Impact Assessment	The overall assessment of the site is that the creation of a basement for the existing development will not adversely impact the site or its immediate environs, providing measures are taken to protect surrounding land and properties during construction. The proposed basement excavation will be within 5m of a public pavement. Unavoidable lateral ground movements associated with the basement excavations must be controlled during temporary and permanent works so as not to impact adversely on the stability of the surrounding ground and any associated services. From the studies that have been undertaken so far it is concluded that the construction of the building will not present a problem for ground water. It is concluded that this site can be successfully developed without causing any problems to the subterranean drainage.

1 INTRODUCTION

1.1 Terms of Reference

1.1.1 Design Ventures Highgate Ltd ("The Client") has commissioned Jomas Associates Ltd, to assess the risk of contamination posed by the ground conditions at a site referred to as 138-140 Highgate Road, Highgate, London, NW5 1PB and to provide indicative recommendations for foundation design prior to the redevelopment of the site.

1.1.2 To this end a Desk Study has been produced for the site and issued separately (Jomas, March 2018), followed by an intrusive investigation (detailed in this report).

1.1.3 A full list of previous reports undertaken for the site by Jomas are detailed in Table 1.1:

Table 1.1: Previous Reports - Jomas

Title	Author	Reference	Date
Geo-environmental Desk Study and Basement Impact Assessment (screening & Scoping) Report for 138-140 Highgate Road, Highgate, London, NW5 1PB	Jomas Associates Ltd	P1323J1303, Finalv1.0	March 2018

1.1.4 The intrusive investigation was undertaken in accordance with Jomas proposal dated 10th January 2018.

1.2 Proposed Development

1.2.1 The site under consideration and its neighbouring assets are presented in Appendix 1 Figures. The proposed development is bound by Denyer House along the north east boundary, with green areas to the north and south. Highgate Road bounds the site to the west, as indicated in Appendix 1 Figures.

1.2.2 Based on topographical data, the site is noted to slope downwards from the east to the west. More specifically, it is observed that the elevation at Denyer House is approximately 103 mOD, falling to around 101 mOD closer to Highgate Road. Moreover, Highgate Road slopes gently downward from north to south.

1.2.3 It is understood that the proposed development will involve the demolition of the existing building and construction of a new three-storey residential development. The new development will include a lower ground floor (half of which is below ground due to slope of ground) and a full single -storey basement below. The new building will be located in approximately the same footprint as the existing building, but the basement level will extend out to under most of the site. Proposed plans indicate that private garden will be included.

Figure 1.1: 138 – 140 Highgate Road Site (site outline in green) and its surroundings.

1.2.4 For the purposes of the contamination risk assessment, the proposed development is classified as 'Residential with plant uptake'.

1.2.5 For the purpose of geotechnical assessment, it is considered that the project could be classified as a Geotechnical Category (GC) 2 site in accordance with BS EN 1997. GC 2 projects are defined as involving:

- Conventional structures.
- Quantitative investigation and analysis.
- Normal risk.
- No difficult soil and site conditions.
- No difficult loading conditions.
- Routine design and construction methods.

1.3 Objectives

1.3.1 The objectives of Jomas' investigation were as follows:

- To present a description of the present site status, based upon the published geology, hydrogeology and hydrology of the site and surrounding area;
- To provide an assessment of the environmental sensitivity at the site and the surrounding area, in relation to any suspected or known contamination which may significantly affect the site and the proposed development;
- To conduct an intrusive investigation, to determine the nature and extent of contaminants potentially present at the site;

- To establish the presence of significant pollutant linkages, in accordance with the procedures set out within Part IIA of the Environmental Protection Act 1990, associated statutory guidance and current best practice including the EA report R&D CLR 11;
- To obtain geotechnical parameters to inform preliminary foundation design; and
- To assess the potential impacts that the proposal may have on ground stability, the hydrogeology and hydrology on the site and its environs.

1.4 Scope of Works

1.4.1 The following tasks were undertaken to achieve the objectives listed above:

- Intrusive ground investigation to determine shallow ground conditions, and potential for contamination at the site;
- Undertaking of laboratory chemical and geotechnical testing upon samples obtained;
- The compilation of this report, which collects and discusses the above data, and presents an assessment of the site conditions, conclusions and recommendations;
- A basement impact assessment.

1.5 Scope of Basement Impact Assessment (BIA)

1.5.1 A Basement Impact Assessment (BIA) is required for all planning applications with basements in Camden.

1.5.2 The Jomas' BIA has been undertaken in accordance with "Camden Planning Guidance Basements " (CPGB) dated March 2018.

1.5.3 The Jomas BIA covers most items required under CPGB, with the exception of;

- Plans and sections to show foundation details of adjacent structures;
- Programme for enabling works, construction and restoration
- Evidence of consultation with neighbours
- Construction Sequence Methodology
- Proposals for monitoring during construction.
- Drainage Assessment

1.5.4 This Jomas BIA also considers the Campbell Reith pro forma BIA produced as guidance for applicants to ensure that all of the required information is provided

1.5.5 It should be noted that a Ground Movement Assessment was carried out for the proposed development and is discussed in Section 10 with the calculations provided in Appendix 6.

1.6 Limitations

1.6.1 Jomas Associates Ltd has prepared this report for the sole use of Design Ventures Highgate Ltd, in accordance with the generally accepted consulting practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon by any other party without the explicit written agreement of Jomas Associates Limited. No other third party warranty, expressed or implied, is made as to the professional advice included in this report. This report must be used in its entirety.

1.6.2 The records search was limited to information available from public sources; this information is changing continually and frequently incomplete. Unless Jomas Associates Limited has actual knowledge to the contrary, information obtained from public sources or provided to Jomas Associates Limited by site personnel and other information sources, have been assumed to be correct. Jomas Associates Limited does not assume any liability for the misinterpretation of information or for items not visible, accessible or present on the subject property at the time of this study.

1.6.3 Whilst every effort has been made to ensure the accuracy of the data supplied, and any analysis derived from it, there may be conditions at the site that have not been disclosed by the investigation, and could not therefore be taken into account. As with any site, there may be differences in soil conditions between exploratory hole positions. Furthermore, it should be noted that groundwater conditions may vary due to seasonal and other effects and may at times be significantly different from those measured by the investigation. No liability can be accepted for any such variations in these conditions.

1.6.4 Any reports provided to Jomas Associates Limited have been reviewed in good faith. Jomas Associates Limited cannot be held liable for any errors or omissions in these reports, or for any incorrect interpretation contained within them.

1.6.5 This investigation and report has been carried out in accordance with the relevant standards and guidance in place at the time of the works. Future changes to these may require a re-assessment of the recommendations made within this report.

1.6.6 This report is not an engineering design and the figures and calculations contained in the report should be used by the Structural Engineer, taking note that variations may apply, depending on variations in design loading, in techniques used, and in site conditions. Our recommendations should therefore not supersede the Engineer's design.

2 SITE SETTING

2.1 Site Information

2.1.1 The site location plan is appended to this report in Appendix 1.

Table 2.1: Site Information

Name of Site	-
Address of Site	138-140 Highgate Road, Highgate, London, NW5 1PB
Approx. National Grid Ref.	E528629, N185800
Site Area (Approx)	0.07ha (approximately 72 m long and 62 m wide)
Site Occupation	Petrol station and MOT test centre
Local Authority	London Borough of Camden
Proposed Site Use	Residential with plant uptake inclusive of single-storey basement

2.2 Desk Study Overview

2.2.1 A Desk Study report has been produced for the site and issued separately (Jomas – March 2018). A brief overview of the desk study findings is presented below. Reference should be made to the full report for detailed information.

2.2.2 Earliest historical maps (1872) indicate that the site consists of an undeveloped agricultural field. Few major changes occur to the site until 1936 when an industrial-style unit was constructed on site, in the NW boundary of the site. By 1952 the industrial-style unit on site was identified as a garage which was demolished by 1970. By 1974 another garage was constructed in the NE of the site. The canopy above the forecourt are also appears to have been constructed at this time. The site appears to have remained in this configuration until present-day.

2.2.3 The surrounding area has been utilised predominantly for residential use with limited industrial uses noted including railway, garages, various works and manufactories and an oil processing plant.

2.2.4 The British Geological Survey indicates that the site is directly underlain by solid deposits of the London Clay Formation. No artificial deposits are reported within the site.

2.2.5 A review of the EnviroInsight Report indicates that there are no source protection zones within 500m of the site.

2.2.6 There are no groundwater, surface water or potable water abstractions reported within 500m of the site.

2.2.7 There are 2No. surface water features within 250m of the site, the nearest identified 182m east.

2.2.8 There is 1No. detailed river network reported within 500m of the site; identified as a culvert 271m south-west of the site.

2.2.9 The conceptual site model provided within the report identifies the following potential sources, pathways and receptors. The report indicates the following potential sources of contamination:

- Potential for hydrocarbon contaminated ground associated with previous site use as fuel station/garage – on site (S1)
- Potential for Made Ground associated with previous development operations – on site (S2)
- Potential buried tanks associated with former use as a fuel station/garage – on site (S3)
- Current and previous industrial use – off site (S4)
- Potential asbestos containing materials within existing buildings – on site (S5)
- Potential asbestos impacted soils from demolition of previous buildings – on site (S6)
- Potential ground gas generation associated with hydrocarbon impacted soils from historic use as fuel station - on site (S7)

2.2.10 The conceptual site model identifies the following potential pathways:

- Ingestion and dermal contact with contaminated soil (P1)
- Inhalation or contact with potentially contaminated dust and vapours (P2)
- Leaching through permeable soils, migration within the vadose zone (i.e., unsaturated soil above the water table) and/or lateral migration within surface water, as a result of cracked hard standing or via service pipe/corridors and surface water runoff. (P3)
- Horizontal and vertical migration of contaminants within groundwater (P4)
- Accumulation and migration of soil gases (P5)
- Permeation of water pipes and attack on concrete foundations by aggressive soil conditions (P6)

2.2.11 The conceptual site model identifies the following potential receptors:

- Construction workers (R1)
- Maintenance workers (R2)
- Neighbouring site users (R3)
- Future site users (R4)
- Building foundations and on site buried services (water mains, electricity and sewer) (R5)
- Controlled Waters (Culvert) (R6)

3 GROUND INVESTIGATION

3.1 Rationale for Ground Investigation

3.1.1 The site investigation has been undertaken generally in accordance with Contaminated Land Report 11, BS10175, NHBC Standards Chapter 4.1, and other associated Statutory Guidance. If required, further targeted investigations and remedial option appraisal would be dependent on the findings of this site investigation.

3.1.2 The soil sampling rationale for the site investigation was developed with reference to EA guidance 'Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination' (Technical Report P5-066/TR).

3.1.3 The sampling proposal was designed in order to gather data representative of the site conditions; to target identified sources (see Table 3.1) and to aid the preparation of the BIA with reference to the scoping and screening assessment.

3.2 Scope of Ground Investigation

3.2.1 The ground investigation was undertaken on 12th & 13th February 2018.

3.2.2 The work was undertaken in accordance with BS5930 'Code of Practice for Site Investigation' and BS10175 'Investigation of Potentially Contaminated Sites'. All works were completed without incident.

3.2.3 The investigation focused on collecting data on the following:

- Quality of Made Ground/ natural ground within the site boundaries;
- Presence of groundwater beneath the site (if any), perched or otherwise;
- Determination of the presence or absence of hazardous ground gases;
- Obtaining geotechnical parameters to allow initial design to take place.
- To aid the preparation of the BIA

3.2.4 A summary of the fieldwork carried out at the site, with justifications for exploratory hole positions, are offered in Table 3.1 below.

Table 3.1: Scope of Intrusive Investigation

Investigation Type	Number of Exploratory Holes Achieved	Exploratory Hole Designation	Depth Achieved (m BGL)	Justification
Window Sample Boreholes	7	WS1 - 7	Up to 5.45mbgl	Obtain shallow samples for laboratory contamination and geotechnical testing. To allow in-situ geotechnical testing. WS1 & BH2 - Targeting 2No. abandoned tanks WS2 - Targeting petrol interceptor

Investigation Type	Number of Exploratory Holes Achieved	Exploratory Hole Designation	Depth Achieved (m BGL)	Justification
				WS3, WS7, & WS8 - Targeting existing buried fuel tanks. WS4 & WS6 - Targeting internal area of existing workshop/MOT test centre. WS5 - Targeting 2No. former kerosene and diesel tanks.
Cable Percussion Boreholes	2	BH1 - 2	Up to 24.95mbgl	Obtain deeper samples for laboratory contamination and geotechnical testing. To allow in-situ geotechnical testing.
Monitoring Wells	6	WS1 - WS5, BH1	Up to 5.00mbgl	Combined soil gas and groundwater monitoring wells. WS1 - response zone in clay WS2 - response zone in Made Ground and clay WS3 - response zone in clay WS4 - response zone in clay WS5 - response zone in Made Ground and clay BH1 - response zone in clay

3.2.5 The exploratory holes were completed to allow soil samples to be taken in the areas of interest identified in Table 3.1 above. In all cases, all holes were logged in accordance with BS:5930 (2015).

3.2.6 Exploratory hole positions were located approximately with reference to known features on site as shown in the exploratory hole location plan presented in Appendix 1. The exploratory hole records are included in Appendix 2.

3.2.7 Where monitoring well installations were not installed, the exploratory holes were backfilled with the arisings (in the reverse order in which they were drilled) and the ground surface was reinstated so that no depression was left.

3.3 In-situ Geotechnical Testing

3.3.1 In-situ geotechnical testing included Standard Penetration Tests. The determined 'N' values have been used to determine the relative density of granular materials and have been used with standard correlations to infer various other derived geotechnical parameters including the undrained shear strength of the cohesive strata. The results of the individual tests are on the appropriate exploratory hole logs in Appendix 2.

3.4 Sampling Rationale

3.4.1 Our soil sampling rationale for the site investigation was developed with reference to EA guidance 'Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination' (Technical Report P5-066/TR).

3.4.2 The exploratory holes were positioned by applying a combined non-targeted sampling strategy, as well as sample locations positioned with reference to sources identified from the desk study.

3.4.3 Soil samples were taken from across the site at various depths as shown in the exploratory hole logs.

3.4.4 Jomas Associates Limited's engineers normally collect samples at appropriate depths based on field observations such as:

- appearance, colour and odour of the strata and other materials, and changes in these;
- the presence or otherwise of sub-surface features such as pipework, tanks, foundations and walls; and,
- areas of obvious damage, e.g. to the building fabric.

3.4.5 A number of the samples were taken from the top 0-1m to aid in the assessment of the pollutant linkages identified at the site. In addition, some deeper samples were taken to aid in the interpretation of fate and transport of any contamination identified.

3.4.6 Soil samples were taken from across the site at various depths as shown in the exploratory hole logs (copies of which are provided in Appendix 2). The methodology used and type of samples taken were chosen to allow the Sampling category to be A or B according to EN ISO 22475-1. This in turn allows suitable geotechnical testing to be carried out.

3.4.7 During return groundwater monitoring visits, where groundwater samples are taken, all boreholes were purged of three well volumes prior to obtaining the sample for testing. This removes stagnant groundwater from the monitoring well.

3.4.8 Groundwater strikes noted during drilling, are recorded within the exploratory hole records in Appendix 2.

3.4.9 Samples were stored in cool boxes (<4^{o}C) and preserved in accordance with laboratory guidance.

3.5 Sampling Limitations

3.5.1 WS1 and BH1 were moved slightly from where initially positioned, due to the presence of parked cars.

3.5.2 WS2 was moved slightly from where initially positioned, to avoid services. WS2 did not recover any material from 1.1m to 4.0m bgl.

3.5.3 WS6 terminated on reinforced concrete at 0.60mbgl.

3.5.4 The remaining boreholes were drilled at the proposed locations and to the proposed depths.

3.6 Laboratory Analysis

3.6.1 A programme of laboratory testing, scheduled by Jomas Associates Limited, was carried out on selected samples of Made Ground and natural strata.

Chemical Testing

3.6.2 Soil samples were submitted to i2 Analytical (a UKAS and MCerts accredited laboratory), for analysis.

3.6.3 The samples were analysed for a wide range of contaminants as shown in Table 3.2 below:

Table 3.2: Chemical Tests Scheduled

	No. of tests	
Test Suite	**Made Ground / Topsoil**	**Natural**
Jomas Suite S3	2	0
Total Organic Carbon	3	1
Asbestos Screen & ID	6	1
Jomas Reduced Suite S5	4	3
Hydrocarbon Suite	4	3
VOC Suite	1	0
WAC	3	0
Water Soluble Sulphate	6*	9*

**Including samples tested for as part of Jomas Suites S3 and S5*

3.6.4 The determinands contained in the basic suite are as detailed in Table 3.3 below:

Table 3.3: Basic Suite of Determinands

DETERMINAND	LIMIT OF DETECTION (mg/kg)	UKAS ACCREDITATION	TECHNIQUE
Arsenic	1	Y (MCERTS)	ICPMS
Cadmium	0.2	Y (MCERTS)	ICPMS
Chromium	1	Y (MCERTS)	ICPMS
Chromium (Hexavalent)	4	Y (MCERTS)	Colorimetry
Lead	1	Y (MCERTS)	ICPMS
Mercury	0.3	Y (MCERTS)	ICPMS
Nickel	1	Y (MCERTS)	ICPMS
Selenium	1	Y (MCERTS)	ICPMS
Copper	1	Y (MCERTS)	ICPMS
Zinc	1	Y (MCERTS)	ICPMS
Boron (Water Soluble)	0.2	Y (MCERTS)	ICPMS
pH Value	0.1 units	Y (MCERTS)	Electrometric
Sulphate (Water Soluble)	0.0125g/l	Y (MCERTS)	Ion Chromatography
Total Cyanide	1	Y (MCERTS)	Colorimetry
Speciated/Total PAH	0.05/0.80	Y (MCERTS)	GCFID
Phenols	1	Y (MCERTS)	HPLC
Total Petroleum Hydrocarbons (banded)	-	N Y (MCERTS)	Gas Chromatography

3.6.5 To support the selection of appropriate tier 1 screening values, 4No. samples were analysed for total organic carbon.

3.6.6 Laboratory test results are summarised in Section 6, with raw laboratory data included in Appendix 3.

Geotechnical Laboratory Testing

3.6.7 In addition to the contamination assessment, soil samples were submitted to the UKAS Accredited laboratory of i2 Analytical Ltd. for a series of analysis.

3.6.8 This testing was specifically designed to:

- to classify the samples; and
- to obtain parameters (either directly or sufficient to allow relevant correlations to be used) relevant to the technical objectives of the investigation.

3.6.9 The following laboratory geotechnical testing (as summarised in Table 3.4) was carried out:

Table 3.4 Laboratory Geotechnical Analysis

BS 1377 (1990) Test Number	Test Description	Number of tests
Part 2		
3.2	Moisture Content Determination	5
4.3 and 5.3	Liquid and Plastic Limit Determination (Atterberg Limits)	8
Part 7		
8	Determination of the undrained shear strength in triaxial compression with single stage loading and without measurement of pore pressure	8

3.6.10 The water soluble sulphate and pH results obtained as part of the chemical analysis was used in combination with BRE Special Digest 1 to allow buried concrete to be designed.

3.6.11 The results of the geotechnical laboratory testing are presented as Appendix 4 and discussed in Section 9 of this report.

4 GROUND CONDITIONS

4.1 Soil

4.1.1 Ground conditions were logged in accordance with the requirements of BS: 5930 (2015). Detailed exploratory hole logs are provided in Appendix 2. The ground conditions encountered are summarised in Table 4.1 below, based on the strata observed during the investigation.

Table 4.1: Ground Conditions Encountered

Stratum and Description	Encountered from (m bgl)	Base of strata (m bgl)	Thickness range (m)
Reinforce concrete over dark brown sandy gravelly clay. Gravel consists of fine to coarse sub-angular to sub-rounded flint, brick and concrete. (MADE GROUND)	0.00	0.30 - 1.20	0.30 - 1.20
Brown mottled grey medium increasing to very high strength silty CLAY (LONDON CLAY FORMATION)	0.30 - 1.20	>4.45 - >24.95	>3.45 - >24.65

4.1.2 It should be noted that the Made Ground was encountered to base of WS6 (reinforced concrete) and that the exact depth of the Made Ground in WS2 could not be determined as there was no recovery from 1.10mbgl.

4.1.3 In the remaining locations materials considered to represent the London Clay Formation was noted to the base of the exploratory holes.

4.1.4 Where buried tanks and petrol interceptors are located, the depth of Made ground will be greater.

4.2 Hydrogeology

4.2.1 Groundwater was not observed during drilling of the exploratory holes, though water was noted to seep into WS2 at 1.1mbgl and WS4 at 4.5mbgl.

4.2.2 Within WS2 this may represent a perched water table at the boundary between the Made Ground and the underlying London Clay Formation.

4.2.3 Groundwater strikes and groundwater monitoring are summarised below in Table 4.2, In addition, during groundwater monitoring product was detected in some installations, this was measured using an interface probe. The depths are also shown below.

Table 4.2: Groundwater Monitoring Records

Exploratory Hole ID	Depth to product (m bgl)	Depth to water (m bgl)	Depth to Base of Well (m bgl)	Stratum
WS1	-	Dry	5.00 - 5.02	-
WS2	1.49 - 1.56	2.23 - 3.41	3.42	London Clay Formation
WS3	-	4.66 - Dry	4.86 - 4.89	London Clay Formation
WS4	-	4.37 - Dry	4.93 - 4.94	London Clay Formation
WS5	1.48 - 1.54	1.64 - 1.85	4.92 - 4.95	London Clay Formation
BH1	-	Dry	5.07 - 5.10	-

4.2.4 It should be noted that the difference in ground water levels, and the encountered ground conditions suggest that the water encountered may be surface water ingress that has been unable to egress through the London Clay Formation.

4.2.5 It should also be noted that significant thickness of product was detected using the interface probe. These noted thickness of product may not be fully representative as the limitations of the equipment mean that it can often measure an emulsion of oil and water (i.e. oily water) as free product. In addition product can “stick” to the probe whilst it is being lowered down the hole, thus making the thickness appear greater.

4.3 Physical and Olfactory Evidence of Contamination

4.3.1 Water seepage into WS2 at 1.10mbgl was described as “black” and “oily”. Although there was no recovery from 1.10mbgl in WS2, a single vial sample of soil was obtained at approximately 2.50mbgl. A hand-held photo-ionisation detector was used on this sample; giving a VOC reading of 18ppm.

4.3.2 Made Ground recovered from WS5 (0.30m - 1.20m bgl) had some evidence of black staining and a hydrocarbon odour. Clay recovered from WS5 at 1.50m to 2.00m bgl had black staining and a “strong” hydrocarbon odour.

4.3.3 It should be noted that during the groundwater monitoring, an interface probe detected significant thickness of free product at these two locations (see above).

4.3.4 Visual or olfactory evidence of contamination was not reported in the other exploratory holes.

5 RISK ASSESSMENT – ANALYTICAL FRAMEWORK

5.1 Context and Objectives

5.1.1 This section seeks to evaluate the level of risk pertaining to human health and the environment which may result from both the existing use and proposed future use of the site. It makes use of the site investigation findings, as described in the previous sections, to evaluate further the potential pollutant linkages identified in the desk study. A combination of qualitative and quantitative techniques is used, as described below.

5.1.2 The purpose of generic quantitative risk assessment is to compare concentrations of contaminants found on site against screening level generic assessment criteria (GAC) to establish whether there are actual or potential unacceptable risks. It also determines whether further detailed assessment is required. The approaches detailed all broadly fit within a tiered assessment structure in line with the framework set out in the Department of Environment, Food and Rural Affairs (DEFRA), EA and Institute for Environment and Health Publication, Guidelines for Environmental Risk Assessment and Management.

5.1.3 It should be noted that the statistical tests carried out in this report in accordance with CL:AIRE and CIEH (2008) recommendations, are for guidance purposes only and the conclusions of this report should be approved by the local authority prior to any redevelopment works being undertaken.

5.2 Analytical Framework – Soils

5.2.1 There is no single methodology that covers all the various aspects of the assessment of potentially contaminated land and groundwater. Therefore, the analytical framework adopted for this investigation is made up of a number of procedures, which are outlined below. All of these are based on a Risk Assessment methodology centred on the identification and analysis of Source – Pathway – Receptor linkages.

5.2.2 The CLEA model provides a methodology for quantitative assessment of the long term risks posed to human health by exposure to contaminated soils. Toxicological data have been used to calculate Soil Guideline Values (SGV) for individual contaminants, based on the proposed site use; these represent minimal risk concentrations and may be used as screening values.

5.2.3 In the absence of any published SGVs for certain substances, or where the assumptions made in generating the SGVs do not apply to the site, Jomas Associates Limited have obtained Tier 1 screening values for initial assessment of the soil, based on available current UK guidance including the LQM/CIEH S4ULs and DEFRA C4SL. Site-specific assessments are undertaken wherever possible and/or applicable. All assessments are carried out in accordance with the CLEA protocol.

5.2.4 CLEA requires a statistical treatment of the test results to take into account the normal variations in concentration of potential contaminants in the soil and allow comparisons to be made with published guidance.

5.2.5 The assessment criteria used for the screening of determinands within soils are identified within Table 5.1.

Table 5.1: Selected Assessment Criteria – Contaminants in Soils

Substance Group	Determinand(s)	Assessment Criteria Selected
Organic Substances		
Non-halogenated Hydrocarbons	Total Petroleum Hydrocarbons (TPHCWG banded)	S4UL
	Total Phenols	S4UL
Polycyclic Aromatic Hydrocarbons (PAH-16)	Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenzo(a,h)anthracene, Benzo(ghi)perylene	S4UL
Volatile Organic Compounds (VOCs/sVOCs).	Toluene, Ethylbenzene, Benzene, Xylenes	S4UL
Inorganic Substances		
Heavy Metals and Metalloids	Arsenic, Cadmium, Chromium, Lead, Mercury, Nickel, Selenium, Copper, Zinc	S4UL
	Copper, Zinc, Nickel	BS: 3882 (2015).
Cyanides	Free Cyanide	CLEA v1.06
Sulphates	Water Soluble Sulphate	BRE Special Digest 1:2005

5.3 BRE

5.3.1 The BRE Special Digest 1:2005, 'Concrete in Aggressive Ground' is used with soluble sulphate and pH results to assess the aggressive chemical environment of future underground concrete structures at the site.

5.4 Analytical Framework – Groundwater and Leachate

5.4.1 The requirement to protect groundwater from pollution is outlined in Groundwater protection: Principles and practice (GP3, EA, August 2013, v1.1).

5.4.2 Where undertaken, the groundwater quality analysis comprises a Level 1 assessment in accordance with the EA Remedial Targets Methodology Document (EA, 2006).

5.4.3 The criteria used by Jomas' in the Level 1 assessment of groundwater and leachate quality are shown in Table 5.2.

Table 5.2: Selected Assessment Criteria – Contaminants in Water

Substance Group	Determinand(s)	Assessment Criteria Selected
Metals	Arsenic, Copper, Cyanide, Mercury, Nickel, Lead, Zinc, Chromium	EQS/DWS
	Selenium	DWS
PAHs	Sum of Four – benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, indeno(1,2,3-c,d)pyrene	DWS
PAHs	Benzo(a)pyrene,	DWS
PAHs	Remainder	LEC
Total Petroleum Hydrocarbons	Aliphatic C5-C6, Aliphatic >C6-C8, Aliphatic >C8-C10. Aliphatic >C10-C12, Aliphatic >C12-C16, Aliphatic >C16-C21, Aromatic C5-C7, Aromatic >C7-C8, Aromatic >C8-C10, Aromatic >C10-C12, Aromatic >C12-C16, Aromatic >C16-C21, Aromatic> C21-C35	DWS/WHO
Benzene	Benzene	DWS
Toluene	Toluene	EQS
Ethylbenzene	Ethylbenzene	EQS
Xylene	Xylene	EQS
Oxygen Demand	Chemical Oxygen Demand and Biological Oxygen Demand	Urban Waste Water Treatment (England and Wales) Regulations

Environmental Quality Standards EQS

Environmental Quality Standards (EQS) have been released by the EA for dangerous substances, as identified by the EC Dangerous Substances Directive. EQS can vary for each substance, for the hardness of the water and can be different for fresh, estuarine or coastal waters.

Lowest Effect Concentration (LEC)

These criteria relate to the concentration of PAHs in groundwater. They are taken from the EA R&D Technical Report P45 – Polycyclic Aromatic Hydrocarbons (PAH): Priorities for Environmental Quality Standard Development (2001).

WHO Health

These screening criteria have been taken from the World Health Organisation Guidelines for Drinking Water Quality (1984). The health value is a guideline value representing the concentration of a contaminant that does not result in any significant risk to the receptor over a lifetime of exposure.

Further criteria have been obtained from 'Petroleum Products in Drinking-water' - Background document for development of WHO Guidelines for Drinking-water Quality (2005).

UK Drinking Water Standards (DWS)
These comprise screening criteria provided by the Drinking Water Inspectorate (DWI) in the Water Supply (Water Quality) Regulations 2006,

Urban Waste Water Treatment (England and Wales) Regulations - UWWT Regs
The Urban Waste Water Treatment (England and Wales) Regulations SI/1994/2841 as amended by SI/2003/1788 sets down minimum standards for the discharge of treated effluent from waste water treatment works to inland surface waters, groundwater, estuaries or coastal waters. Standards of (125mg/L) COD and (25mg/L) BOD have been set.

5.5 Site Specific Criteria

5.5.1 The criteria adopted in the selection of correct screening criteria from published reports as previously described, are provided within Tables 5.3.

Table 5.3: Site Specific Data

Input Details	Value
Land Use	Residential with plant uptake
Soil Organic Matter	1%

5.5.2 As the published reports only offer the option of selecting an SOM value of 1%, 2.5% or 6%, an SOM value of 1% has been used for the generation of generic assessment criteria, as 1.33% was the mean value obtained from laboratory analysis.

5.5.3 It is understood that the existing buildings on site are to be demolished and a new three-storey residential development will be constructed. Private gardens are proposed. As a result, the site has been assessed as residential with plant uptake.

6 GENERIC QUANTITATIVE RISK ASSESSMENT

6.1 Screening of Soil Chemical Analysis Results – Human Health Risk Assessment

6.1.1 To focus on the contaminants of potential concern (COPC), the results have been compared with the respective SGV/GAC. Those contaminants which exceed the SGV/GAC are considered to be the COPC. Those which do not exceed the respective SGV/GAC are not considered to be COPC and as such do not require further assessment in relation to the proposed development of the site.

6.1.2 Laboratory analysis for soils are summarised in Tables 6.1 to 6.4. Raw laboratory data is included in Appendix 3.

Table 6.1: Soil Laboratory Analysis Results – Metals, Metalloids, Phenol, Cyanide

Determinand	Unit	No. samples tested	Screening Criteria		Min	Max	No. Exceeding
Arsenic	mg/kg	8	S4UL	37	9.5	22	0
Cadmium	mg/kg	8	S4UL	11	<0.2	0.4	0
Chromium	mg/kg	8	S4UL	910	25	64	0
Lead	mg/kg	8	C4SL	200	19	760	2No.; WS1 at 0.25mbgl WS7 at 0.40mbgl
Mercury	mg/kg	8	S4UL	40	<0.3	<0.3	0
Nickel	mg/kg	8	S4UL	180	24	51	0
Copper	mg/kg	8	S4UL	2400	22	270	0
Zinc	mg/kg	8	S4UL	3700	78	240	0
Total Cyanide [A]	mg/kg	8	CLEA v 1.06	33	<1	2	0
Selenium	mg/kg	8	S4UL	250	<1.0	<1.0	0
Boron Water Soluble	mg/kg	8	S4UL	290	2.2	16	0
Phenols	mg/kg	8	S4UL	120	<1.0	<1.0	0

Notes: [A] Generic assessment criteria derived for free inorganic cyanide.

Table 6.2: Soil Laboratory Analysis Results – Polycyclic Aromatic Hydrocarbons (PAHs)

Determinand	Unit	No. Samples Tested	Screening Criteria		Min	Max	No. Exceeding
Naphthalene	mg/kg	8	S4UL	2.3	<0.05	3.6	1No.; WS2 at 0.50mbgl
Acenaphthylene	mg/kg	8	S4UL	170	<0.05	0.49	0
Acenaphthene	mg/kg	8	S4UL	210	<0.05	2.1	0
Fluorene	mg/kg	8	S4UL	170	<0.05	1.6	0
Phenanthrene	mg/kg	8	S4UL	95	<0.05	18	0

Determinand	Unit	No. Samples Tested	Screening Criteria		Min	Max	No. Exceeding
Anthracene	mg/kg	8	S4UL	2400	<0.05	4.7	0
Fluoranthene	mg/kg	8	S4UL	280	<0.05	21	0
Pyrene	mg/kg	8	S4UL	620	<0.05	17	0
Benzo(a)anthracene	mg/kg	8	S4UL	7.2	<0.05	13	3No.; WS1 at 0.25mbgl WS2 at 0.50mbgl WS7 at 0.40mbgl
Chrysene	mg/kg	8	S4UL	15	<0.05	8.0	0
Benzo(b)fluoranthene	mg/kg	8	S4UL	2.6	<0.05	10	3No.; WS1 at 0.25mbgl WS2 at 0.50mbgl WS7 at 0.40mbgl
Benzo(k)fluoranthene	mg/kg	8	S4UL	77	<0.05	4.5	0
Benzo(a)pyrene	mg/kg	8	S4UL	2.2	<0.05	10	3No.; WS1 at 0.25mbgl WS2 at 0.50mbgl WS7 at 0.40mbgl
Indeno(123-cd)pyrene	mg/kg	8	S4UL	27	<0.05	4.6	0
Dibenzo(ah)anthracene	mg/kg	8	S4UL	0.24	<0.05	0.94	3No.; WS1 at 0.25mbgl WS2 at 0.50mbgl WS7 at 0.40mbgl
Benzo(ghi)perylene	mg/kg	8	S4UL	320	<0.05	4.2	0
Total PAH	mg/kg	8	-	-	<0.80	124	-

Table 6.3: Soil Laboratory Analysis Results – Total Petroleum Hydrocarbons (TPH)

TPH Band	Unit	No. Samples Tested	Screening Criteria		Min	Max	No. Exceeding
C_8-C_{10}	mg/kg	2	S4UL	27	<0.1	<0.1	0
>C_{10}-C_{12}	mg/kg	2	S4UL	74	<2.0	6.6	0
>C_{12}-C_{16}	mg/kg	2	S4UL	140	11	27	0
>C_{16}-C_{21}	mg/kg	2	S4UL	260	83	190	0
>C_{21}-C_{35}	mg/kg	2	S4UL	1100	220	690	0
Total TPH	mg/kg	2	-	-	316.1	913.7	-

Note: *The lower value of guidelines for Aromatic/Aliphatics has been selected

Table 6.4: Soil Laboratory Analysis Results – Total Petroleum Hydrocarbons (TPHCWG)

TPH Band	Unit	No. Samples Tested	Screening Criteria		Min	Max	No. Exceeding
>C_5-C_6 Aliphatic	mg/kg	7	S4UL	42	<0.001	<0.001	0
>C_6-C_8 Aliphatic	mg/kg	7	S4UL	100	<0.001	<0.001	0
>C_8-C_{10} Aliphatic	mg/kg	7	S4UL	27	<0.001	<0.001	0
>C_{10}-C_{12} Aliphatic	mg/kg	7	S4UL	130	<1.0	42	0
>C_{12}-C_{16} Aliphatic	mg/kg	7	S4UL	1100	<2.0	130	0
>C_{16}-C_{35} Aliphatic	mg/kg	7	S4UL	65000	<16.0	4290	0
>C_5-C_7 Aromatic	mg/kg	7	S4UL	70	<0.001	<0.001	0
>C_7-C_8 Aromatic	mg/kg	7	S4UL	130	<0.001	<0.001	0
>C_8-C_{10} Aromatic	mg/kg	7	S4UL	34	<0.001	<0.001	0
>C_{10}-C_{12} Aromatic	mg/kg	7	S4UL	74	<1.0	5.8	0
>C_{12}-C_{16} Aromatic	mg/kg	7	S4UL	140	<2.0	50	0
>C_{16}-C_{21} Aromatic	mg/kg	7	S4UL	260	<10	160	0
>C_{21}-C_{35} Aromatic	mg/kg	7	S4UL	1100	<10	2000	1No.; WS5 at 1.60mbgl
Total TPH (Ali/Aro)	mg/kg	7	-	-	<20	6700	-

6.2 Volatile Organic Compounds

6.2.1 In addition to the suites outlined previously, 7No. samples were tested for the presence of volatile organic compounds including BTEX compounds (benzene, toluene, ethylbenzene, xylene). No VOCs were reported above the laboratory detection limit within tested samples.

6.3 Soil Source Vapour Assessment

6.3.1 As outlined in the tables above, a number of compounds have been found in excess of their generic screening criteria for the protection of human health within a 'residential with plant uptake' end-use scenario. The generic screening criteria considers all possible pathways between the source and the receptor. In order to assess potential risks from inhalation of vapour, each compound that has been found in excess of its GAC will be assessed in terms of the contribution to total exposure from vapour inhalation inside a structure as reported within the LQM/CIEH S4UL document. Where a significant proportion of the total exposure is reported from vapour inhalation, there could be a potential risk from vapour inhalation.

Table 6.5: Soil Laboratory Analysis Results – Contribution to Total Exposure from Vapour Inhalation (Indoor)

Compound	Contribution of Vapour Inhalation to Total Exposure (%)	Screening Criteria (mg/kg)	Maximum recorded value (mg/kg)	Potential Vapour Risk?
Naphthalene	64.7	2.3	3.6	✓
Benzo(a)anthracene	0.1	11	13	X
Benzo(b)fluoranthene	<0.1	3.9	10	X
Benzo(a)pyrene	0.0	3.2	10	X
Dibenzo(ah)anthracene	<0.1	0.31	0.94	X
Aromatic C21-C35	0.0	1900	2000	X

6.3.2 As shown in the table above, naphthalene has significant proportion of its total exposure from vapour inhalation and has been reported in excess of the screening criteria, and therefore a potential vapour risk must be assumed to exist.

6.3.3 The well showing the highest levels of these contaminants (WS2) was positioned to target an underground petrol interceptor, and therefore removal of this feature and impacted soils may remove the source of contamination and therefore mitigate the vapour risks described above.

6.4 Asbestos in Soil

6.4.1 7No. samples of the Made Ground were screened in the laboratory for the presence of asbestos. The results of the analysis is summarised below in Table 6.6 below

Table 6.6: Asbestos Analysis – Summary

Sample	Screening result.	Quantification result (%)	Comments
WS1 – 0.25mbgl	None Detected	N/A	N/A
WS2 – 0.50mbgl	Detected	<0.001	Chrysotile, amosite - loose fibres
WS3 – 0.40mbgl	Detected	<0.001	Chrysotile - loose fibres
WS4 – 0.70mbgl	None Detected	N/A	N/A
WS5 – 1.00mbgl	None Detected	N/A	N/A
WS5 – 0.50mbgl	None Detected	N/A	N/A
WS7 – 0.40mbgl	Detected	<0.001	Chrysotile - loose fibres

6.4.2 The results reported an asbestos content of below 0.1%, the fibre content at which arisings are considered hazardous for the purpose of disposal.

6.4.3 It should be noted that for the purposes of human health assessment there is no level of asbestos below which it is deemed the materials are “safe”.

6.5 Statistical Analysis

6.5.1 Given the likely point sources of contamination, i.e. former and existing buried tanks and petrol interceptors, it is considered that undertaking statistical analysis would be of little benefit for the samples showing elevated hydrocarbons and PAHs.

6.5.2 In the case of Lead, as can be seen above asbestos was noted in one of the samples that exhibited elevated lead concentrations. Consequently even if statistical analysis showed that the recorded concentrations were not of concern, some remedial action would be required.

6.6 Screening of Groundwater Chemical Analysis Results

6.6.1 A sample of groundwater obtained from the borehole installation WS4 was submitted for chemical analysis. The sample was obtained using “low flow” methodology, which allows for reduced sediment sampling relative to traditional bailers, and produces the most representative samples.

6.6.2 Samples could not be obtained from WS1, WS3 or BH1 because no water was reported in the wells.

6.6.3 The results of the laboratory testing are summarised in Tables 6.7 and 6.8 below, with the raw chemical testing data presented in Appendix 3.

Table 6.7: Groundwater Analysis Results – Polycyclic Aromatic Hydrocarbons (PAHs)

Determinand	Unit	No. samples tested	Screening Criteria		Result	No. of Exceedances
Naphthalene	µg/l	1	EQS	2.4	<0.01	0
Acenaphthylene	µg/l	1	-	-	<0.01	0
Acenaphthene	µg/l	1	-	-	<0.01	0
Fluorene	µg/l	1	-	-	<0.01	0
Phenanthrene	µg/l	1	-	-	<0.01	0
Anthracene	µg/l	1	EQS	0.1	<0.01	0
Fluoranthene	µg/l	1	EQS	0.0063	<0.01	0
Pyrene	µg/l	1	-	-	<0.01	0
Benzo(a)anthracene	µg/l	1	-	-	<0.01	0
Chrysene	µg/l	1	-	-	<0.01	0
Sum of four Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(ghi)perylene Indeno(123-cd)pyrene	µg/l	1	DWS	0.1	<0.04	0
Benzo(a)pyrene	µg/l	1	DWS	0.01	<0.01	0
	µg/l	1	EQS	0.00017	<0.01	0
Dibenzo(ah)anthracene	µg/l	1	-	-	<0.01	0

***** *Laboratory method detection limit exceeds the EQS.*

Table 6.8: Groundwater Analysis Results – TPHCWG & BTEX compounds– Controlled Waters

Determinand	Unit	No. Samples tested	Screening Criteria		Result	No. of Exceedances
Benzene	µg/l	1	EQS	10	<1.0	0
	µg/l	1	DWS	1	<1.0	0
Toluene	µg/l	1	DWS	700	<1.0	0
	µg/l	1	EQS	74	<1.0	0
Ethyl benzene	µg/l	1	DWS	300	<1.0	0
Xylenes	µg/l	1	DWS	500	<2.0	0
MTBE	µg/l	1	DWS	15	<1.0	0
>C5-C6 Aliphatic	µg/l	1	WHO	15000	<1.0	0
>C6-C8 Aliphatic	µg/l	1	WHO	15000	<1.0	0
>C8-C10 Aliphatic	µg/l	1	WHO	300	<1.0	0
>C10-C12 Aliphatic	µg/l	1	WHO	300	<10	0
>C12-C16 Aliphatic	µg/l	1	WHO	300	<10	0
>C16-C21 Aliphatic	µg/l	1	WHO	-	<10	0
>C21-C35 Aliphatic	µg/l	1	WHO	90	<10	0
>C5-C7 Aromatic	µg/l	1	WHO	10	<1.0	0
>C7-C8 Aromatic	µg/l	1	WHO	700	<1.0	0
>C8-C10 Aromatic	µg/l	1	WHO	300	<1.0	0
>C10-C12 Aromatic	µg/l	1	WHO	90	<10	0
>C12-C16 Aromatic	µg/l	1	WHO	90	<10	0
>C16-C21 Aromatic	µg/l	1	WHO	90	<10	0
>C21-C35 Aromatic	µg/l	1	WHO	90	<10	0

6.6.4 In addition to the suites outlined above, the water sample was also analysed for a suite of volatile organic compounds. None of the compounds analysed for were reported above the laboratory method detection limit.

6.7 Light Non-Aqueous Phase Liquid (LNAPL)

6.7.1 Water was not obtained from WS2 or WS5 but a sample of Light Non-Aqueous Phase Liquid (LNAPL) was obtained for chemical testing.

6.7.2 2No. samples of LNAPL obtained from WS2 and WS5 were submitted to the laboratory for TPH chromatogram and product ID analysis. For both samples tested, the Total Ion Count (TIC) trace shows a carbon range from C10 to >C40 with both aromatic and aliphatic product sources. The traces do not match any standard product profiles but are indicative of lube oil.

6.8 Screening of Soil Chemical Analysis Results – Potential Risks to Plant Growth

6.8.1 Zinc, copper and nickel are phytotoxins and could therefore inhibit plant growth in soft landscaped areas. Concentrations measured in soil for these determinands have been compared with the pH dependent values given in BS: 3882 (2015).

6.8.2 Adopting a pH value of greater than 7, as indicated by the results of the laboratory analysis, the following is noted;

Table 6.9: Soil Laboratory Analysis Results – Phytotoxic Determinands

Determinand	Threshold level (mg/kg)	Min (mg/kg)	Max (mg/kg)	No. Exceeding
Zinc	300	78	240	0
Copper	200	22	270	0
Nickel	110	24	51	0

6.9 Screening for Water Pipes

6.9.1 The results of the analysis have been assessed for potential impact upon water supply pipes. Table 6.10 below summarises the findings of the assessment:

Table 6.10: Screening Guide for Water Pipes

Determinand	Threshold adopted for PE (mg/kg)	Min Value for site data (mg/kg)	Max Value from site data (mg/kg)
Total VOCs	0.5	<0.056*	<0.056*
BTEX	0.1	<0.005*	<0.005*
MTBE	0.1	<0.001*	<0.001*
EC5-EC10	1	<0.006*	<0.1*
EC10-EC16	10	<6.0*	227.4
EC16-EC40	500	<36.0*	6420
Naphthalene	5	<0.05*	3.6
Phenols	2	<1.0*	<1.0*

*Laboratory detection limit

6.9.2 The above results indicate that upgraded pipework will be required.

6.9.3 However, it should be noted that following remediation of the site this assessment may change.

6.9.4 The water supply pipe requirements for this site should be discussed at an early stage with the relevant Utility provider.

6.10 Waste Characterisation and Disposal

6.10.1 The following comments are given as guidance and should be confirmed by the waste disposal facility accepting the waste. The waste disposal facility may have their own classification methodology and are under no obligation to honour the comments given below.

6.10.2 3No. soil samples were submitted to a UKAS and MCERTS accredited laboratory for Waste Acceptance Criteria testing. The WAC results indicate that soil arisings from WS4 at 0.70mbgl and WS7 at 0.90mbgl meet the criteria for disposal at an “inert waste landfill”. The results indicate that soil arisings from WS5 at 0.50mbgl meet the criteria for disposal as “stable non-reactive hazardous waste in non-hazardous landfill”.

6.10.3 In addition to the above, the accepting waste disposal facility must be provided with all chemical results (Tables 6.1 - 6.6 and Appendix 3) for review.

7 SOIL GAS RISK ASSESSMENT

7.1 Soil Gas Results

7.1.1 Four return monitoring visits have been undertaken from 21st February to 15th March 2018, to monitor wells installed within boreholes at the site for soil gas concentrations and groundwater levels.

7.1.2 During these visits atmospheric pressure ranged between 985mb and 1026mb.

7.1.3 The results of the monitoring undertaken are summarised in Table 7.1 below, with the monitoring records presented in Appendix 5.

Table 7.1: Summary of Gas Monitoring Data

Hole No.	CH_4 (%)	CO_2 (%)	O_2 (%)	H_2S (ppm)	VOCs (ppm)	Peak Flow Rate (l/hr)	Depth to product (mbgl)	Depth to water (mbgl)	Depth of installation (mbgl)
WS1	0.0	2.1 - 3.5	18.7 - 20.3	0	0 - 8	0.0 - +0.1	-	Dry	5.00 - 5.02
WS2	0.0 - 0.1	0.2 - 0.7	20.1 - 21.6	0	6 - 21	-0.1 - +0.1	1.49 - 1.56	2.23 - 3.41	3.42
WS3	0.0	0.3 - 1.3	20.3 - 20.9	0	0 - 4	0.0 - +0.1	-	4.66 - Dry	4.86 - 4.89
WS4	0.0	0.5 - 2.3	16.4 - 20.3	0	0 - 5	0.0 - +0.4	-	4.37 - Dry	4.93 - 4.94
WS5	3.0 - 4.9	0.8 - 1.0	0.4 - 4.4	0 - 1	27 - 145	-0.4 - 0.0	1.48 - 1.54	1.64 - 1.85	4.92 - 4.95
BH1	0.0	1.1 - 1.9	18.9 - 19.5	0	0 - 5	+0.1 - +0.2	-	Dry	5.07 - 5.10

7.2 Screening of Results

7.2.1 As shown in Table 7.1, methane has been reported to a maximum concentration of 4.9% v/v. Carbon dioxide has been reported to a maximum concentration of 3.5% v/v. Screening of the monitoring well headspaces with a photo-ionisation detector (PID) has detected maximum Volatile organic compound (VOC) concentration to a maximum level of 145 ppm. A maximum flow rate of +0.4l/hr has been reported.

7.2.2 In the assessment of risks posed by hazardous ground gases and selection of appropriate mitigation measures, BS: 8485 (2015) identifies four types of development, termed Type A to Type D. Type A buildings are defined as

"Private ownership with no building management controls on alterations to the internal structure, the use of rooms, the ventilation of rooms or the structural fabric of the building. Some small rooms present. Probably conventional building construction (rather than civil engineering). Examples include private housing and some retail premises."

7.2.3 Type A has been adopted as the relevant category for the proposed development.

7.2.4 The soil gas assessment method is based on that proposed by Wilson & Card (1999), which was a development of a method proposed in CIRIA publication R149 (CIRIA, 1995). The method uses both gas concentrations and borehole flow rates to define a characteristic situation based on the limiting borehole gas volume flow for methane and carbon dioxide. In both these methods, the limiting borehole gas volume flow is renamed as the Gas Screening Value (GSV).

7.2.5 The Gas Screening Value (litres of gas per hour) is calculated by using the following equation

GSV = (Concentration/100) X Flow rate

Where concentration is measured in percent (%)
and flow rate is measured in litres per hour (l/hr)

7.2.6 The Characteristic Situation is then determined from Table 8.5 of CIRIA C665.

7.2.7 To accord with C665, worst case conditions are used in the calculation of GSVs for the site.

7.2.8 A worst case flow rate of 0.4l/hr (maximum reported) will be used in the calculation of GSVs for the site. The Characteristic Situation is then determined from Table 8.5 of CIRIA C665.

7.2.9 To accord with C665, worst case conditions are used in the calculation of GSVs for the site. These have been summarised below in Table 7.2

Table 7.2: Summary of Gas Monitoring Data

Gas	Concentration (v/v %)	Peak Flow Rate (l/hr)	GSV (l/hr)	Characteristic Situation (after CIRIA C665)
CO_2	3.5	0.4	**0.014**	**1**
CH_4	4.9	0.4	**0.0196**	**1**

7.2.10 The methodology set out in BS 8485 (2015) has been used for determining the required gas protection measures. Although the site is a CS1 based on GSV calculations, concentrations of CH_4 were reported greater than 1.0% v/v, and therefore consideration must be given to increasing this to CS2. Specialist ground gas risk assessments may prove that this is not necessary.

7.2.11 Elevated methane was only detected in WS5 which was positioned to target two former kerosene and diesel tanks. Product was also noted within the well. Therefore, it is assumed that the source of ground gas is due to hydrocarbon contamination from these tanks. A course of ground gas monitoring should be undertaken following removal of tanks and any remedial work undertaken at the site to remove the potential source of elevated methane.

7.2.12 A CS2 site on a Type A development requires a minimum of 3.5 protection points in accordance with B8485.

7.2.13 A basement is to be formed under approximately half of the building due to the topography. Assuming the basement floor and walls conform to BS 8102:2009 - Grade 2 waterproofing, then this will provide the site with 2 protection points. If basement floor and walls conform to BS 8102:2009 - Grade 3 waterproofing, this will provide 2.5 protection points.

7.2.14 This can be achieved in a number of ways, within BS8485 it is recommended that a range of protection measures are utilised with a minimum of two separate methods chosen from the three groupings (Structural, Ventilation and Barrier).

Table 7.3: Recommended Gas Protection Measures

Protection Measures	BS 8485 Score
Structural Cast in situ monolithic reinforced ground bearing raft or reinforced cast in situ suspended floor slab with minimal penetrations	**1.5**
Ventilation Active positive pressurization by the creation of a blanket of external fresh air beneath the building floor slab by pumps supplying air to points across the central footprint of the building into a permeable layer, usually formed of a thin geocomposite blanket	**2.5**
Barrier Gas/hydrocarbon vapour resistant membrane meeting all of the following criteria: • sufficiently impervious to the gases with a methane gas transmission rate <40.0 ml/day/m2/atm (average) for sheet and joints (tested in accordance with BS ISO 15105-1 manometric method); • sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions; • sufficiently strong to withstand in-service stresses (e.g. settlement if placed below a floor slab); • sufficiently strong to withstand the installation process and following trades until covered (e.g. penetration from steel fibres in fibre reinforced concrete, penetration of reinforcement ties, tearing due to working above it, dropping tools, etc); • capable, after installation, of providing a complete barrier to the entry of the relevant gas; and • verified in accordance with CIRIA C735	**2**
MINIMUM REQUIRED TOTAL	**3.5**

7.2.15 During construction where personnel are required to enter excavations of greater than 1.2m the air quality (Carbon Dioxide, Methane and Oxygen as a minimum) should be regularly checked prior and during person entry. Appropriate precautions, including but not limited to, venting, PPE and gas alarms should be undertaken

7.2.16 Any permanent excavations such as manholes, inspection chambers or other void spaces formed beneath the sites ground surface are potential ground gas traps and precautions, as per above, are considered the minimum necessary prior to person entry.

7.2.17 BS 8576:2013 has been used to derived threshold levels for Carbon Monoxide and Volatile Organic Compounds.

7.2.18 Given the recorded levels it is not considered that additional protection measures need to be incorporated to protect end users from the recorded Carbon Monoxide concentrations.

7.2.19 PID screening of the monitoring well headspace has revealed maximum concentrations of VOCs of 145ppm. No VOCs were detected in soils or water tested in the laboratory. The likely source of elevated VOCs is the identified LNAPL encountered within WS5. It is considered that the PID screening of monitoring well confirms the assessment that risks to human health receptors via vapour inhalation pathways require further evaluation once remedial works are undertaken.

8 SUMMARY OF RESULTS

8.1 Land Quality Impact Summary

8.1.1 Following the ground investigation, the following is noted:

- It is understood that the proposed development will involve the demolition of the existing building and construction of a new three-storey residential development. The new development will include a lower ground floor (half of which is below ground due to slope of ground) and a full single -storey basement below. The new building will be located in approximately the same footprint as the existing building, but the basement level will extend out to under most of the site. Proposed plans indicate that private garden will be included.

- Following generic risk assessments, elevated concentrations of lead, naphthalene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(ah)anthracene and C21-C35 aromatic hydrocarbons were detected in soils in excess of generic assessment criteria for the protection of human health within a 'residential with plant uptake' end-use scenario.

- Asbestos in the form of chrysotile and amosite - loose fibres were detected in 3No. samples analysed in the laboratory. These were quantified to <0.001%, lesser than the 0.1% fibre content where arisings are considered hazardous for the purpose of disposal.

- Given the locations of the soil exceedances in relation to the location of suspected underground fuel tanks, it is considered likely that underground tanks are the source of the hydrocarbon contamination in soil. Removal of these tanks and associated impacted soil will be required to partly address these risks.

- A basement is proposed under the majority of the site. As a result, soils will be removed down to approximately 5.0-8.0m bgl. This removal of soil would also remove significant amounts of (if not all of) the contaminated soils.

- Due to the presence of asbestos, any areas of proposed soft landscaping should comprise at least 600mm of clean imported soil placed on a break layer. Where crush concrete is used as a break layer, a 200mm thick layer may be installed as part of the 600mm cover.

- Groundwater analysis has reported no concentrations of contaminants above the laboratory detection limit. Due to several installations reported as 'dry' and the underlying geology (London Clay - unproductive strata) it is considered that the water encountered represents surface water ingress as oppose to groundwater. Of greater concern is the "free product" reported to be floating on the surface of the water within WS2 and WS5. The source of this product is likely to be water migrating though the contaminated Made Ground. Any product encountered during the tank removal works must also removed. Due to the underlying London Clay, identified as unproductive strata, the product and contaminants within soil are unlikely to migrate to impact off-site controlled waters receptors.

- Calculating the Gas Screening Value using worst case results indicates Characteristic Situation 1. However, concentrations of methane are raised at the

site, with corresponding depleted oxygen, meaning raising the site to CS2 must be considered.

- It is noted that the elevated levels were only recorded in a single well (WS5) in close proximity to the underground tank locations, with product also reported within the installation. The other wells on site reported significantly reduced gas readings. It is possible that following remediation of the site, including the removal of the underground tanks and associated contaminated soils and free product, future monitoring may be able to reduce the level of gas protection required. Given the levels of potentially volatile contaminants identified within soil, a vapour resistant membrane may be required within the proposed structures.

- As with any ground investigation, the presence of further hotspots between sampling points cannot be ruled out.

- A remediation strategy and subsequent verification report will be required.

8.1.2 The above conclusions are made subject to approval by the statutory regulatory bodies.

8.2 Review of Pollutant Linkages Following Site Investigation

8.2.1 The site CSM has been revised and updated from that suggested in the desk study in view of the ground investigation data, including soil laboratory analysis results. Table 8.1 highlights whether pollutant linkages identified in the original CSM are still relevant following the risk assessment, or whether pollutant linkages, not previously identified, exist.

Table 8.1: Plausible Pollutants Linkages Summary (Pre Remediation)

Potential Source (from desk study)	Pathway	Receptor	Relevant Pollutant Linkage?	Comment
• Potential for hydrocarbon contaminated ground associated with previous site use as fuel station/garage – on site (S1) • Potential for Made Ground associated with previous development operations – on site (S2) • Potential buried tanks associated with former use as a fuel station/garage – on site (S3) • Current and previous industrial use – off site (S4) • Potential asbestos containing materials within existing buildings – on site (S5) • Potential asbestos impacted soils from demolition of previous buildings – on site (S6) • Potential ground gas generation associated with hydrocarbon impacted soils from historic use as fuel station - on site (S7)	• Ingestion and dermal contact with contaminated soil (P1) • Inhalation or contact with potentially contaminated dust and vapours (P2) • Permeation of water pipes and attack on concrete foundations by aggressive soil conditions (P6)	• Construction workers (R1) • Maintenance workers (R2) • Neighbouring site users (R3) • Future site users (R4) • Building foundations and on site buried services (water mains, electricity and sewer) (R5)	✓	see 8.1 above for remedial measures. A remediation strategy and subsequent verification report will be required. The findings of this report should be included in the construction health and safety file, with adequate measures put in place for the protection of construction and maintenance workers.
	• Accumulation and migration of soil gases (P5)		✓	Gas Protection measures are required. However, additional monitoring undertaken post-remediation may reduce this or prove otherwise.
	• Leaching through permeable soils, migration within the vadose zone (i.e., unsaturated soil above the water table) and/or lateral migration within surface water, as a result of cracked hardstanding or via service pipe/corridors and surface water runoff. (P3) • Horizontal and vertical migration of contaminants within groundwater (P4)	• Neighbouring site users (R3) • Building foundations and on site buried services (water mains, electricity and sewer) (R5) • Controlled Waters (Culvert) (R6)	✓	Remedial measures required and set out in Section 8.1. All free product should be removed form site. Contact should be made with relevant utility providers to confirm if upgraded materials are required. It should be noted that remediation may negate the requirement for this.

9 GEOTECHNICAL ENGINEERING RECOMMENDATIONS

9.1 Ground Investigation Summary

9.1.1 No detailed structural engineering design information, with respect to the type of construction and associated structural loadings, was provided at the time of preparing this report. Consequently, a detailed discussion of all the problems that may arise during the proposed redevelopment scheme is beyond the scope of this report.

9.1.2 Practical solutions to the difficulties encountered, both prior to, and during construction, are frequently decided by structural constraints or economic factors. For these reasons, this discussion is predominantly confined to remarks of a general nature, which are based on site conditions encountered during the intrusive investigations.

9.1.3 It is understood that the proposed development will involve the demolition of the existing building and construction of a new three storey residential development. The new development will include a lower ground floor (half of which is below ground due to slope of ground) and a full single -storey basement below. The new building will be located in approximately the same footprint as the existing building, but the basement level will extend out to under most of the site. Proposed plans indicate that private garden will be included.

9.2 Geotechnical Classification

9.2.1 At the Desk Study stage this development was deemed to be a GC2 development in accordance with BS: 1997.

9.2.2 The findings of the investigation undertaken and discussed previously does not change this assessment.

9.3 Data Summary

9.3.1 The results of the ground investigation revealed a ground profile comprising a variable thickness of Made Ground up to 1.20mbgl overlying London Clay Formation to the base of the borehole at 24.95mbgl.

9.3.2 A summary of ground conditions obtained from the ground investigation and the derived geotechnical parameters, is provided in Table 9.1 below.

Table 9.1: Ground Conditions and Derived Geotechnical Parameters

Strata	Depth Encountered (from-to) (mbgl)	SPT 'N' Value	Inferred Shear Strength (kPa)	Measured Shear Strength (kPa)	Moisture content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (corrected plasticity) (%)	NHBC Volume Change Classification
Reinforce concrete over dark brown sandy gravelly clay. Gravel consists of fine to coarse sub-angular to sub-rounded flint, brick and concrete. (MADE GROUND) Encountered to base of WS6. No recovery from 1.10mbgl in WS2.	0.00 to 0.30 - 1.20	-	-	-	-	-	-	-	-
Brown mottled grey CLAY (LONDON CLAY FORMATION) Encountered to the base of WS1, WS3, WS4, WS5, WS7, BH1 & BH2	0.30 - 1.20 to >4.45 - >24.95	0 - 41	0 - 185	72 - 160	26 - 34	72 - 80	26 - 32	44 - 52 (43.56 - 52)	High

9.4 Undrained Shear Strength

9.4.1 Standard Penetration Tests were undertaken at regular intervals throughout the window sampler holes and cable percussive boreholes within the London Clay Formation. Due to the shallow nature of the Made Ground no tests were carried out with those materials.

9.4.2 The N values recorded in the London Clay Formation varies with depth, this infers that the undrained shear strength of the clay similarly varies. Figure 9.1 below shows the undrained shear strength inferred by the correlation suggested by Stroud (1974),

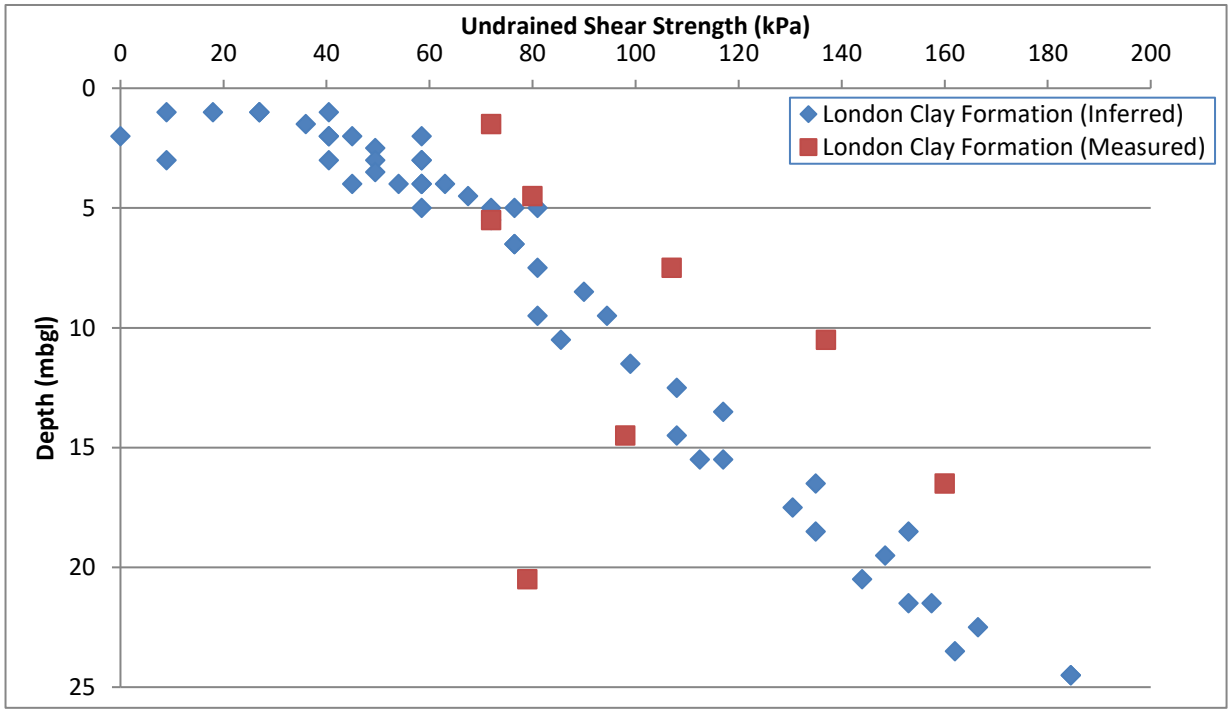
$c_u = f_1 \times N$ can be applied,

in which
c_u= mass shear strength (kN)
f_1 = constant
N= SPT Value achieved during boring operations

9.4.3 In the above equation f_1 is dependent on the plasticity of the material that the SPT is being carried out in. As the plasticity indices were shown to be greater than 27% a value for f_1 of 4.5 has been adopted after Tomlinson (2001).

9.4.4 The graph below shows the shear strength profile of the London Clay Formation encountered at the site, based on the SPT to shear strength correlation described above, as well as the results of undrained triaxial tests on undisturbed samples taken from the boreholes.

Figure 9.1: Undrained Shear Strength v Depth



9.4.5 As can be seen from above using a f_1 of 4.5 provided a generally good correlation between the inferred undrained shear strengths and the measured results. A f_1 of 5 could be used but due to the conservative nature of using 4.5 this value has been kept.

9.4.6 It should be noted that some very low strengths were inferred at 1m - 3m in WS5. This location was located in close proximity to a known tank and at 4m the recorded SPT 'N' values (and thus the inferred undrained shear strengths) jump up to levels noted elsewhere. It is possible that the materials noted between 1m and 3m in WS5 are actually materials disturbed to allow the installation of the known tanks.

9.5 Coefficient of Compressibility

9.5.1 Stroud and Butler (1974) developed a relationship between the coefficient of compressibility (m_v) and SPT 'N' value.

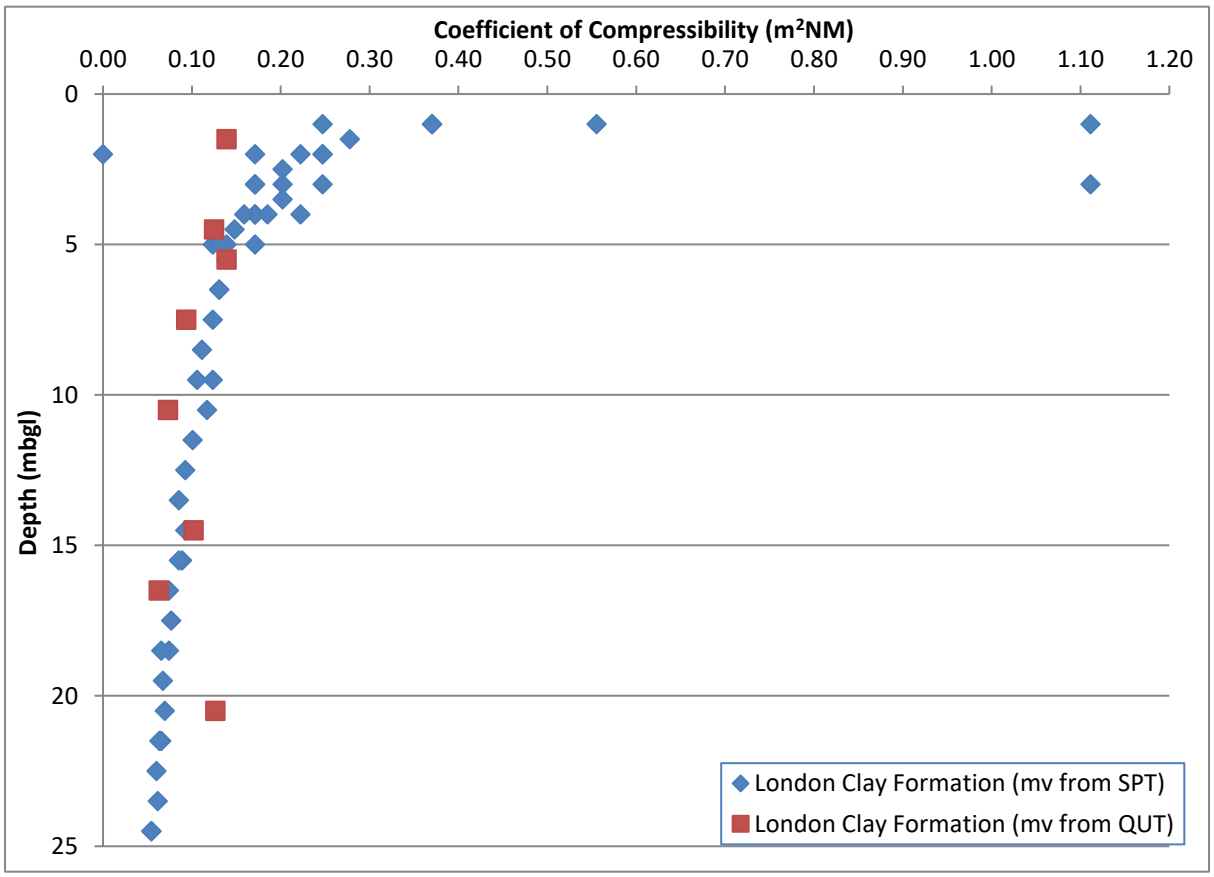
$m_v = 1 / (f_2 \times N)$ can be applied,

in which
m_v = coefficient of compressibilty (m^2/MN)
f_2 = constant dependant on the plasticity index
N = SPT Value achieved during boring operations

9.5.2 Using the plasticity indices obtained (See Table 9.1) and the graphs provided in Tomlinson (2001) a value of f_2 of 0.45 has been taken and used with the SPT 'N' values to infer coefficient of compressibility (m_v).

9.5.3 Where the undrained shear strength of the clays was obtained using the quick undrained triaxial methodology the m_v value was used by rearranging the equations for f_1 and f_2 and the measured undrained shear strength.

Figure 9.2: of Coefficient of Volume Compressibility (m_v) v Depth



9.5.4 As would be expected, the results reduce with depth as the clay increases in strength and the over burden increases, reducing the potential for compressibility.

9.5.5 As would be expected the results from of the London Clay are generally of “low” to “medium” compressibility. A number of near surface clays are noted to be of “high” compressibility. However this is considered to be due to the lack of overburden pressure allowing the clays to relax and so compress slightly as well as the potential for these materials to be disturbed / Made Ground.

9.6 Building Near Trees

9.6.1 The underlying soil conditions have been shown to be of high volume change potential.

9.6.2 Using the geotechnical testing obtained (summarised in Table 9.1) and with reference to NHBC Chapter 4.2 it can be seen that a minimum founding depth of 1.50m will be required. This would allow for restricted new planting.

9.6.3 As a basement is proposed, the foundations are likely to be formed at a depth greater than the 1.50m minimum founding depth.

9.6.4 Presence of existing and proposed trees may increase this minimum depth. It is recommended that a tree survey that should include: location, species and height of all trees on and near to the proposed development is recommended.

9.6.5 Guidance is also given in relation to other aspects of construction where the shrink / swell potential of the soils may be needed to take into consideration. This guidance is summarised in the appropriate sections below.

9.7 Foundations

9.7.1 Foundations should not be formed in either the Made Ground or Topsoil due to the unacceptable risk of total and differential settlement. It should be noted that the demolition and removal of existing structures including, foundations, services, tanks etc may increase the depth of Made Ground on the site.

9.7.2 It is considered likely that an excavation circa 5.0m deep, below the ground level at the front of the site, would be required to form the basement.

9.7.3 The topography of the site means that the finished floor level would be at significantly different levels below local ground level, increasing towards the rear (north-east) of the site.

9.7.4 Based upon the information obtained to date, it is considered that a cantilever retaining wall installed may be constructed with an allowable bearing pressure of 120kPa at 5.0m below the ground level adjacent to Highgate Road.

9.7.5 The exact allowable bearing capacity that could be achieved would need to be reviewed on receipt of foundation design details. This would include a check against sliding failure would need to be made to the retaining wall design. This may alter the above recommendations

9.7.6 If a greater allowable bearing capacity is required and towards the rear of the site where there could be upto two storeys of basement, then it is considered that conventional foundations would be unsuitable for the proposed development and a piled foundation solution within the underlying London Clay should be considered.

9.7.7 The piled foundations will carry their working load in a combination of skin friction along the sides of the pile and end bearing at the base of the pile. The piles should be designed by a suitably qualified and experienced piling specialist using a suitable factor of safety with the settlement at working load specified to meet any structural requirements. Table 9.2 provides some indicative capacities for a single pile for the diameter and depths shown.

Table 9.2: Indicative Piles Capacities (kN)

Pile toe depth (m bgl)	Pile diameter (m)					
	0.30	0.45	0.60	0.75	0.90	1.20
	Indicative Allowable Pile Capacity (kN)					
10	140	220	315	415	530	785
12	190	300	425	555	700	1025
14	250	390	545	715	895	1295
16	315	490	680	885	1105	1585
18	385	600	830	1075	1340	1910
20	465	605	840	1095	1365	1955

9.7.8 The above assumes a bored piling system. Other methods of piling and equipment may provide different results.

9.7.9 Should any loading be placed directly on the ground which cause the ground to settle relative to the piles then additional negative skin friction loads could be imposed on the piles.

9.7.10 If piling is used then an engineered granular piling mat designed and constructed to BRE 470 would need to be constructed to support the rig to prevent it overturning and / or sinking into the ground.

9.7.11 Once structural loads have been fully determined a full design check in accordance with BS EN 1997 should be undertaken to confirm suitability of foundation choice.

9.7.12 Alternatively, a fully embedded retaining wall consisting of a contiguous or secant piled box could be utilised to form the basement. Such a retaining wall would also need to be designed to carry structural loadings. The piles should be designed to withstand the earth pressures, and still meet the required structural requirements regarding issues such as deflection, deformation and bending.

9.7.13 The above comments are indicative only based on limited ground investigation data. Foundations should be designed by a suitably qualified Engineer. Once structural loads have been fully determined a full design check in accordance with BS EN 1997 should be undertaken to confirm suitability of foundation choice.

9.8 Concrete in the Ground

9.8.1 Sulphate attack on building foundations occurs where sulphate solutions react with the various products of hydration in Ordinary Portland Cement (OPC) or converted High-Alumina Cement (HAC). The reaction is expansive, and therefore disruptive, not only due to the formation of minute cracks, but also due to loss of cohesion in the matrix.

9.8.2 In accordance with BRE Special Digest 1, as there are less than 10 results in the data set the highest value has been taken.

9.8.3 Table 9.3 summarises the analysis of the aggressive nature of the ground for each of the strata encountered within the ground investigation.

Table 9.3: Concrete in the Ground Classes

Stratum	No. Samples	pH range	Highest WS Sulphate (mg/l)	Design Sulphate Class	ACEC Class
Made Ground	5	8.6 - 10.7	1780	DS-3	AC-2s
London Clay Formation	9	6.6 - 9.0	6100	DS-5	AC-4s

9.8.4 It should be noted that within the BRE SD-1 where there are results from 10 or more samples from a strata the mean of the top 20% is taken as the design value. The highest value noted and used in the above assessment is approximately twice as high as the next value and is considered likely to be due to the disseminated pyrite noted to exist in the London Clay Formation.

9.8.5 Taking the mean of the two highest results obtained would mean that concrete could be designed to designed to design sulphate DS4 and ACEC Class AC-3s.

9.9 Ground Floor Slabs

9.9.1 Given that there is to be a basement formed on the site, it is expected that the finished floor level would be approximately 5m below current ground level.

9.9.2 If a cantilever retaining wall is utilised, then a ground bearing floor slab could be used. Such a slab would need to be constructed on a suitable thickness of engineered granular material.

9.9.3 In this case, formations of the structures should be inspected by a competent person. Any loose or soft material should be removed and replaced with well-graded, properly compacted granular fill or lean mix concrete. The formation should be blinded if left exposed for more than a few hours or if inclement weather is experienced.

9.9.4 Such a floor slab would also need to be suitably reinforced, not only to distribute the structural loading but also to ensure that the floor slab can prop the retaining walls and does not buckle from the lateral pressures imposed by the cantilever retaining walls.

9.9.5 Such a floor slab could also be used for a fully embedded retaining wall (secant or contiguous piled retaining wall) however the floor would need to be independent of the walls. In normal circumstances such a retaining wall would use a suspended floor slab, in which case the piles would need to be designed to carry the floor loads as well as the structural loads. The void beneath such a suspended floor slab would require a clear void or equivalent compressible material to provide an equivalent of 150mm void.

9.9.6 The floor slab (and basement walls) would need to be constructed to conform to BS: 8102 (2009).

9.10 Excavations

9.10.1 It is likely that some shallow excavations will be required at the site for services etc, in addition to larger excavations during the remediation and construction works. These are anticipated to remain stable for the short term only.

9.10.2 The stability of all excavations should be assessed during construction. The sides of any excavations into which personnel are required to enter, should be assessed and where necessary fully supported or battered back to a safe angle.

9.10.3 Due to the requirement to remove former fuel tanks from the site and the location of these tanks in relation to the site boundary and specifically the highway, it may not be possible to batter back, and additional support will be required.

9.10.4 As these excavations need to be undertaken to remediate the site it would make sense to attempt to schedule the remedial and construction works so that retaining walls / foundations etc could be formed directly into the remedial excavations rather than having to back fill and then re-excavate.

9.10.5 For the north-east of the site where there is likely to be upto two storeys of basement and a fully embedded retaining wall is likely to be required, it would be prudent to install the piles first to act as the retaining wall to support the excavations to form the basement.

9.10.6 Given the noted ground gas conditions, protective precautions and monitoring of the gas levels within excavations of 1.2m or deeper prior to persons entering the excavations.

9.11 Retaining Walls

9.11.1 At the current time, it is not known how the retaining walls to the basement will be constructed. It is assumed that the retaining walls will be either of the cast in-situ cantilever type and formed in short sections to help prevent instability issues.

9.11.2 These walls would need to be designed to both withstand the earth pressures and to be able to transfer the above loading successfully i.e. the retaining wall should be designed to act as a foundation for the structure.

9.11.3 A check against sliding failure would need to be made to the retaining wall design. This may alter the above recommendations regarding allowable bearing capacities.

9.11.4 Alternatively a contiguous piled wall could be used, a schematic for such a wall is included as Figure 10.3.

9.11.5 At the current time, insufficient structural information is available to allow details of the retaining wall to be determined. Given the obtained information it is considered that a friction angle for the materials could be taken as 0° in its undrained state.

9.11.6 Given the proposed depth of the basement, it is considered that heave precautions will not be required at the base of the basement walls. However, where basement walls extend up above 3mbgl, it would be recommended that heave precautions are included. Given the high-volume change potential of the underlying clays these should consist of 35mm void or the equivalent thickness of compressible material adjacent to the foundation.

9.11.7 The choice of parameters to allow the design of a retaining wall should be discussed in the Geotechnical Design Report. However, the following suggestions for the London Clay Formation are given based on the findings of this Ground Investigation and undertaking a limited literature review.

Table 9.4: Suggested Retaining Wall Parameters For the London Clay Formation

Parameter	Unit	Range
Unit Weight	kN/m^3	18 to 20.5
Effective Stress Cohesion	kPa	0 to 12*
Angle of Shearing Resistance	°	24 to 28
Poisson Ratio		0.25 - 0.5*

*Depending on drainage state

9.12 Groundwater Control

9.12.1 Groundwater was not encountered during drilling of any of the exploratory holes, though water was noted to seep into WS2 at 1.1mbgl and WS4 at 4.5mbgl.

9.12.2 During return monitoring groundwater was reported at depths of between 1.64m and 4.66m bgl within WS2, WS3, WS4 and WS5. No water was reported within WS1 or BH1 during any monitoring visit. Such variance suggests the ingress of surface water, as opposed to the natural groundwater table.

9.12.3 Subject to seasonal variations, any groundwater encountered during site works could be readily dealt with by conventional pumping from a sump used to collate waters. Surface water or rainfall ingress could be similarly dealt with.

10 GROUND MOVEMENT ASSESSMENT

10.1 Study Aims & Objectives

10.1.1 A ground movement assessment has been carried out to assess the potential ground movement field induced by the proposed redevelopment works at 138 – 140 Highgate Road on the neighbouring properties. The below assessment has been prepared in accordance with Camden Planning Guidance (CPG) Basements (March 2018).

10.1.2 The proposed scheme includes the demolition of the existing 138 – 140 Highgate Road properties followed by the construction of the new residential development. Redevelopment works are also planned to take place around the front of the plot where garden areas are planned.

10.1.3 The modelling works carried out and described herein are provided to:

- Assess the impact of the proposed works on the local ground movements induced by the proposed development in the proximity to adjacent properties.
- Check the ground movement along Highgate Road to verify the effect of the new development construction on existing road infrastructure.

10.1.4 This assessment provides a detailed description of the:

- Site and proposed development.
- Modelling parameters and input.
- Analyses and results.

10.2 Proposed Development

10.2.1 A diagram showing the proposed development, is presented in Appendix 1. The development will involve the demolition of the existing building and construction of a new three-storey storey residential development. The new development will include a lower ground floor (half of which is below ground due to slope of ground) and a full single-storey basement below. The new building will be located in approximately the same footprint as the existing building, but the basement level will extend out to under most of the site.

10.2.2 An indicative section of the proposed development, displaying the elevations of each level is presented as Figure 10.2.. The existing ground level of the site is approximately 100.5mOD.

10.2.3 The proposed SSL of the lower ground floor level is 98.36mOD, with the additional full basement level extending to a proposed SSL of 95.16mOD. Detailed substructure proposals were not available at the time of carrying out this GMA, for this reason a 500mm thick raft foundation has been assumed for analysis purposes, more specifically for the determination of the representative bulk excavation depth which is assumed to be approximately 6m deep. The proposals indicate that a private garden will be included to the front of the development, adjacent to Highgate Road. The proposed excavation is anticipated to be conducted with the aid of an embedded pile wall (or similar solution – see indicative contiguous pile wall provided in Figure 10.3) as indicated by the

drawings available at the time of writing this report (Rev A drawings dated 15th August 2018).

10.3 Design Assumptions

10.3.1 It has been assumed that the earth retention system (embedded pile / sheet pile wall or suitable alternative) will be adequately propped during temporary works construction, in order to limit deflections during bulk excavation works and prior to permanent works slab installation. This may be achieved by one or a combination of the following (or another suitable alternative):

- Restraint from a capping beam bending out-of-plane across relatively short spans.
- Bespoke temporary props/corner bracing/etc.
- Temporary berm and raking prop arrangements.

10.3.2 Additionally, it has been assumed that the depth of embedment of the embedded pile wall below the formation level will be equal to the retained height – which is considered an upper bound for a propped wall, this assumption was made in light of the limited substructure design data available at the time of carrying out this GMA, in order to provide a robust assessment. A temporary cantilever retaining wall would require an embedded length in the order of 1.5 to 2 times the retained height.

10.4 Indicative Construction Sequence

10.4.1 The following outline construction sequence has been assumed:

- Establish site, repair any existing cracks and install monitoring equipment.
- Demolish existing structure.
- Install contiguous piled wall (or suitable alternative) from existing ground level along proposed basement perimeter.
- Excavation works carried out to achieve formation level, with parallel installation of temporary propping as required to maintain stability.
- Install buried drainage, heave board (if required) and cast basement slab.
- Remove temporary props when basement slab has gained sufficient strength.
- Completion of permanent works construction.

10.4.2 The piled wall will be installed from the existing ground level and will be designed by the piling specialist.

Figure 10.1: 3D render of proposed development.

Figure 10.2: Indicative section through proposed development.

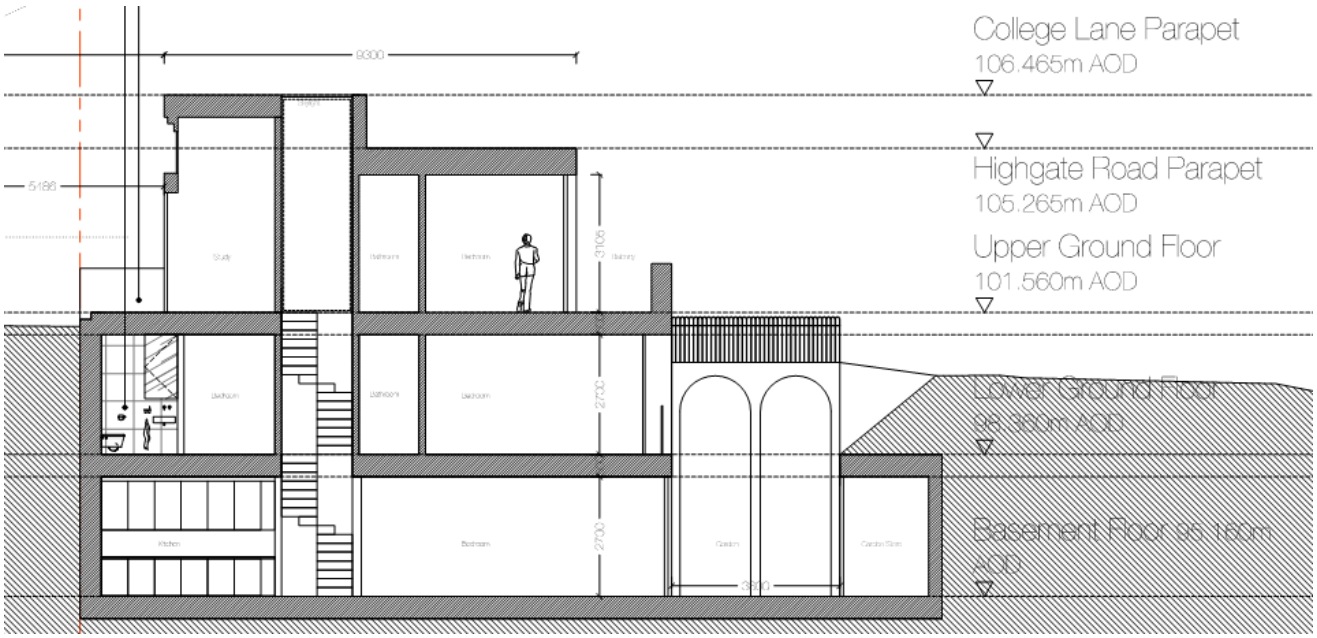
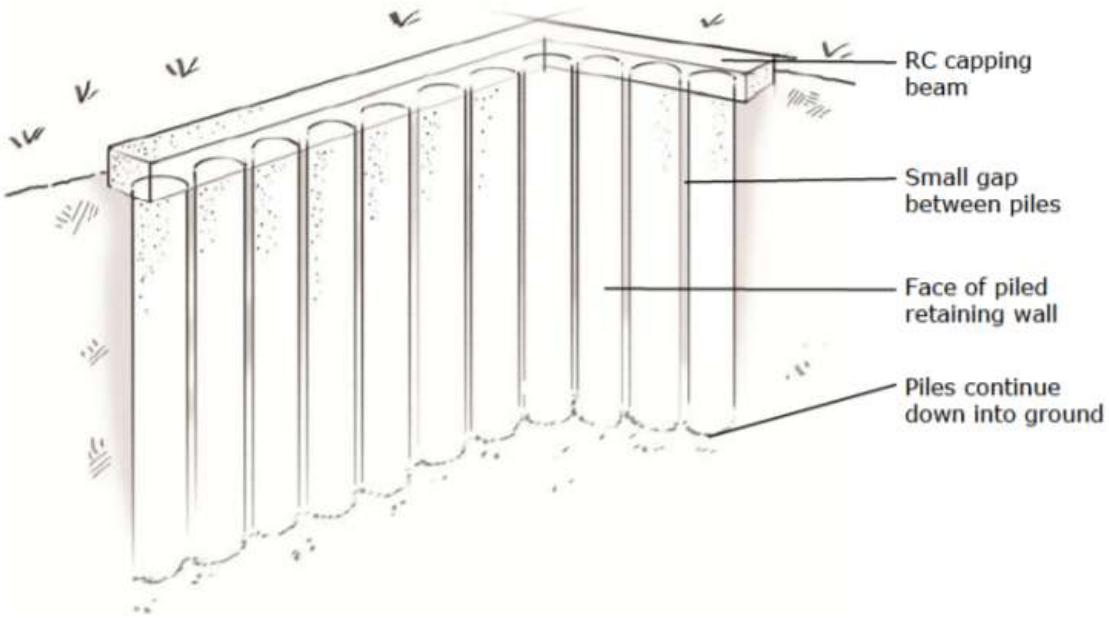


Figure 10.3: Indicative arrangement of a contiguous piles wall.



10.5 Ground Movement Assessment - Overview

10.5.1 Ground movements will arise from a number of different sources as the works progress. These ground movements will extend over a given zone of influence surrounding the building footprint. Neighbouring structures may be adversely affected by ground movements resulting from basement construction. A simplified account of typical sources of ground movement is provided below:

1. Demolition and enabling works:

   - Minor stress relief and (typically) small ground movements associated with removal of permanent building loads during demolition.

   - Ground movements arising primarily from contractor workmanship and adopted means and methods to enable the site to progress with basement works. E.g. shoring of temporary excavations to remove obstructions prior to piling, etc.

2. Installation effects:

   - Ground movements arising from installation of embedded retaining wall elements, such as contiguous piled walls.

   - The development and pattern of ground movements is dependent on the sequence that the works are performed.

3. Bulk excavation to formation:

- Ground movements arising from stress relief associated with unloading of the ground mass.

- Ground movements associated with soil-structure interaction between the embedded retaining wall, temporary propping system and retained ground mass.

4. Permanent loading:

- Ground movements associated with construction of the superstructure.

- Redistribution of load paths from temporary works elements to permanent works elements.

- Long term ground movements associated with soil consolidation and creep.

10.6 Ground Movement Assessment - Means and Methods

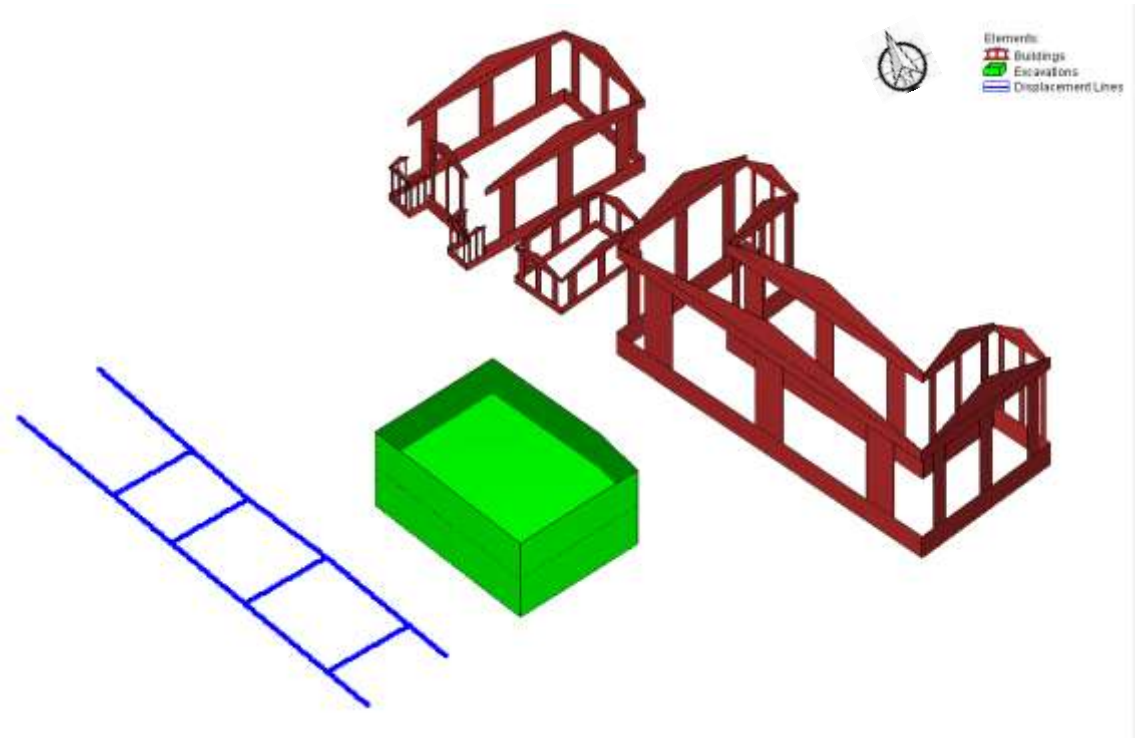
10.6.1 The GMA has been undertaken using proprietary spreadsheets and the commercially available software Oasys Pdisp and Xdisp, which consider the three-dimensional ground movement field induced by the proposed works in a simplified way.

10.6.2 Ground movements associated with Items 1, 3 & 4 (as described in the previous section), were evaluated using Oasys Pdisp. In these analyses the soil is assumed to behave as an isotropic, linear elastic medium. Structural forces applied to the foundation and the effects of stress-relief due to excavation are represented by applying pressures on planes at the surface, or within the elastic half-space representing the foundation soils. Ground movements that are primarily due to contractor workmanship cannot be captured within this type of assessment.

10.6.3 Ground movements associated with Items 2 & 3 were also evaluated using the empirical normalised displacement curves presented in CIRIA C760 for installation and excavation of embedded retaining walls. These curves have been developed from a database of recorded ground movements and they generally represent an upper bound to the data. It is assumed that some effects of workmanship are intrinsically captured within the movement records. Notwithstanding, ground movements due to poor workmanship practices, (e.g. flighting in meta-stable sands and silts) may induce movements significantly higher than those represented by the empirical ground movement curves. It is assumed that the ground works will be carried out by a competent and experienced groundworks contractor.

10.6.4 A series of three-dimensional models of the proposed scheme have been developed in both software packages outlined previously and have been combined by means of superposition to represent the various ground displacement fields summarised above. An indicative plot of the analytical model with clarification comments is presented below in **Error! Reference source not found.**.

Figure 10.1 Indicative plot of the three-dimensional analytical model produced using the Oasys software suite (soil removed for clarity of presentation). Simplified excavation geometry shown in green and Highgate Road in blue.



10.7 Ground Movement Assessment - Ground Model

10.7.1 An idealised ground model has been evaluated based on the site-specific ground investigation which comprised 7no window sample boreholes to 5.45mbgl and 2no cable percussive boreholes, drilled up to 24.95mbgl both with associated in situ testing and sampling.

10.7.2 The thickness of Made Ground was observed in the boreholes to be typically 1m thick. It is assessed that the buildings adjacent to the proposed development site will be founded at ground surface. The thickness of the London Clay was not proven during the site investigation. Table 10.1 summarises the representative ground model adopted for ground movement assessment purposes.

Table 10.1: Summary of ground model and geotechnical parameters adopted for analysis purposes

Stratum	Top of stratum (mbgl)	Assumed Undrained Strength, S_u (kPa)	Undrained Young's Modulus, E_u (MPa)	Drained Young's Modulus, E' (MPa)
Made Ground	0.0	-	-	15.0
London Clay Formation	1.0	30 + 6.3z [1]	15.0 + 3.1z [1]	12.0 + 2.5z [1]

Notes: 1. z is the depth in metres below top of the London Clay, which is assumed to be approx. 1.0m below existing ground level.

2. *Rigid boundary* assumed at 64mOD for analytical purposes (conservative level adopted capturing extensive zone of influence based on development width of around 20m).

3. The stiffness data (E_u and E') has been evaluated empirically taking into consideration the nature of the geotechnical/soil-structure interaction mechanisms and level of anticipated strain within the soil mass.

10.8 Ground Movement Assessment - Assessment Scenarios

10.8.1 Two different scenarios have been considered in order to bound the potential ground movements arising from the proposed works.

10.8.2 In the first option (Method 1), the worst-case heave condition was assessed by assuming that no lateral or downward ground movement takes place during the piling operations. Heave movements arising from the proposed basement excavation were assessed using Oasys Pdisp.

10.8.3 The proposed bulk excavation works and associated heave was modelled by applying an upward (unloading) stress at the formation level, which is equivalent to the total stress relief (approx. -110 kPa) imposed by the proposed depth of excavation beneath the existing buildings.

10.8.4 For the short-term analysis, representing the condition immediately following excavation, the soil mass was modelled using undrained stiffness parameters.

10.8.5 In the long-term (representing the condition some time after the building works are complete and excess pore pressures have dissipated), relaxation of the soil was captured by using drained soil parameters. The effect of long-term new loads from the proposed building were also incorporated in this phase.

10.8.6 Figure 10.2 shows the geometry and intensity of the footing loads as applied in the Pdisp model. The permanent building loads were evaluated on the basis of an indicative load takedown based on the proposed floor arrangements provided.

10.8.7 The second option (Method 2) assesses horizontal movements and ground settlements (as opposed to heave evaluated in Option 1) imposed by the proposed excavation and piling works.

10.8.8 The horizontal and vertical ground movements due to pile installation and mass excavation to formation level were evaluated using the normalised CIRIA C760 curves for ground movement, as implemented in Oasys Xdisp. Installation was modelled by adopting the CIRIA C760 curve for Installation of contiguous piled wall in stiff clay. Bulk excavation was evaluated using the CIRIA C760 curve for Excavation in front of a high stiffness wall in stiff clay.

10.8.9 This option assumes that the piled wall installation imposes a ground movement field (resulting from installation and lateral deflection), leading to lateral and vertical components of movement and displacements at foundation level. This is considered a reasonable and bounds the solution between maximum potential heave, settlements and lateral deformations anticipated for the type of construction presented herein, which are also inherently subject to satisfactory control of workmanship.

10.8.10 As for Method 1, short-term and long-term phases were considered. The proposed building loads were also incorporated.

10.9 Ground Movement Assessment - Impact Assessment

10.9.1 The potential impact/damage induced on primary façade/wall elements of the buildings within the zone of influence of the proposed scheme has been evaluated on the basis of the calculated ground movement field. The walls of concern are shown in Figure 10.2

including the wall nomenclature/reference system adopted. The arrangement is based on the currently available information and presents a reasonable array of primary structures both perpendicular and parallel to the proposed basement (covering the key deformation mechanisms).

10.9.2 Each wall has been assumed to behave as an equivalent beam subject to a bending and extension/compression deformation mechanism, based on the evaluated greenfield ground movement, as outlined previously. The walls under investigation were conservatively considered to be of masonry structure.

10.9.3 Attention was also paid to potential ground movements both parallel and perpendicular to Highgate Road.

Figure 10.2: Long-term phase loading regime model with adjacent properties. The green and blue areas represent the main building loading and bicycle storage area, respectively.

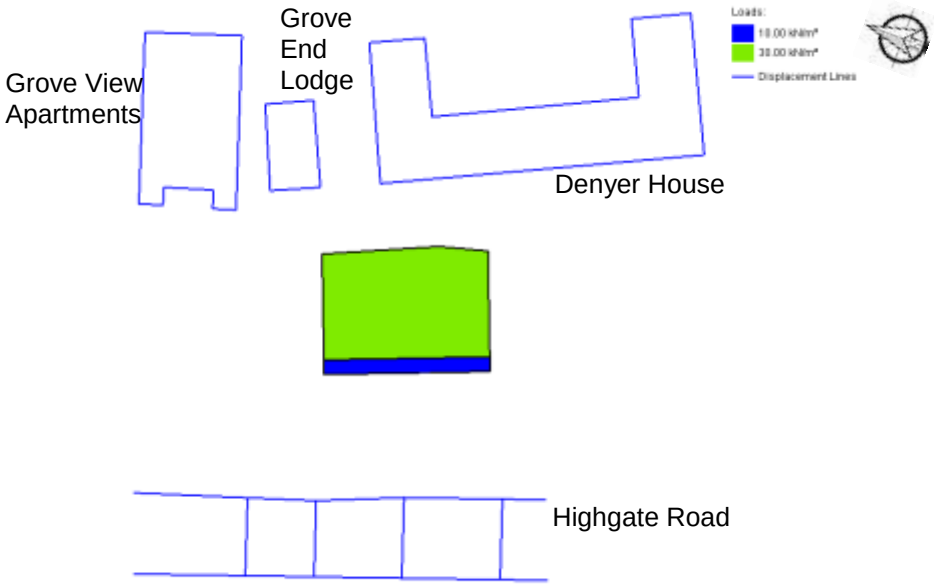
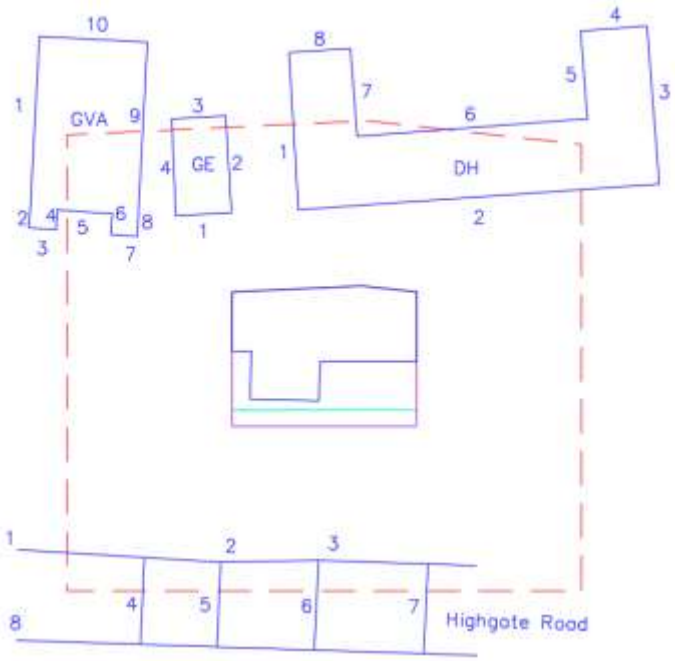


Figure 10.3: Simplified scheme and nomenclature for building façade/masonry wall elements (blue), proposed (magenta) schemes, and excavation zone of influence (dashed red).



10.9.4 Tensile strains induced within the building masonry walls have been evaluated based on the deflection ratios Δ/L estimated from the analyses. The assessment considers the well-established Burland (1997) damage classification method, as presented and summarised in Figure 10.4 and Figure 10.5. This method involves a simple but robust means of assessment, which is widely adopted and is considered to comprise an industry standard/best practice basis for impact assessments of this typology.

10.9.5 Potential damage categories are directly related to the tensile strains induced by the assessed interim (short-term) and long-term phases of construction, arising from a combination of direct tension and bending induced tension mechanisms, as reported in Table 10.2.

10.10 Ground Movement Assessment - Impact Assessment Outcomes

10.10.1 The results from the analysis are presented in Table 10.2 (denoting the evaluated damage categorisation in accordance with the Burland criteria presented herein).

10.10.2 The majority of the façades fall within Category 0, representative of a Negligible damage classification. Two façades have been classified as Category 1, representative of Very Slight damage classification. No façades have been classified as Category 2 (slight) or higher.

10.10.3 On the basis of the bounding analysis methods, it is assessed that the damage category for the properties adjacent to 138 – 140 Highgate Road will not exceed Category 1 – very slight. Both the vertical and horizontal contour plots from the long-term analysis in Method 2 (giving the most conservative results) are presented below in Figure 10.6 and Figure 10.7.

10.10.4 Highgate Road runs immediately to the west of the site under consideration. The impact of piled wall installation and excavation works on this road has also been assessed in terms of maximum vertical and horizontal deflections at a number of locations. Soil

displacements were assessed along the blue lines drawn on the streets (see Figure 10.3). Lines running both parallel (segments 1 & 2) and perpendicular (segments 3-6) to the streets were defined to capture the effects more accurately.

10.10.5 The Thames Water asset search has indicated the presented of the infrastructure within Highgate Road only. The assessment found that the majority of displacements at these locations were between 1-2 mm and as such are considered negligible. Consequently, it is considered that the potential impact on the existing infrastructure is not critical but should be verified if 3rd parties requires any additional assessment.

10.10.6 On the basis of these results, it can be reasonably concluded that the risk of the proposed works resulting in loss of structural integrity to the pavement build-up of Highgate Road is low. Nevertheless, it may be prudent for the contractor to make an allowance for minor making good of pavement surfacing.

Table 10.2: Evaluated damage categories for strip/excavation and long-term condition stages (refer to Figure 10.3 for wall nomenclature).

Method 1

Building	Wall/façade reference	Damage Category Envelope	
		Excavation	Long-term
Danyer House	1	0 (Negligible)	0 (Negligible)
	2	0 (Negligible)	0 (Negligible)
	3	0 (Negligible)	0 (Negligible)
	4	0 (Negligible)	0 (Negligible)
	5	0 (Negligible)	0 (Negligible)
	6	0 (Negligible)	0 (Negligible)
	7	0 (Negligible)	0 (Negligible)
	8	0 (Negligible)	0 (Negligible)
Grove End Lodge	1	0 (Negligible)	0 (Negligible)
	2	0 (Negligible)	0 (Negligible)
	3	0 (Negligible)	0 (Negligible)
	4	0 (Negligible)	0 (Negligible)
Grove View Apartments	1	0 (Negligible)	0 (Negligible)
	2	0 (Negligible)	0 (Negligible)

Building	Wall/façade reference	Damage Category Envelope	
		Excavation	Long-term
	3	0 (Negligible)	0 (Negligible)
	4	0 (Negligible)	0 (Negligible)
	5	0 (Negligible)	0 (Negligible)
	6	0 (Negligible)	0 (Negligible)
	7	0 (Negligible)	0 (Negligible)
	8	0 (Negligible)	0 (Negligible)
	9	0 (Negligible)	0 (Negligible)
	10	0 (Negligible)	0 (Negligible)
Highgate Road	1	0 (Negligible)	0 (Negligible)
	2	0 (Negligible)	0 (Negligible)
	3	0 (Negligible)	0 (Negligible)
	4	0 (Negligible)	0 (Negligible)
	5	0 (Negligible)	0 (Negligible)
	6	0 (Negligible)	0 (Negligible)
	7	0 (Negligible)	0 (Negligible)
	8	0 (Negligible)	0 (Negligible)

Method 2

Building	Wall/façade reference	Damage Category Envelope	
		Excavation	Long-term
Danyer House	1	**1 (Very Slight)**	**1 (Very Slight)**
	2	0 (Negligible)	0 (Negligible)
	3	0 (Negligible)	0 (Negligible)
	4	0 (Negligible)	0 (Negligible)
	5	0 (Negligible)	0 (Negligible)
	6	0 (Negligible)	0 (Negligible)
	7	0 (Negligible)	0 (Negligible)
	8	0 (Negligible)	0 (Negligible)
Grove End Lodge	1	0 (Negligible)	0 (Negligible)
	2	**1 (Very Slight)**	**1 (Very Slight)**
	3	0 (Negligible)	0 (Negligible)
	4	0 (Negligible)	0 (Negligible)
Grove View Apartments	1	0 (Negligible)	0 (Negligible)
	2	0 (Negligible)	0 (Negligible)
	3	0 (Negligible)	0 (Negligible)
	4	0 (Negligible)	0 (Negligible)
	5	0 (Negligible)	0 (Negligible)
	6	0 (Negligible)	0 (Negligible)
	7	0 (Negligible)	0 (Negligible)
	8	0 (Negligible)	0 (Negligible)
	9	0 (Negligible)	0 (Negligible)

	10	0 (Negligible)	0 (Negligible)
Highgate Road	1	0 (Negligible)	0 (Negligible)
	2	0 (Negligible)	0 (Negligible)
	3	0 (Negligible)	0 (Negligible)
	4	0 (Negligible)	0 (Negligible)
	5	0 (Negligible)	0 (Negligible)
	6	0 (Negligible)	0 (Negligible)
	7	0 (Negligible)	0 (Negligible)
	8	0 (Negligible)	0 (Negligible)

Table 10.4: Summary of CIRIA C580 Table 2.5 (after Burland et al (1977), Boscardin and Cording (1989) and Burland (2001)) and limiting strain εlim.

Category of damage		Description of Typical Damage	Approximate crack width (mm)	Limiting tensile strain (%)
0	Negligible	Hairline cracks of less than about 0.1mm are classes as negligible.	< 0.1	0.0-0.05
1	Very Slight	Fine cracks that can easily be treated during normal decoration. Perhaps isolated slight fracture in building. Cracks in external brickwork visible on inspection.	<1	0.05-0.075
2	Slight	Cracks easily filled. Redecoration probably required. Several slight fractures showing inside of building. Cracks are visible externally and some repointing may be required externally to ensure weather tightness. Doors and windows may stick slightly	<5	0.075-0.15
3	Moderate	The cracks require some opening up and can be patched by a mason. Recurrent cracks can be masked by suitable linings. Repointing of external brickwork and possibly a small amount of brickwork to be replaced. Doors and windows sticking. Service pipes may fracture. Weather-tightness often impaired.	5-15 or a number of cracks >3	0.15 – 0.3
4	Severe	Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Windows and frames distorted, floors sloping noticeably. Walls leaning or bulging noticeably, some loss of bearing in beams. Service pipes disrupted.	15-25 but also depends on number of cracks	>0.3
5	Very Severe	This requires a major repair involving partial or complete rebuilding. Beams lose bearings, walls lean badly and require	Usually >25 but depends	

Category of damage	Description of Typical Damage	Approximate crack width (mm)	Limiting tensile strain (%)
	shoring. Windows broken with distortion. Danger of instability.	on number of cracks	

Figure 10.5: Definition of relative deflection Δ and deflection ratio Δ/L.

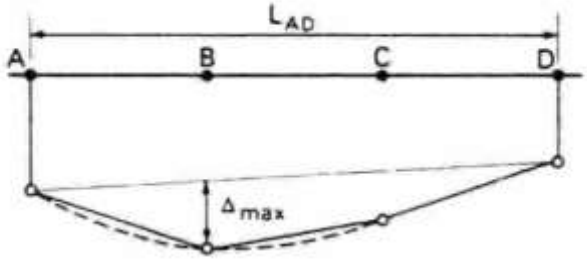


Figure 10.6: Vertical Settlement Contours for Method 2 long-term analysis

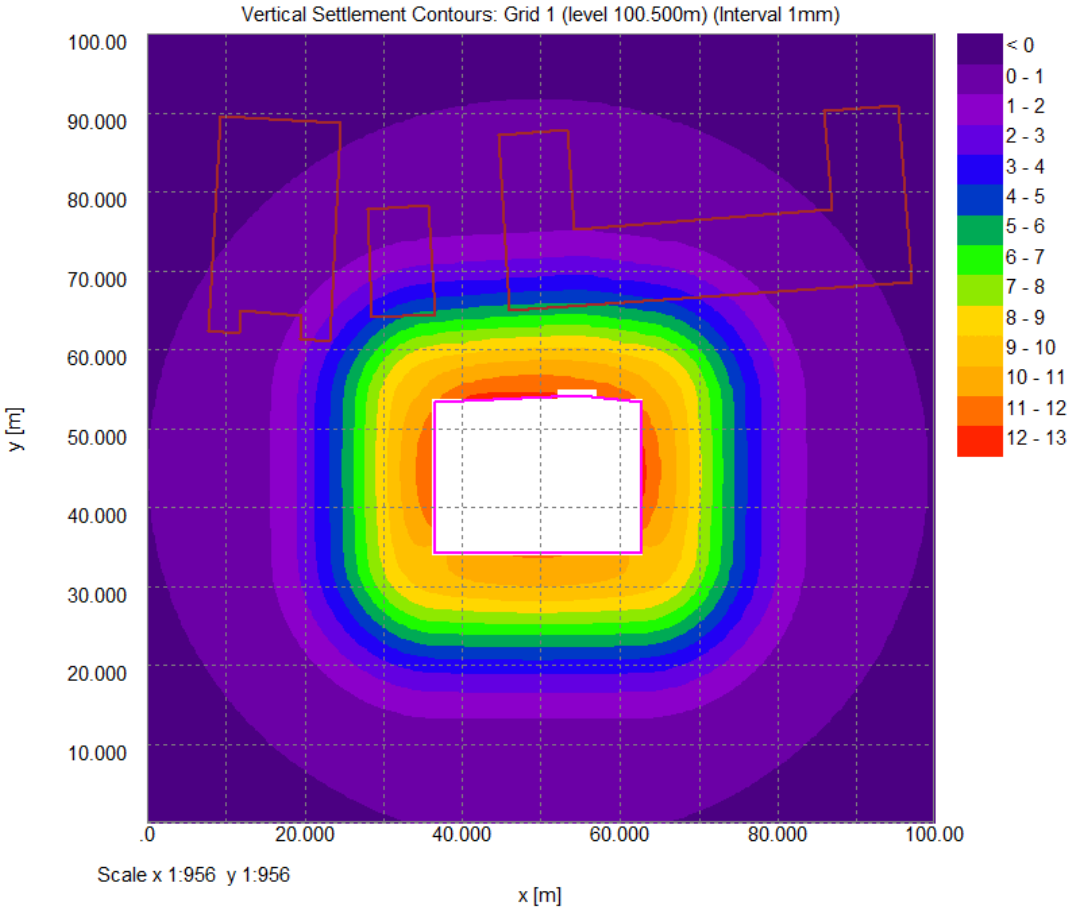
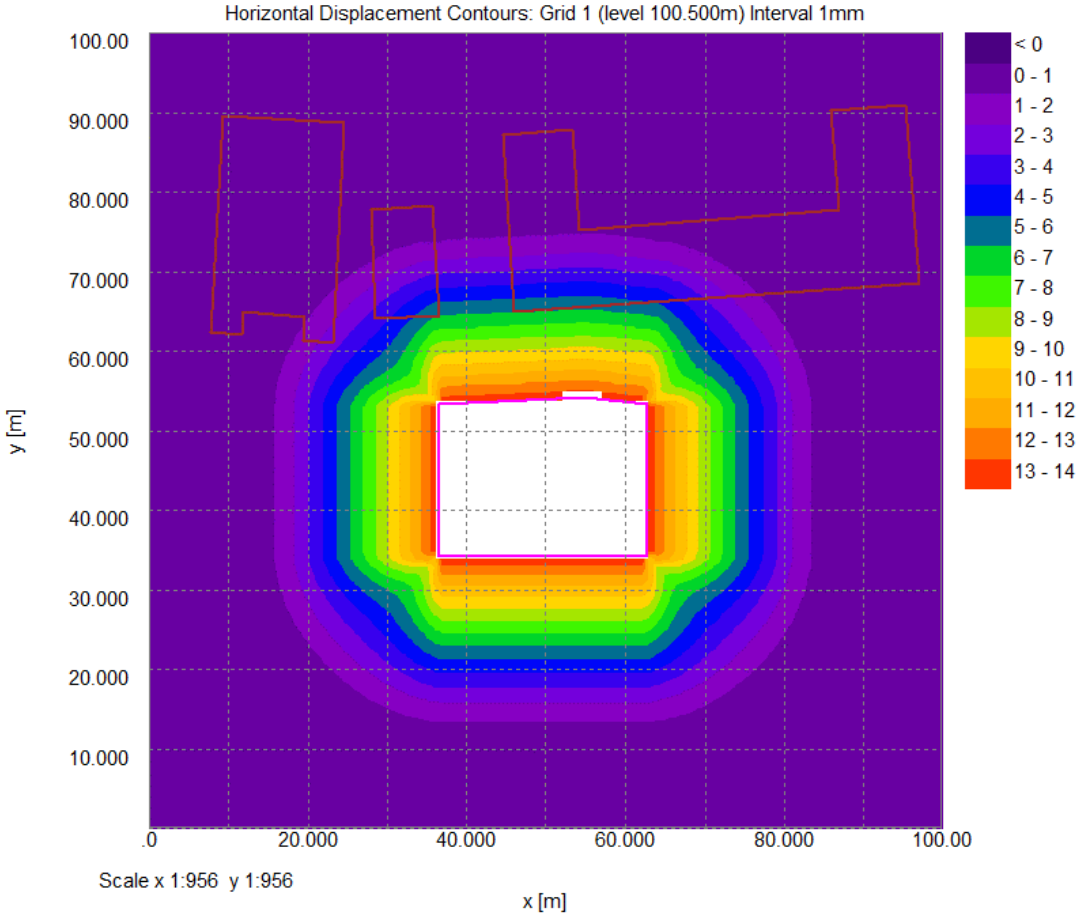


Figure 10.7: Horizontal Settlement Contours for Method 2 long-term analysis



10.11 Ground Movement Assessment - Conclusions & Closing Remarks

10.11.1 The interaction between the proposed 138 – 140 Highgate Road development, Denyer House, Grove End and Grove End Apartments has been reviewed as part of the GMA study presented herein.

10.11.2 The proposed development construction operations comprise a series of stages, including demolition of the existing structure, piled wall installation (assumed), basement excavation and construction of the proposed permanent works elements. The impact of construction works has been reviewed on the basis of two alternative methods (i.e. evaluating the effects of unloading/overburden removal using Pdisp (Method 1) and the excavation effect using empirical CIRIA ground movement curves in Xdisp (Method 2)).

10.11.3 The two different scenarios have been considered in order to bind the potential ground movements arising from the proposed works (i.e. maximum potential heave and settlement respectively). This strategy ensures a robust evaluation of the potential ground movement field resulting from the proposed works.

10.11.4 The results from the analysis are presented in Table 10.2 and 10.3 (denoting the evaluated damage categorisation in accordance with the Burland criteria presented herein). The majority of the facades fall within Category 0, representative of a Negligible damage classification. Two structures / façades have been classified as Category 1, representative of Very Slight damage classification. No damage category higher than this has been assessed.

10.11.5 In addition to the above, assessments were carried out to quantify the potential impact of the proposed development on the adjacent roadways, respectively. The Thames Water asset search has indicated the presented of the infrastructure within Highgate Road where the ground movements were found to fall generally between 1-2mm. Such movements are considered to represent a low risk of damage to the structural integrity of the road build up and infrastructure. Nevertheless, it may be prudent for the contractor to allow for some localised making good of surface defects – if required.

10.11.6 It is noted that the predicted ground movements, the associated wall tensile strains and level of damage categorisation are considered to be moderately conservative in view of the relatively cautious ground model assumptions and greenfield nature of the assessment undertaken.

10.11.7 It is also noted that the GMA will be supplemented by a project specific monitoring regime and Action Plan, which will delineate lines of responsibility, monitor trigger levels and appropriate mitigation measures. The assessment presented herein is dependent and reliant on the works being undertaken by an experienced contractor, high quality workmanship and appropriate supervision of construction means and methods by experienced personnel.

11 BASEMENT IMPACT ASSESSMENT

11.1 Basement Impact Assessment (BIA)

11.1.1 The BIA uses information produced as part of the Desk Study (Jomas - March 2018). The full report should be referred to in conjunction with the below.

11.2 Flood Resilience

11.2.1 In accordance with general basement flood policy and basement design, the proposed development will utilize the flood resilient techniques recommended in the NPPF Technical Guidance where appropriate and also the recommendations that have previously been issued by various councils.

11.2.2 These include:

- Basement to be fully waterproofed (tanked) and waterproofing to be tied in to the ground floor slab as appropriate: to reduce the turnaround time for returning the property to full operation after a flood event.
- Plasterboards will be installed in horizontal sheets rather than conventional vertical installation methods to minimise the amount of plasterboard that could be damaged in a flood event
- Wall sockets will be raised to as high as is feasible and practicable in order to minimise damage if flood waters inundate the property
- Any wood fixings on basement / ground floor will be robust and/or protected by suitable coatings in order to minimise damage during a flood event
- The basement waterproofing where feasible will be extended to an appropriate level above existing ground levels.
- The concrete sub floor as standard will likely be laid to fall to drains or gullies which will remove any build-up of ground water to a sump pump where it will be pumped into the mains sewer. This pump will be fitted with a non-return valve to prevent water backing up into the property should the mains sewer become full.

11.2.3 Insulation to the external walls will be specified as rigid board which has impermeable foil facings that are resistant to the passage of water vapour and double the thermal resistance of the cavity.

11.3 Proposed Changes to Areas of External Hardstanding

11.3.1 The proposed basement is beneath an existing building and beneath areas of hard paving.

11.3.2 The site has been shown to lie directly on very low permeability London Clay Formation.

11.3.3 It is not considered likely that additional areas of hardstanding will be created. Small additional areas of hardstanding are not considered likely to significantly change the ingress of the surface water into the ground.

11.4 Past Flooding

11.4.1 The National Planning Policy Framework sets strict tests to protect people and property from flooding which all local planning authorities are expected to follow.

11.4.2 When assessing the site-specific flood risk and the potential for historic flooding to reoccur, the above guidance recommends that historic flooding records and any other

relevant and available information including flood datasets (e.g. flood levels, depths and/or velocities) and any other relevant data, which can be acquired are assessed.

11.4.3 The BGS does not consider the area to be prone to groundwater flooding based on rock type. Furthermore, groundwater was not reported during intrusive works at the site and water reported during monitoring is considered to represent surface water ingress unable to drain out of the well, rather than groundwater.

11.4.4 The SFRA produced by URS for London Borough of Camden includes several maps regarding flood risks within the local authority. The site is not shown to be at risk from groundwater or sewer flooding. The site is shown to be at 'low' risk of surface water flooding and has a 'low' flood hazard rating (<0.75m).

11.5 Geological Impact

11.5.1 The published geological maps indicate that the site is directly underlain by solid deposits of the London Clay Formation. This was confirmed by the intrusive investigation.

11.5.2 At the depths that the basement would be constructed at, the London Clay is unlikely to be prone to seasonal shrinkage and swelling that arises due to changing water content in the soil. This is due to a lack of significant vegetation capable of removing water within the zone of influence; the hard cover minimising the amount of water entering the ground and the lack of proven groundwater. The measured groundwater is considered to represent surface water that has percolated through the near surface soils into the well and then not been able to drain away.

11.6 Hydrology and Hydrogeology Impact

11.6.1 Based on the information available at the time of writing, the risk of flooding from groundwater is considered to be low. The proposed basement is unlikely to have a detectable impact on the local groundwater regime. Appropriate water proofing measures should be included within the whole of the proposed basement wall/floor design as a precaution.

11.6.2 The proposed dwelling will lie outside of flood risk zones and is therefore assessed as being at a very low probability of fluvial flooding.

11.6.3 There are no surface water features on or in the immediate vicinity of the site. It is therefore not anticipated that the site will make any impact upon the hydrology of the area.

11.6.4 The information available suggests that the site lies in an area that is not at significant risk of surface water flooding. Flooding via this source is therefore considered to be low.

11.6.5 The proposed basement construction is considered unlikely to create a reduction of impermeable area in the post development scenario.

11.6.6 No risk of flooding to the site from artificial sources has been identified.

11.7 Impacts of Basement on Adjacent Properties and Pavement

11.7.1 The proposed basement excavation will be within 5m of a public pavement.

11.7.2 Unavoidable lateral ground movements associated with the basement excavations must be controlled during temporary and permanent works so as not to impact adversely on the stability of the surrounding ground, any associated services and structures.

11.7.3 It is recommended that the site is supported by suitably designed temporary support with cast-in-situ cantilever retaining walls or a fully embedded piled retaining wall that is likely to require propping during construction. This will ensure that the adjacent land is adequately supported in the temporary and permanent construction. Alternatively, the excavation should proceed in a manner that maintains the integrity of the ground on all sides.

11.7.4 Careful and regular monitoring of the structure will need to be undertaken during the construction phase to ensure that vertical movements do not adversely affect the above property. If necessary the works may have to be carried out in stages with the above structure suitably propped and supported. It is understood that sacrificial bearing piles will be utilised during construction.

11.7.5 It will be necessary to ensure that the basements are designed in accordance with the NHBC Standards and take due cognisance of the potential impacts highlighted above. This may be achieved by ensuring best practice engineering and design of the proposed scheme by competent persons and in full accordance with the Construction (Design and Management) Regulations. This will include:

- Establishment of the likely ground movements arising from the temporary and permanent works and the mitigation of excessive movements;
- Assessment of the impact on any adjacent structures (including adjacent properties and the adjacent pavement with potential services);
- Determination of the most appropriate methods of construction of the proposed basements;
- Undertake pre-condition surveys of adjacent structures;
- Monitor any movements and pre-existing cracks during construction;
- Establishment of contingencies to deal with adverse performance;
- Ensuring quality of workmanship by competent persons.

11.7.6 Full details of the suitable engineering design of the scheme in addition to an appropriate construction method statement should be submitted by the Developer to London Borough of Camden.

12 REFERENCES

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APPENDICES

APPENDIX 1 – FIGURES

JOMAS ASSOCIATES LTD
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Project Name	140 Highgate Road	**Client**	Design Ventures Highgate Ltd
Project No.	P1323J1303	**Date**	15/2/18
Title	Actual GI Plan		

JOMAS ASSOCIATES LTD
T: 0843 289 2187

Project Name	140 Highgate Road	**Client**	Design Ventures Highgate Ltd
Project No.	P1323J1303	**Date**	15/2/18
Title	Actual GI Plan		

APPENDIX 2 – EXPLORATORY HOLE RECORDS

WINDOW/WINDOWLESS SAMPLING BOREHOLE RECORD

Exploratory Hole No:	WS1		
Site Address:	140 Highgate Road, Highgate, London, NW5 1PB	Project No:	P1323J1303
Client:	Design Ventures Highgate Ltd	Ground Level:	
Logged By:	JT	Date Commenced:	12/02/2018
Checked By:		Date Completed:	12/02/2018
Type and diameter of equipment:	Window Sampler	Sheet No:	1 Of 1

Water levels recorded during boring, m						
Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

Remarks

1: *Field description.
2: No water reported.
3: VOC readings of each sample given in ppm.
4:

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N	0.00					
P+J D	0.25												Soft* consistency dark brown sandy gravelly clay. Gravel consists of fine to coarse sub-angular to sub-rounded brick, concrete and flint. Contains frequent rootlets. No black staining or hydrocarbon odour noted. (MADE GROUND).	
	0ppm													
P+J D	0.50								0.50		0.60			
	0ppm												Very stiff* mottled brown-grey CLAY. No black staining or hydrocarbon odour noted. (LONDON CLAY).	
P+J D	1.00								1.00					
	0ppm													
SPT		1	1	2	3	2	2	9	1.50					
P+J	2.00								2.00					
	0ppm													
SPT		1	2	2	3	2	3	10	2.50					
P+J	3.00								3.00					
	0ppm													
SPT		1	2	3	4	3	3	13	3.50					
P+J	4.00								4.00					
	0ppm													
SPT		1	2	3	3	3	4	13	4.50					
P+J	5.00								5.00		5.00			
	0ppm													
SPT		2	2	4	4	4	4	16						

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

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WINDOW/WINDOWLESS SAMPLING BOREHOLE RECORD

		Exploratory Hole No:	WS2
Site Address:	140 Highgate Road, Highgate, London, NW5 1PB	Project No:	P1323J1303
Client:	Design Ventures Highgate Ltd	Ground Level:	
Logged By:	JT	Date Commenced:	13/02/2018
Checked By:		Date Completed:	13/02/2018
Type and diameter of equipment:	Window Sampler	Sheet No:	1 Of 1

Water levels recorded during boring, m						
Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

Remarks

1: *Field description.

2: Metal bar (approx. 15mm in diameter) hit at approx. 1.05m bgl.

3: Seepage of black oily water at approx. 1.10m bgl.

4: VOC readings of each sample given in ppm.

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N						
P+J D	0.50								0.00		0.20		Reinforced concrete. (MADE GROUND).	
	0ppm												Soft* consistency dark brown sandy gravelly clay. Gravel consists of fine to coarse sub-angular to sub-rounded brick, concrete and flint. No black staining or hydrocarbon odour noted. (MADE GROUND).	
P+J D	1.00								0.50					
	0ppm								1.00		1.10		No recovery from 1.00-4.00m bgl (except one vial from approx. 2.50m bgl).	
VIAL ONLY	2.50								1.50					
	18ppm								2.00					
									2.50					
									3.00					
									3.50					
									4.00		4.00			
									4.50					
									5.00					

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

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WINDOW/WINDOWLESS SAMPLING BOREHOLE RECORD

Exploratory Hole No:	WS3		
Site Address:	140 Highgate Road, Highgate, London, NW5 1PB	Project No:	P1323J1303
Client:	Design Ventures Highgate Ltd	Ground Level:	
Logged By:	JT	Date Commenced:	12/02/2018
Checked By:		Date Completed:	12/02/2018
Type and diameter of equipment:	Window Sampler	Sheet No:	1 Of 1

Water levels recorded during boring, m						
Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

Remarks

1: *Field description.
2: No water reported.
3: VOC readings of each sample given in ppm.
4:

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N	0.00					
											0.20		Reinforced concrete. (MADE GROUND).	
P+J D	0.40												Soft* consistency mid to dark brown sandy gravelly clay. Gravel consists of fine to coarse sub-angular to sub-rounded brick, concrete and flint. No black staining or hydrocarbon odour noted. (MADE GROUND).	
	0ppm								0.50					
P+J D	0.80										0.90			
	0ppm													
SPT	1.00	1	1	1	2	2	1	6	1.00				Very stiff* mottled brown-grey CLAY. No black staining or hydrocarbon odour noted. (LONDON CLAY).	
									1.50					
P+J D	2.00								2.00					
	0ppm													
SPT		1	1	2	2	2	3	9						
									2.50					
P+J	3.00								3.00					
	0ppm													
SPT		1	1	2	2	2	3	9						
									3.50					
P+J	4.00								4.00					
	0ppm													
SPT		1	2	2	3	4	4	13						
									4.50					
P+J	5.00								5.00		5.00			
	0ppm													
SPT		2	4	3	5	4	6	18						

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

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WINDOW/WINDOWLESS SAMPLING BOREHOLE RECORD

		Exploratory Hole No:	WS4
Site Address:	140 Highgate Road, Highgate, London, NW5 1PB	Project No:	P1323J1303
Client:	Design Ventures Highgate Ltd	Ground Level:	
Logged By:	JT	Date Commenced:	13/02/2018
Checked By:		Date Completed:	13/02/2018
Type and diameter of equipment:	Window Sampler	Sheet No:	1 Of 1

Water levels recorded during boring, m						
Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

Remarks

1: Field description.
2: Water seepage at approx. 4.50m bgl.
3: VOC readings of each sample given in ppm.
4:

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N						
									0.00				Reinforced concrete. (MADE GROUND).	
											0.50			
P+J D	0.70								0.50				Very stiff* mottled brown-grey CLAY. No black staining or hydrocarbon odour noted. (LONDON CLAY).	
	0ppm													
P+J D	1.00								1.00					
	0ppm													
SPT		1	0	1	0	1	2	4	1.50					
P+J D	2.00								2.00					
	0ppm													
SPT		1	2	2	3	4	4	13	2.50					
P+J	3.00								3.00					
	0ppm													
SPT		1	2	2	3	4	4	13	3.50					
P+J	4.00								4.00					
	0ppm													
SPT		1	2	3	3	4	4	14	4.50					
SPT	5.00	1	2	4	4	5	4	17	5.00		5.00			

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

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WINDOW/WINDOWLESS SAMPLING BOREHOLE RECORD

Exploratory Hole No:	WS5		
Site Address:	140 Highgate Road, Highgate, London, NW5 1PB	Project No:	P1323J1303
Client:	Design Ventures Highgate Ltd	Ground Level:	
Logged By:	JT	Date Commenced:	13/02/2018
Checked By:		Date Completed:	13/02/2018
Type and diameter of equipment:	Window Sampler	Sheet No:	1 Of 1

Water levels recorded during boring, m

Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

Remarks

1: *Field description.
2: No water reported.
3: VOC readings of each sample given in ppm.
4:

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N						
									0.00					
											0.08		Concrete. (MADE GROUND).	
													Concrete. (MADE GROUND).	
											0.30			
P+J D	0.50								0.50				Soft* consistency mid to dark brown sandy gravelly clay. Gravel consists of fine to coarse sub-angular to sub-rounded brick, concrete and flint. Some black staining and a moderate hydrocarbon odour noted throughout. (MADE GROUND).	
	2ppm													
P+J D	1.00								1.00					
	8ppm													
SPT		1	1	0	1	0	1	2			1.20			
P+J D	1.60								1.50				Very stiff* mottled brown-grey CLAY. Dark black staining and a strong hydrocarbon odour noted from approx. 1.50m-2.00m bgl. Softer consistency and wetter from approx. 2.00m-3.00m bgl. (LONDON CLAY).	
	24ppm													
SPT	2.00	0	0	0	0	0	0		2.00					
P+J	2.50								2.50					
	1ppm													
SPT	3.00	0	1	0	0	1	1	2	3.00					
P+J	3.50								3.50					
	0ppm													
SPT	4.00	1	2	2	3	2	3	10	4.00					
P+J	4.50								4.50					
	0ppm													
SPT	5.00	2	2	2	3	4	4	13	5.00		5.00			

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

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WINDOW / WINDOWLESS SAMPLING BOREHOLE RECORD

		Exploratory Hole No:	WS6
Site Address:	140 Highgate Road, Highgate, London, NW5 1PB	Project No:	P1323J1303
Client:	Design Ventures Highgate Ltd	Ground Level:	
Logged By:	JT	Date Commenced:	13/02/2018
Checked By:		Date Completed:	13/02/2018
Type and diameter of equipment:	Window Sampler	Sheet No:	1 Of 1

Water levels recorded during boring, m						
Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

Remarks

1: Concrete corer refused at 0.60m due to presence of vertical rebar.

2:

3:

4:

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N						
									0.00				Reinforced concrete. (MADE GROUND).	
									0.50		0.60			
									1.00					
									1.50					
									2.00					
									2.50					
									3.00					
									3.50					
									4.00					
									4.50					
									5.00					

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

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WINDOW/WINDOWLESS SAMPLING BOREHOLE RECORD

		Exploratory Hole No:	WS7
Site Address:	140 Highgate Road, Highgate, London, NW5 1PB	Project No:	P1323J1303
Client:	Design Ventures Highgate Ltd	Ground Level:	
Logged By:	JT	Date Commenced:	12/02/2018
Checked By:		Date Completed:	12/02/2018
Type and diameter of equipment:	Window Sampler	Sheet No:	1 Of 1

Water levels recorded during boring, m						
Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

Remarks

1: *Field description.

2: No water reported.

3: VOC readings of each sample given in ppm.

4:

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N						
P+J D	0.40								0.00		0.25		Reinforced concrete. (MADE GROUND).	
	0ppm								0.50				Soft* consistency mid brown sandy gravelly clay. Gravel consists of fine to coarse sub-angular to sub-rounded brick, concrete and flint. No black staining or hydrocarbon odour noted. (MADE GROUND).	
P+J D	0.90										1.00			
SPT	0ppm1.00	1	1	1	2	1	2	6	1.00				Very stiff* mottled brown-grey CLAY. No black staining or hydrocarbon odour noted. (LONDON CLAY).	
P+J D	1.50								1.50					
	0ppm													
SPT	2.00	1	2	2	2	3	2	9	2.00					
									2.50					
P+J	3.00								3.00					
	0ppm													
SPT		1	2	3	2	3	3	11						
									3.50					
P+J	4.00								4.00		4.00			
	0ppm													
SPT		1	2	3	3	3	3	12						
									4.50					
									5.00					

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

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CABLE PERCUSSION BOREHOLE RECORD

		Exploratory Hole No:	BH1
Site Address:	140 Highgate Road, Highgate, London, NW5 1PB	Project No:	P1323J1303
Client:	Design Ventures Highgate Ltd	Ground Level:	
Logged By:	RD	Date Commenced:	13/02/2018
Checked By:		Date Completed:	13/02/2018
Type and diameter of equipment:	Dando 4000	Sheet No:	1 Of 5

Water levels recorded during boring, m						
Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

Remarks

1: No water reported
2:
3:
4:

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N						
									0.00				Concrete. (MADE GROUND)	
											0.30			
D	0.40								0.50				Brown medium to high strength silty CLAY.	
D	1.00								1.00					
U	1.50								1.50					
									2.00					
D	2.50								2.50					
S		2	2	2	3	3	3	11						
									3.00					
D	3.50								3.50					
									4.00					
U	4.50								4.50					
	45 blows for 100% recovery													
									5.00					

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

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CABLE PERCUSSION BOREHOLE RECORD

		Exploratory Hole No:	BH1
Site Address:	140 Highgate Road, Highgate, London, NW5 1PB	Project No:	P1323J1303
Client:	Design Ventures Highgate Ltd	Ground Level:	
Logged By:	RD	Date Commenced:	13/02/2018
Checked By:		Date Completed:	13/02/2018
Type and diameter of equipment:	Dando 4000	Sheet No:	2 Of 5

Water levels recorded during boring, m

Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

Remarks

1: No water reported

2:

3:

4:

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N						
									5.00				Brown medium to high strength silty CLAY.	
D	5.50								5.50					
S		2	4	4	4	4	4	16						
									6.00					
D	6.50								6.50					
S		2	4	4	4	4	5	17						
									7.00					
U	7.50								7.50					
	60 blows for 100% recovery													
									8.00					
D	8.50								8.50					
S		3	4	4	5	5	6	20						
									9.00					
D	9.50								9.50					
S		3	4	5	5	5	6	21						
									10.00					

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

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CABLE PERCUSSION BOREHOLE RECORD

Exploratory Hole No:	BH1		
Site Address:	140 Highgate Road, Highgate, London, NW5 1PB	Project No:	P1323J1303
Client:	Design Ventures Highgate Ltd	Ground Level:	
Logged By:	RD	Date Commenced:	13/02/2018
Checked By:		Date Completed:	13/02/2018
Type and diameter of equipment:	Dando 4000	Sheet No:	3 Of 5

Water levels recorded during boring, m

Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

Remarks

1: No water reported
2:
3:
4:

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N						
									10.00				Brown medium to high strength silty CLAY.	
U	10.50								10.50					
	80 blows for 100% recovery													
									11.00					
D	11.50								11.50					
S		4	5	5	5	6	6	22						
									12.00					
											12.40			
D	12.50								12.50				Grey high to very high strength CLAY. (LONDON CLAY)	
S		3	4	5	6	6	7	24						
									13.00					
U	13.50								13.50					
	80 blows for 100% recovery													
									14.00					
D	14.50								14.50					
S		3	4	5	6	6	7	24						
									15.00					

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

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CABLE PERCUSSION BOREHOLE RECORD

		Exploratory Hole No:	BH1
Site Address:	140 Highgate Road, Highgate, London, NW5 1PB	Project No:	P1323J1303
Client:	Design Ventures Highgate Ltd	Ground Level:	
Logged By:	RD	Date Commenced:	13/02/2018
Checked By:		Date Completed:	13/02/2018
Type and diameter of equipment:	Dando 4000	Sheet No:	4 Of 5

Water levels recorded during boring, m

Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

Remarks

1: No water reported

2:

3:

4:

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N						
									15.00				Grey high to very high strength CLAY. (LONDON CLAY)	
D	15.50								15.50					
S		3	4	5	6	7	7	25						
									16.00					
U	16.50								16.50					
	70 blows for 100% recovery													
									17.00					
D	17.50								17.50					
S		4	5	6	7	7	9	29						
									18.00					
D	18.50								18.50					
S		4	5	6	7	8	9	30						
									19.00					
U	19.50								19.50					
	80 blows for 100% recovery													
									20.00					

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

CABLE PERCUSSION BOREHOLE RECORD

Exploratory Hole No:	BH1		
Site Address:	140 Highgate Road, Highgate, London, NW5 1PB	Project No:	P1323J1303
Client:	Design Ventures Highgate Ltd	Ground Level:	
Logged By:	RD	Date Commenced:	13/02/2018
Checked By:		Date Completed:	13/02/2018
Type and diameter of equipment:	Dando 4000	Sheet No:	5 Of 5

Water levels recorded during boring, m

Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

Remarks

1: No water reported
2:
3:
4:

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N	20.00					
													Grey high to very high strength CLAY. (LONDON CLAY)	
D	20.50								20.50					
S		4	5	7	7	8	10	32						
									21.00					
D	21.50								21.50					
S		5	7	8	8	9	9	34						
									22.00					
U	22.50								22.50					
	150 blows for 55% recovery													
									23.00					
D	23.50								23.50					
S		4	7	8	8	9	11	36						
D	24.00								24.00					
S	24.50	7	8	9	10	10	12	41	24.50					
											24.95			
									25.00					

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

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CABLE PERCUSSION BOREHOLE RECORD

		Exploratory Hole No:	BH2
Site Address:	140 Highgate Road, Highgate, London, NW5 1PB	Project No:	P1323J1303
Client:	Design Ventures Highgate Ltd	Ground Level:	
Logged By:	RS	Date Commenced:	13/02/2018
Checked By:		Date Completed:	13/02/2018
Type and diameter of equipment:	Dando 4000	Sheet No:	1 Of 5

Water levels recorded during boring, m						
Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

Remarks

1: No water reported
2:
3:
4:

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N	0.00				Concrete. (MADE GROUND)	
											0.30			
D	0.40								0.50				Brown medium to high strength silty CLAY.	
D	1.00								1.00					
S	1.50	2	2	2	2	2	2	8	1.50					
D	2.00								2.00					
U	2.50								2.50					
	60 blows for 100% recovery													
									3.00					
D	3.50								3.50					
S		2	3	2	3	3	3	11						
									4.00					
D	4.50								4.50					
S		2	3	3	4	4	4	15						
									5.00					

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

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CABLE PERCUSSION BOREHOLE RECORD

Exploratory Hole No:	BH2		
Site Address:	140 Highgate Road, Highgate, London, NW5 1PB	Project No:	P1323J1303
Client:	Design Ventures Highgate Ltd	Ground Level:	
Logged By:	RS	Date Commenced:	13/02/2018
Checked By:		Date Completed:	13/02/2018
Type and diameter of equipment:	Dando 4000	Sheet No:	2 Of 5

Water levels recorded during boring, m

Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

Remarks

1: No water reported
2:
3:
4:

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N						
									5.00				Brown medium to high strength silty CLAY.	
U	5.50								5.50					
	60 blows for 100% recovery													
									6.00					
D	6.50								6.50					
S		3	3	4	4	4	5	17						
									7.00					
D	7.50								7.50					
S		3	3	4	4	5	5	18						
									8.00					
U	8.50								8.50					
	70 blows for 100% recovery													
									9.00					
D	9.50								9.50					
S		2	3	4	4	4	6	18						
									10.00					

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

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CABLE PERCUSSION BOREHOLE RECORD

Exploratory Hole No:	BH2		
Site Address:	140 Highgate Road, Highgate, London, NW5 1PB	Project No:	P1323J1303
Client:	Design Ventures Highgate Ltd	Ground Level:	
Logged By:	RS	Date Commenced:	13/02/2018
Checked By:		Date Completed:	13/02/2018
Type and diameter of equipment:	Dando 4000	Sheet No:	3 Of 5

Water levels recorded during boring, m

Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

Remarks

1: No water reported
2:
3:
4:

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N						
									10.00				Brown medium to high strength silty CLAY.	
D	10.50								10.50					
S		3	4	4	4	5	6	19						
									11.00					
U	11.50								11.50					
	70 blows for 100% recovery										11.60			
													Grey high to very high strength CLAY. (LONDON CLAY)	
									12.00					
D	12.50								12.50					
S														
									13.00					
D	13.50								13.50					
S		3	4	6	6	7	7	26						
									14.00					
U	14.50								14.50					
	65 blows for 100% recovery													
									15.00					

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

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		CABLE PERCUSSION BOREHOLE RECORD	
		Exploratory Hole No:	BH2
Site Address:	140 Highgate Road, Highgate, London, NW5 1PB	Project No:	P1323J1303
Client:	Design Ventures Highgate Ltd	Ground Level:	
Logged By:	RS	Date Commenced:	13/02/2018
Checked By:		Date Completed:	13/02/2018
Type and diameter of equipment:	Dando 4000	Sheet No:	4 Of 5

Water levels recorded during boring, m						
Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

Remarks
1: No water reported
2:
3:
4:

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N						
									15.00				Grey high to very high strength CLAY. (LONDON CLAY)	
D	15.50								15.50					
S		4	4	5	6	7	8	26						
									16.00					
D	16.50								16.50					
S		4	5	6	7	8	9	30						
									17.00					
U	17.50								17.50					
	70 blows for 100% recovery													
									18.00					
D	18.50								18.50					
S		4	7	7	8	8	11	34						
									19.00					
D	19.50								19.50					
S		4	5	6	8	9	10	33						
									20.00					

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

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CABLE PERCUSSION BOREHOLE RECORD

		Exploratory Hole No:	BH2
Site Address:	140 Highgate Road, Highgate, London, NW5 1PB	Project No:	P1323J1303
Client:	Design Ventures Highgate Ltd	Ground Level:	
Logged By:	RS	Date Commenced:	13/02/2018
Checked By:		Date Completed:	13/02/2018
Type and diameter of equipment:	Dando 4000	Sheet No:	5 Of 5

Water levels recorded during boring, m

Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

Remarks

1: No water reported
2:
3:
4:

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N						
									20.00				Grey high to very high strength CLAY. (LONDON CLAY)	
U	20.50								20.50					
	70 blows for 100% recovery													
									21.00					
D	21.50								21.50					
S		4	7	8	8	9	10	35						
									22.00					
D	22.50								22.50					
S		4	8	8	9	10	10	37						
									23.00					
U	23.50								23.50					
	80 blows for 100% recovery													
									24.00					
D	24.50								24.50		24.50			
S		4	8	9	10	11	11	41						
									25.00					

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample

Jomas Associates Ltd - Lakeside House, 1 Furzeground Way, Stockley Park, UB11 1BD
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APPENDIX 3 – CHEMICAL LABORATORY TEST RESULTS

Emma Hucker
Jomas Associates Ltd
Lakeside House
1 Furzeground Way
Stockley Park
UB11 1BD

e: Jomas Group

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 18-77141

Project / Site name:	138-140 Highgate Road, Highgate, London, NW5 1PB	**Samples received on:**	22/02/2018
Your job number:	JJ1303	**Samples instructed on:**	23/02/2018
Your order number:	P1323JJ1303.14	**Analysis completed by:**	02/03/2018
Report Issue Number:	1	**Report issued on:**	02/03/2018
Samples Analysed:	3 water samples		

Signed:

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-77141

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB

Your Order No: P1323JJ1303.14

Lab Sample Number				914716	914717	914718		
Sample Reference				WS2	WS5	WS4		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				21/02/2018	21/02/2018	21/02/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	-	-	< 10		
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	-	-	< 0.01		
Acenaphthylene	µg/l	0.01	ISO 17025	-	-	< 0.01		
Acenaphthene	µg/l	0.01	ISO 17025	-	-	< 0.01		
Fluorene	µg/l	0.01	ISO 17025	-	-	< 0.01		
Phenanthrene	µg/l	0.01	ISO 17025	-	-	< 0.01		
Anthracene	µg/l	0.01	ISO 17025	-	-	< 0.01		
Fluoranthene	µg/l	0.01	ISO 17025	-	-	< 0.01		
Pyrene	µg/l	0.01	ISO 17025	-	-	< 0.01		
Benzo(a)anthracene	µg/l	0.01	ISO 17025	-	-	< 0.01		
Chrysene	µg/l	0.01	ISO 17025	-	-	< 0.01		
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	-	-	< 0.01		
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	-	-	< 0.01		
Benzo(a)pyrene	µg/l	0.01	ISO 17025	-	-	< 0.01		
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	-	-	< 0.01		
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	-	-	< 0.01		
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	-	-	< 0.01		
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	-	-	< 0.16		

Analytical Report Number: 18-77141

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB

Your Order No: P1323JJ1303.14

Lab Sample Number				914716	914717	914718		
Sample Reference				WS2	WS5	WS4		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				21/02/2018	21/02/2018	21/02/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	-	-	< 1.0		
Toluene	µg/l	1	ISO 17025	-	-	< 1.0		
Ethylbenzene	µg/l	1	ISO 17025	-	-	< 1.0		
p & m-xylene	µg/l	1	ISO 17025	-	-	< 1.0		
o-xylene	µg/l	1	ISO 17025	-	-	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	-	-	< 1.0		
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	-	-	< 1.0		
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	-	-	< 1.0		
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	-	-	< 1.0		
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	-	-	< 10		
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	-	-	< 10		
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	-	-	< 10		
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	-	-	< 10		
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	-	-	< 10		
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	-	-	< 1.0		
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	-	-	< 1.0		
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	-	-	< 1.0		
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	-	-	< 10		
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	-	-	< 10		
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	-	-	< 10		
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	-	-	< 10		
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	-	-	< 10		

Analytical Report Number: 18-77141

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB

Your Order No: P1323JJ1303.14

Lab Sample Number				914716	914717	914718		
Sample Reference				WS2	WS5	WS4		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				21/02/2018	21/02/2018	21/02/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	-	-	< 1.0		
Chloroethane	µg/l	1	ISO 17025	-	-	< 1.0		
Bromomethane	µg/l	1	ISO 17025	-	-	< 1.0		
Vinyl Chloride	µg/l	1	NONE	-	-	< 1.0		
Trichlorofluoromethane	µg/l	1	NONE	-	-	< 1.0		
1,1-Dichloroethene	µg/l	1	ISO 17025	-	-	< 1.0		
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	-	-	< 1.0		
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	-	-	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	-	-	< 1.0		
1,1-Dichloroethane	µg/l	1	ISO 17025	-	-	< 1.0		
2,2-Dichloropropane	µg/l	1	ISO 17025	-	-	< 1.0		
Trichloromethane	µg/l	1	ISO 17025	-	-	< 1.0		
1,1,1-Trichloroethane	µg/l	1	ISO 17025	-	-	< 1.0		
1,2-Dichloroethane	µg/l	1	ISO 17025	-	-	< 1.0		
1,1-Dichloropropene	µg/l	1	ISO 17025	-	-	< 1.0		
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	-	-	< 1.0		
Benzene	µg/l	1	ISO 17025	-	-	< 1.0		
Tetrachloromethane	µg/l	1	ISO 17025	-	-	< 1.0		
1,2-Dichloropropane	µg/l	1	ISO 17025	-	-	< 1.0		
Trichloroethene	µg/l	1	ISO 17025	-	-	< 1.0		
Dibromomethane	µg/l	1	ISO 17025	-	-	< 1.0		
Bromodichloromethane	µg/l	1	ISO 17025	-	-	< 1.0		
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	-	-	< 1.0		
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	-	-	< 1.0		
Toluene	µg/l	1	ISO 17025	-	-	< 1.0		
1,1,2-Trichloroethane	µg/l	1	ISO 17025	-	-	< 1.0		
1,3-Dichloropropane	µg/l	1	ISO 17025	-	-	< 1.0		
Dibromochloromethane	µg/l	1	ISO 17025	-	-	< 1.0		
Tetrachloroethene	µg/l	1	ISO 17025	-	-	< 1.0		
1,2-Dibromoethane	µg/l	1	ISO 17025	-	-	< 1.0		
Chlorobenzene	µg/l	1	ISO 17025	-	-	< 1.0		
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	-	-	< 1.0		
Ethylbenzene	µg/l	1	ISO 17025	-	-	< 1.0		
p & m-Xylene	µg/l	1	ISO 17025	-	-	< 1.0		
Styrene	µg/l	1	ISO 17025	-	-	< 1.0		
Tribromomethane	µg/l	1	ISO 17025	-	-	< 1.0		
o-Xylene	µg/l	1	ISO 17025	-	-	< 1.0		
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	-	-	< 1.0		
Isopropylbenzene	µg/l	1	ISO 17025	-	-	< 1.0		
Bromobenzene	µg/l	1	ISO 17025	-	-	< 1.0		
n-Propylbenzene	µg/l	1	ISO 17025	-	-	< 1.0		
2-Chlorotoluene	µg/l	1	ISO 17025	-	-	< 1.0		
4-Chlorotoluene	µg/l	1	ISO 17025	-	-	< 1.0		
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	-	-	< 1.0		
tert-Butylbenzene	µg/l	1	ISO 17025	-	-	< 1.0		
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	-	-	< 1.0		
sec-Butylbenzene	µg/l	1	ISO 17025	-	-	< 1.0		
1,3-Dichlorobenzene	µg/l	1	ISO 17025	-	-	< 1.0		
p-Isopropyltoluene	µg/l	1	ISO 17025	-	-	< 1.0		
1,2-Dichlorobenzene	µg/l	1	ISO 17025	-	-	< 1.0		
1,4-Dichlorobenzene	µg/l	1	ISO 17025	-	-	< 1.0		
Butylbenzene	µg/l	1	ISO 17025	-	-	< 1.0		
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	-	-	< 1.0		
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	-	-	< 1.0		
Hexachlorobutadiene	µg/l	1	ISO 17025	-	-	< 1.0		
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	-	-	< 1.0		

Analytical Report Number: 18-77141

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB

Your Order No: P1323JJ1303.14

Lab Sample Number				914716	914717	914718		
Sample Reference				WS2	WS5	WS4		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				21/02/2018	21/02/2018	21/02/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Miscellaneous Organics								
Product ID		N/A	NONE	See Attached	See Attached	-		

U/S = Unsuitable Sample I/S = Insufficient Sample

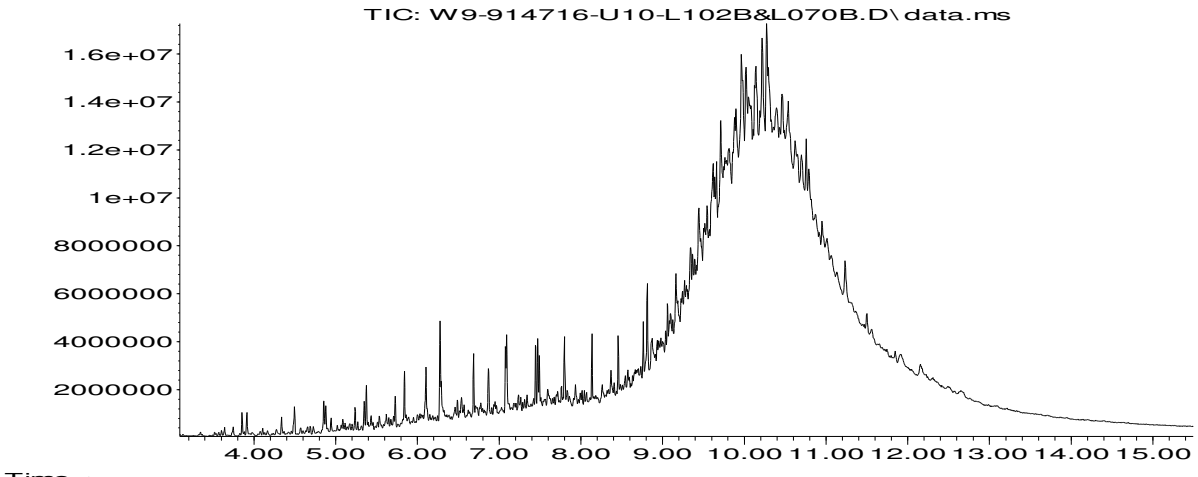
Analytical Report Number : 18-77141

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB

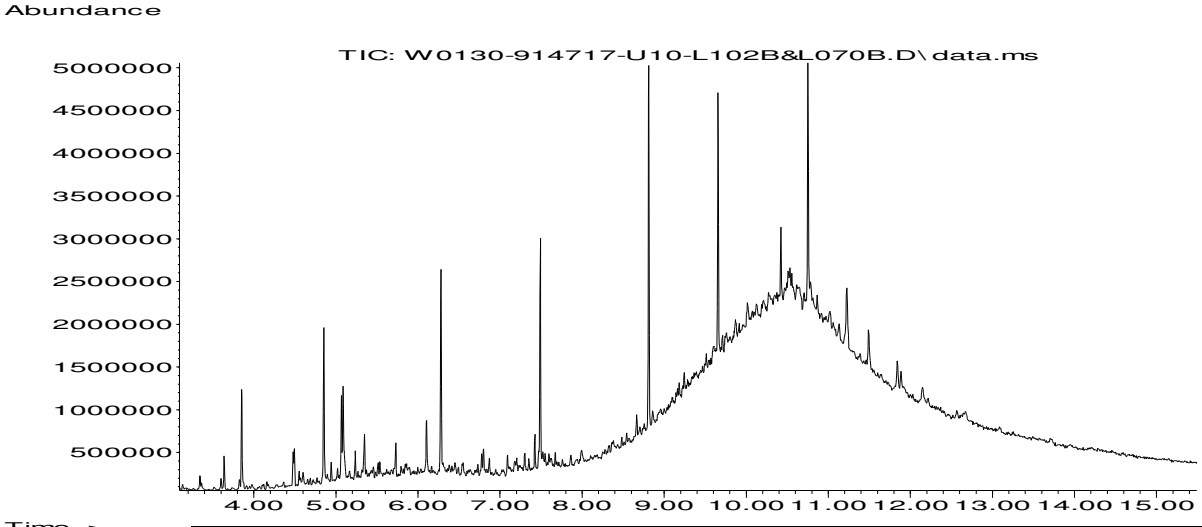
Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Product ID	Determination of product ID by interpretation against standard chromatograms - Water.	In-house method	L070-PL/UK	W	NONE
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
TPH Chromatogram	TPH Chromatogram.	In-house method	L070-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



The total ion count (TIC trace) shows a carbon range from C10 to greater than C40
The sample TIC trace is complex, showing aromatic and aliphatic product sources.
The trace does not match the standard product profiles but is suggestive of lube oil.



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The trace does not match the standard product profiles but is suggestive of lube oil.

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Analytical Report Number : 18-76460

Project / Site name:	138-140 Highgate Road, Highgate, London	**Samples received on:**	15/02/2018
Your job number:	JJ1303	**Samples instructed on:**	16/02/2018
Your order number:	P1323JJ1303.13	**Analysis completed by:**	26/02/2018
Report Issue Number:	1	**Report issued on:**	26/02/2018
Samples Analysed:	4 soil samples		

Signed:

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-76460

Project / Site name: 138-140 Highgate Road, Highgate, London
Your Order No: P1323JJ1303.13

Lab Sample Number				910620	910621	910622	910623	
Sample Reference				BH1	BH1	BH2	BH2	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				5.50	15.00	7.50	24.50	
Date Sampled				14/02/2018	14/02/2018	14/02/2018	14/02/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	20	18	19	18	
Total mass of sample received	kg	0.001	NONE	1.0	0.75	0.85	1.0	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	6.6	8.1	7.5	8.9	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	3.2	0.84	6.1	0.43	

Analytical Report Number : 18-76460

Project / Site name: 138-140 Highgate Road, Highgate, London

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
910620	BH1	None Supplied	5.50	Brown clay.
910621	BH1	None Supplied	15.00	Brown clay.
910622	BH2	None Supplied	7.50	Light brown clay.
910623	BH2	None Supplied	24.50	Brown clay.

The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 18-76460

Project / Site name: 138-140 Highgate Road, Highgate, London

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-76323

Project / Site name:	138-140 Highgate Road, Highgate, London, NW5 1PB	**Samples received on:**	14/02/2018
Your job number:	JJ1303	**Samples instructed on:**	16/02/2018
Your order number:	P1323JJ1303.11	**Analysis completed by:**	23/02/2018
Report Issue Number:	1	**Report issued on:**	23/02/2018
Samples Analysed:	3 WAC 10:1 Samples		

Signed:

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

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soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Waste Acceptance Criteria Analytical Results

Report No:	**18-76323**						
					Client:	**JOMASASSOC**	
Location	**138-140 Highgate Road, Highgate, London, NW5 1PB**						
Lab Reference (Sample Number)	909812 / 909813				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	12/02/2018				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS5 tjv						
Depth (m)	0.50						
Solid Waste Analysis							
TOC (%)**	0.4				3%	5%	6%
Loss on Ignition (%) **	1.8				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	370				500	--	--
Total PAH (WAC-17) (mg/kg)	4.6				100	--	--
pH (units)**	10.1				--	>6	--
Acid Neutralisation Capacity (mol / kg)	39				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0119			0.0814	0.5	2	25
Barium *	0.0239			0.164	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0004			< 0.0040	0.5	10	70
Copper *	0.0038			0.026	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0123			0.0844	0.5	10	30
Nickel *	0.0019			0.013	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0094			0.065	4	50	200
Chloride *	95			650	800	4000	25000
Fluoride	0.41			2.8	10	150	500
Sulphate *	430			3000	1000	20000	50000
TDS	230			1600	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	7.60			52.1	500	800	1000
Leach Test Information							
Stone Content (%)	26						
Sample Mass (kg)	1.4						
Dry Matter (%)	82						
Moisture (%)	18						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.
*= UKAS accredited (liquid eluate analysis only)
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation
** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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Waste Acceptance Criteria Analytical Results

Report No:	**18-76323**						
					Client:	**JOMASASSOC**	
Location	**138-140 Highgate Road, Highgate, London, NW5 1PB**						
Lab Reference (Sample Number)	909814 / 909815				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	12/02/2018				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS4 tjv						
Depth (m)	0.70						
Solid Waste Analysis							
TOC (%)**	0.3				3%	5%	6%
Loss on Ignition (%) **	1.9				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	60				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.9				100	--	--
pH (units)**	8.9				--	>6	--
Acid Neutralisation Capacity (mol / kg)	8.7				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0024			0.0167	0.5	2	25
Barium *	0.0023			0.0155	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	< 0.0004			< 0.0040	0.5	10	70
Copper *	0.0097			0.066	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0023			0.0155	0.5	10	30
Nickel *	0.0003			< 0.0030	0.4	10	40
Lead *	0.0021			0.014	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0055			0.038	4	50	200
Chloride *	6.4			43	800	4000	25000
Fluoride	0.29			2.0	10	150	500
Sulphate *	91			620	1000	20000	50000
TDS	150			1000	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	4.52			30.8	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.6						
Dry Matter (%)	76						
Moisture (%)	24						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.
*= UKAS accredited (liquid eluate analysis only)
Stated limits are for guidance only and i2 cannot be held responsible for any discrepencies with current legislation
** = MCERTS accrediited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
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Waste Acceptance Criteria Analytical Results

Report No:	**18-76323**						
					Client: JOMASASSOC		
Location	**138-140 Highgate Road, Highgate, London, NW5 1PB**						
Lab Reference (Sample Number)	909816 / 909817				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	12/02/2018				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS7 tjv						
Depth (m)	0.90						
Solid Waste Analysis							
TOC (%)**	0.9				3%	5%	6%
Loss on Ignition (%) **	3.1				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	190				500	--	--
Total PAH (WAC-17) (mg/kg)	3.1				100	--	--
pH (units)**	8.2				--	>6	--
Acid Neutralisation Capacity (mol / kg)	14				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.0011			< 0.0110	0.5	2	25
Barium *	0.0126			0.0845	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0008			0.0056	0.5	10	70
Copper *	0.0056			0.038	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0221			0.148	0.5	10	30
Nickel *	0.0003			< 0.0030	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0033			0.022	4	50	200
Chloride *	13			86	800	4000	25000
Fluoride	1.5			9.9	10	150	500
Sulphate *	48			320	1000	20000	50000
TDS	120			830	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	10.5			70.2	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.1						
Dry Matter (%)	83						
Moisture (%)	17						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.
*= UKAS accredited (liquid eluate analysis only)
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Analytical Report Number : 18-76323

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
909812	WS5	tjv	0.50	Light brown clay and sand with stones.
909814	WS4	tjv	0.70	Brown clay.
909816	WS7	tjv	0.90	Light brown clay and sand with gravel.

Analytical Report Number : 18-76323

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance""	L046-UK	W	NONE
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L047-PL	D	MCERTS
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	in-house method	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	MCERTS

Analytical Report Number : 18-76323

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
WS4	tjv	S	18-76323	909814	b	BTEX in soil (Monoaromatics)	L073B-PL	b
WS4	tjv	S	18-76323	909814	b	Total BTEX in soil (Poland)	L073-PL	b

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

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Analytical Report Number : 18-76317

Replaces Analytical Report Number : 18-76317, issue no. 1

Project / Site name:	138-140 Highgate Road, Highgate, London, NW5 1PB	**Samples received on:**	14/02/2018
Your job number:	JJ1303	**Samples instructed on:**	16/02/2018
Your order number:	P1323JJ1303.10	**Analysis completed by:**	16/03/2018
Report Issue Number:	2	**Report issued on:**	16/03/2018
Samples Analysed:	12 soil samples		

Signed:

Nicole Fay
Quality Assistant
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB
Your Order No: P1323JJ1303.10

Lab Sample Number				909736	909737	909738	909739	909740
Sample Reference				WS1	WS2	WS2	WS3	WS3
Sample Number				tjv	tjv	tjv	tjv	tjv
Depth (m)				0.25	2.50	0.50	0.40	2.00
Date Sampled				12/02/2018	13/02/2018	13/02/2018	12/02/2018	12/02/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	16	16	12	16	21
Total mass of sample received	kg	0.001	NONE	1.2	-	1.4	1.2	1.4
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile & Amosite	Chrysotile	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Detected	Detected	-
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	< 0.001	< 0.001	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	< 0.001	< 0.001	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.6	-	9.2	10.1	8.3
Total Cyanide	mg/kg	1	MCERTS	< 1	-	< 1	< 1	2
Total Sulphate as SO_4	mg/kg	50	MCERTS	1300	-	11000	2000	1800
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.067	-	1.8	0.32	0.85
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	67.2	-	1780	318	851
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.6	-	1.2	-	-
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	3.6	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.49	-	0.25	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.45	-	2.1	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.42	-	1.6	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	6.1	-	18	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	1.3	-	4.7	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	15	-	21	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	13	-	17	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	9.5	-	13	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	5.7	-	8.0	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	7.7	-	10	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	3.8	-	4.5	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	8.0	-	10	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.8	-	4.6	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.71	-	0.94	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.4	-	4.2	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	79.6	-	124	< 0.80	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	-	15	10	10
Boron (water soluble)	mg/kg	0.2	MCERTS	3.9	-	7.2	4.2	3.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	-	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	-	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	-	28	53	64
Copper (aqua regia extractable)	mg/kg	1	MCERTS	35	-	37	32	29
Lead (aqua regia extractable)	mg/kg	1	MCERTS	280	-	160	90	69
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	-	24	40	51
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	210	-	190	78	91

Analytical Report Number: 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB
Your Order No: P1323JJ1303.10

Lab Sample Number				909736	909737	909738	909739	909740
Sample Reference				WS1	WS2	WS2	WS3	WS3
Sample Number				tjv	tjv	tjv	tjv	tjv
Depth (m)				0.25	2.50	0.50	0.40	2.00
Date Sampled				12/02/2018	13/02/2018	13/02/2018	12/02/2018	12/02/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	7.6	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	29	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	150	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	190	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	5.8	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	20	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	160	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	440	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	620	< 10	< 10
TPH (C10 - C12)	mg/kg	2	MCERTS	< 2.0	-	6.6	-	-
TPH (C12 - C16)	mg/kg	4	MCERTS	11	-	27	-	-
TPH (C16 - C21)	mg/kg	1	MCERTS	83	-	190	-	-
TPH (C21 - C40)	mg/kg	10	MCERTS	220	-	690	-	-

Analytical Report Number: 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB
Your Order No: P1323JJ1303.10

Lab Sample Number				909736	909737	909738	909739	909740
Sample Reference				WS1	WS2	WS2	WS3	WS3
Sample Number				tjv	tjv	tjv	tjv	tjv
Depth (m)				0.25	2.50	0.50	0.40	2.00
Date Sampled				12/02/2018	13/02/2018	13/02/2018	12/02/2018	12/02/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	5.7	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	-	42	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	-	20	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	15	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	-	4.6	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	35	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1P
Your Order No: P1323JJ1303.10

Lab Sample Number				909741	909742	909743	909744	909745
Sample Reference				WS4	WS5	WS5	WS5	WS7
Sample Number				tjv	tjv	tjv	tjv	tjv
Depth (m)				0.70	1.00	0.50	1.60	0.40
Date Sampled				13/02/2018	13/02/2018	13/02/2018	13/02/2018	12/02/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	-	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	24	23	-	23	12
Total mass of sample received	kg	0.001	NONE	1.6	1.2	-	1.2	1.3
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	< 0.001
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	9.0	10.7	-	8.7	9.5
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	-	< 1	< 1
Total Sulphate as SO_4	mg/kg	50	MCERTS	1300	3400	-	1200	4100
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.57	0.93	-	0.54	0.99
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	574	931	-	538	987
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.4	-	-	-	1.1
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.23	0.80
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	1.2	0.49
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.42	6.4
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.47	2.2
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.42	-	1.4	15
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.69	-	3.1	13
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.78	8.1
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.69	6.1
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.45	8.2
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.27	2.7
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.38	7.7
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.25	3.6
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	0.63
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.74	3.4
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	1.11	-	10.4	78.7
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.7	12	-	9.5	22
Boron (water soluble)	mg/kg	0.2	MCERTS	3.3	16	-	2.2	4.0
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	-	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	58	52	-	43	31
Copper (aqua regia extractable)	mg/kg	1	MCERTS	130	38	-	22	270
Lead (aqua regia extractable)	mg/kg	1	MCERTS	19	68	-	140	760
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	49	40	-	35	41
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	83	81	-	85	240

Analytical Report Number: 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1P
Your Order No: P1323JJ1303.10

Lab Sample Number				909741	909742	909743	909744	909745
Sample Reference				WS4	WS5	WS5	WS5	WS7
Sample Number				tjv	tjv	tjv	tjv	tjv
Depth (m)				0.70	1.00	0.50	1.60	0.40
Date Sampled				13/02/2018	13/02/2018	13/02/2018	13/02/2018	12/02/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	7.8	-	42	1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	13	-	130	9.6
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	40	-	190	15
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	46	980	-	4100	120
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	48	1000	-	4500	140
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	4.2	-	5.4	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	11	-	50	9.6
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	36	-	130	47
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	580	-	2000	94
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	630	-	2200	150
TPH (C10 - C12)	mg/kg	2	MCERTS	-	-	-	-	-
TPH (C12 - C16)	mg/kg	4	MCERTS	-	-	-	-	-
TPH (C16 - C21)	mg/kg	1	MCERTS	-	-	-	-	-
TPH (C21 - C40)	mg/kg	10	MCERTS	-	-	-	-	-

Analytical Report Number: 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1P
Your Order No: P1323JJ1303.10

Lab Sample Number				909741	909742	909743	909744	909745
Sample Reference				WS4	WS5	WS5	WS5	WS7
Sample Number				tjv	tjv	tjv	tjv	tjv
Depth (m)				0.70	1.00	0.50	1.60	0.40
Date Sampled				13/02/2018	13/02/2018	13/02/2018	13/02/2018	12/02/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0

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Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1P
Your Order No: P1323JJ1303.10

Lab Sample Number				909748	909749			
Sample Reference				WS4	WS5			
Sample Number				tjv	tjv			
Depth (m)				2.00	4.50			
Date Sampled				13/02/2018	13/02/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	23	20			
Total mass of sample received	kg	0.001	NONE	1.4	0.90			
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-			
Asbestos in Soil	Type	N/A	ISO 17025	-	-			
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-			
Asbestos Quantification Total	%	0.001	ISO 17025	-	-			
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.9	7.9			
Total Cyanide	mg/kg	1	MCERTS	-	-			
Total Sulphate as SO_4	mg/kg	50	MCERTS	-	-			
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.8	2.3			
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-			
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	-			
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-			
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	-			
Acenaphthylene	mg/kg	0.05	MCERTS	-	-			
Acenaphthene	mg/kg	0.05	MCERTS	-	-			
Fluorene	mg/kg	0.05	MCERTS	-	-			
Phenanthrene	mg/kg	0.05	MCERTS	-	-			
Anthracene	mg/kg	0.05	MCERTS	-	-			
Fluoranthene	mg/kg	0.05	MCERTS	-	-			
Pyrene	mg/kg	0.05	MCERTS	-	-			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-			
Chrysene	mg/kg	0.05	MCERTS	-	-			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-			
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-			
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-			
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-			
Chromium (hexavalent)	mg/kg	4	MCERTS	-	-			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-			

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Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1P
Your Order No: P1323JJ1303.10

Lab Sample Number				909748	909749			
Sample Reference				WS4	WS5			
Sample Number				tjv	tjv			
Depth (m)				2.00	4.50			
Date Sampled				13/02/2018	13/02/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	-			
Toluene	µg/kg	1	MCERTS	-	-			
Ethylbenzene	µg/kg	1	MCERTS	-	-			
p & m-xylene	µg/kg	1	MCERTS	-	-			
o-xylene	µg/kg	1	MCERTS	-	-			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-			
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	-	-			
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-			
TPH (C10 - C12)	mg/kg	2	MCERTS	-	-			
TPH (C12 - C16)	mg/kg	4	MCERTS	-	-			
TPH (C16 - C21)	mg/kg	1	MCERTS	-	-			
TPH (C21 - C40)	mg/kg	10	MCERTS	-	-			

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Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1P
Your Order No: P1323JJ1303.10

Lab Sample Number				909748	909749			
Sample Reference				WS4	WS5			
Sample Number				tjv	tjv			
Depth (m)				2.00	4.50			
Date Sampled				13/02/2018	13/02/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-			
Chloroethane	µg/kg	1	NONE	-	-			
Bromomethane	µg/kg	1	ISO 17025	-	-			
Vinyl Chloride	µg/kg	1	NONE	-	-			
Trichlorofluoromethane	µg/kg	1	NONE	-	-			
1,1-Dichloroethene	µg/kg	1	NONE	-	-			
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-			
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-			
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-			
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-			
Trichloromethane	µg/kg	1	MCERTS	-	-			
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-			
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-			
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-			
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-			
Benzene	µg/kg	1	MCERTS	-	-			
Tetrachloromethane	µg/kg	1	MCERTS	-	-			
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-			
Trichloroethene	µg/kg	1	MCERTS	-	-			
Dibromomethane	µg/kg	1	MCERTS	-	-			
Bromodichloromethane	µg/kg	1	MCERTS	-	-			
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-			
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-			
Toluene	µg/kg	1	MCERTS	-	-			
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-			
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-			
Dibromochloromethane	µg/kg	1	ISO 17025	-	-			
Tetrachloroethene	µg/kg	1	NONE	-	-			
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-			
Chlorobenzene	µg/kg	1	MCERTS	-	-			
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-			
Ethylbenzene	µg/kg	1	MCERTS	-	-			
p & m-Xylene	µg/kg	1	MCERTS	-	-			
Styrene	µg/kg	1	MCERTS	-	-			
Tribromomethane	µg/kg	1	NONE	-	-			
o-Xylene	µg/kg	1	MCERTS	-	-			
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-			
Isopropylbenzene	µg/kg	1	MCERTS	-	-			
Bromobenzene	µg/kg	1	MCERTS	-	-			
n-Propylbenzene	µg/kg	1	ISO 17025	-	-			
2-Chlorotoluene	µg/kg	1	MCERTS	-	-			
4-Chlorotoluene	µg/kg	1	MCERTS	-	-			
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-			
tert-Butylbenzene	µg/kg	1	MCERTS	-	-			
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-			
sec-Butylbenzene	µg/kg	1	MCERTS	-	-			
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-			
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-			
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-			
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-			
Butylbenzene	µg/kg	1	MCERTS	-	-			
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-			
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-			
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-			
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-			

Analytical Report Number: 18-76317
Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB
Your Order No: P1323JJ1303.10

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
909738	WS2	0.50	178	Loose Fibres	**Chrysotile & Amosite**	< 0.001	**< 0.001**
909739	WS3	0.40	161	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
909745	WS7	0.40	170	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

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* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
909736	WS1	tjv	0.25	Brown loam and clay with gravel and vegetation.
909737	WS2	tjv	2.50	Light brown clay and sand with gravel.
909738	WS2	tjv	0.50	Brown sand with rubble and brick.
909739	WS3	tjv	0.40	Grey clay and sand with rubble and brick.
909740	WS3	tjv	2.00	Brown clay.
909741	WS4	tjv	0.70	Brown clay.
909742	WS5	tjv	1.00	Brown clay.
909743	WS5	tjv	0.50	-
909744	WS5	tjv	1.60	Grey clay and sand.
909745	WS7	tjv	0.40	Brown sand with gravel and rubble.
909748	WS4	tjv	2.00	Brown clay.
909749	WS5	tjv	4.50	Brown clay.

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Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

Analytical Report Number : 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
WS4	tjv	S	18-76317	909741	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
WS4	tjv	S	18-76317	909741	b	TPHCWG (Soil)	L088/76-PL	b
WS4	tjv	S	18-76317	909741	b	Volatile organic compounds in soil	L073B-PL	b

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

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Analytical Report Number : 18-76317

Project / Site name:	138-140 Highgate Road, Highgate, London, NW5 1PB	**Samples received on:**	14/02/2018
Your job number:	JJ1303	**Samples instructed on:**	16/02/2018
Your order number:	P1323JJ1303.10	**Analysis completed by:**	26/02/2018
Report Issue Number:	1	**Report issued on:**	26/02/2018
Samples Analysed:	12 soil samples		

Signed:

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB
Your Order No: P1323JJ1303.10

Lab Sample Number				909736	909737	909738	909739	909740
Sample Reference				WS1	WS2	WS2	WS3	WS3
Sample Number				tjv	tjv	tjv	tjv	tjv
Depth (m)				0.25	2.50	0.50	0.40	2.00
Date Sampled				12/02/2018	13/02/2018	13/02/2018	12/02/2018	12/02/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	16	16	12	16	21
Total mass of sample received	kg	0.001	NONE	1.2	-	1.4	1.2	1.4
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile, Amosite- Loose Fibres	Chrysotile- Loose Fibres	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Detected	Detected	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.6	-	9.2	10.1	8.3
Total Cyanide	mg/kg	1	MCERTS	< 1	-	< 1	< 1	2
Total Sulphate as SO_4	mg/kg	50	MCERTS	1300	-	11000	2000	1800
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.067	-	1.8	0.32	0.85
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	67.2	-	1780	318	851
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.6	-	1.2	-	-
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	3.6	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.49	-	0.25	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.45	-	2.1	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.42	-	1.6	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	6.1	-	18	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	1.3	-	4.7	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	15	-	21	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	13	-	17	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	9.5	-	13	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	5.7	-	8.0	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	7.7	-	10	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	3.8	-	4.5	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	8.0	-	10	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.8	-	4.6	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.71	-	0.94	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.4	-	4.2	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	79.6	-	124	< 0.80	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	-	15	10	10
Boron (water soluble)	mg/kg	0.2	MCERTS	3.9	-	7.2	4.2	3.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	-	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	-	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	-	28	53	64
Copper (aqua regia extractable)	mg/kg	1	MCERTS	35	-	37	32	29
Lead (aqua regia extractable)	mg/kg	1	MCERTS	280	-	160	90	69
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	-	24	40	51
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	210	-	190	78	91

Analytical Report Number: 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB
Your Order No: P1323JJ1303.10

Lab Sample Number				909736	909737	909738	909739	909740
Sample Reference				WS1	WS2	WS2	WS3	WS3
Sample Number				tjv	tjv	tjv	tjv	tjv
Depth (m)				0.25	2.50	0.50	0.40	2.00
Date Sampled				12/02/2018	13/02/2018	13/02/2018	12/02/2018	12/02/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	7.6	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	29	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	150	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	190	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	5.8	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	20	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	160	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	440	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	620	< 10	< 10
TPH (C10 - C12)	mg/kg	2	MCERTS	< 2.0	-	6.6	-	-
TPH (C12 - C16)	mg/kg	4	MCERTS	11	-	27	-	-
TPH (C16 - C21)	mg/kg	1	MCERTS	83	-	190	-	-
TPH (C21 - C40)	mg/kg	10	MCERTS	220	-	690	-	-

Analytical Report Number: 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB
Your Order No: P1323JJ1303.10

Lab Sample Number				909736	909737	909738	909739	909740
Sample Reference				WS1	WS2	WS2	WS3	WS3
Sample Number				tjv	tjv	tjv	tjv	tjv
Depth (m)				0.25	2.50	0.50	0.40	2.00
Date Sampled				12/02/2018	13/02/2018	13/02/2018	12/02/2018	12/02/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	5.7	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	-	42	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	-	20	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	15	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	-	4.6	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	35	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1P
Your Order No: P1323JJ1303.10

Lab Sample Number				909741	909742	909743	909744	909745
Sample Reference				WS4	WS5	WS5	WS5	WS7
Sample Number				tjv	tjv	tjv	tjv	tjv
Depth (m)				0.70	1.00	0.50	1.60	0.40
Date Sampled				13/02/2018	13/02/2018	13/02/2018	13/02/2018	12/02/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	-	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	24	23	-	23	12
Total mass of sample received	kg	0.001	NONE	1.6	1.2	-	1.2	1.3
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	Chrysotile- Loose Fibres
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-	Detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	9.0	10.7	-	8.7	9.5
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	-	< 1	< 1
Total Sulphate as SO_4	mg/kg	50	MCERTS	1300	3400	-	1200	4100
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.57	0.93	-	0.54	0.99
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	574	931	-	538	987
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.4	-	-	-	1.1
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.23	0.80
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	1.2	0.49
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.42	6.4
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.47	2.2
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.42	-	1.4	15
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.69	-	3.1	13
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.78	8.1
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.69	6.1
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.45	8.2
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.27	2.7
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.38	7.7
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.25	3.6
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	0.63
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.74	3.4
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	1.11	-	10.4	78.7
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.7	12	-	9.5	22
Boron (water soluble)	mg/kg	0.2	MCERTS	3.3	16	-	2.2	4.0
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	-	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	58	52	-	43	31
Copper (aqua regia extractable)	mg/kg	1	MCERTS	130	38	-	22	270
Lead (aqua regia extractable)	mg/kg	1	MCERTS	19	68	-	140	760
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	49	40	-	35	41
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	83	81	-	85	240

Analytical Report Number: 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1P
Your Order No: P1323JJ1303.10

Lab Sample Number				909741	909742	909743	909744	909745
Sample Reference				WS4	WS5	WS5	WS5	WS7
Sample Number				tjv	tjv	tjv	tjv	tjv
Depth (m)				0.70	1.00	0.50	1.60	0.40
Date Sampled				13/02/2018	13/02/2018	13/02/2018	13/02/2018	12/02/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	7.8	-	42	1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	13	-	130	9.6
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	40	-	190	15
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	46	980	-	4100	120
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	48	1000	-	4500	140
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	4.2	-	5.4	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	11	-	50	9.6
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	36	-	130	47
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	580	-	2000	94
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	630	-	2200	150
TPH (C10 - C12)	mg/kg	2	MCERTS	-	-	-	-	-
TPH (C12 - C16)	mg/kg	4	MCERTS	-	-	-	-	-
TPH (C16 - C21)	mg/kg	1	MCERTS	-	-	-	-	-
TPH (C21 - C40)	mg/kg	10	MCERTS	-	-	-	-	-

Analytical Report Number: 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1P
Your Order No: P1323JJ1303.10

Lab Sample Number				909741	909742	909743	909744	909745
Sample Reference				WS4	WS5	WS5	WS5	WS7
Sample Number				tjv	tjv	tjv	tjv	tjv
Depth (m)				0.70	1.00	0.50	1.60	0.40
Date Sampled				13/02/2018	13/02/2018	13/02/2018	13/02/2018	12/02/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0

Analytical Report Number: 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1P
Your Order No: P1323JJ1303.10

Lab Sample Number				909748	909749			
Sample Reference				WS4	WS5			
Sample Number				tjv	tjv			
Depth (m)				2.00	4.50			
Date Sampled				13/02/2018	13/02/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	23	20			
Total mass of sample received	kg	0.001	NONE	1.4	0.90			
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-			
Asbestos in Soil	Type	N/A	ISO 17025	-	-			
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.9	7.9			
Total Cyanide	mg/kg	1	MCERTS	-	-			
Total Sulphate as SO_4	mg/kg	50	MCERTS	-	-			
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.8	2.3			
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-			
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	-			
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-			
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	-			
Acenaphthylene	mg/kg	0.05	MCERTS	-	-			
Acenaphthene	mg/kg	0.05	MCERTS	-	-			
Fluorene	mg/kg	0.05	MCERTS	-	-			
Phenanthrene	mg/kg	0.05	MCERTS	-	-			
Anthracene	mg/kg	0.05	MCERTS	-	-			
Fluoranthene	mg/kg	0.05	MCERTS	-	-			
Pyrene	mg/kg	0.05	MCERTS	-	-			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-			
Chrysene	mg/kg	0.05	MCERTS	-	-			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-			
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-			
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-			
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-			
Chromium (hexavalent)	mg/kg	4	MCERTS	-	-			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-			

Analytical Report Number: 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1P
Your Order No: P1323JJ1303.10

Lab Sample Number				909748	909749			
Sample Reference				WS4	WS5			
Sample Number				tjv	tjv			
Depth (m)				2.00	4.50			
Date Sampled				13/02/2018	13/02/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	-			
Toluene	µg/kg	1	MCERTS	-	-			
Ethylbenzene	µg/kg	1	MCERTS	-	-			
p & m-xylene	µg/kg	1	MCERTS	-	-			
o-xylene	µg/kg	1	MCERTS	-	-			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-			
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	-	-			
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-			
TPH (C10 - C12)	mg/kg	2	MCERTS	-	-			
TPH (C12 - C16)	mg/kg	4	MCERTS	-	-			
TPH (C16 - C21)	mg/kg	1	MCERTS	-	-			
TPH (C21 - C40)	mg/kg	10	MCERTS	-	-			

Analytical Report Number: 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1P
Your Order No: P1323JJ1303.10

Lab Sample Number				909748	909749			
Sample Reference				WS4	WS5			
Sample Number				tjv	tjv			
Depth (m)				2.00	4.50			
Date Sampled				13/02/2018	13/02/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-			
Chloroethane	µg/kg	1	NONE	-	-			
Bromomethane	µg/kg	1	ISO 17025	-	-			
Vinyl Chloride	µg/kg	1	NONE	-	-			
Trichlorofluoromethane	µg/kg	1	NONE	-	-			
1,1-Dichloroethene	µg/kg	1	NONE	-	-			
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-			
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-			
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-			
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-			
Trichloromethane	µg/kg	1	MCERTS	-	-			
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-			
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-			
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-			
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-			
Benzene	µg/kg	1	MCERTS	-	-			
Tetrachloromethane	µg/kg	1	MCERTS	-	-			
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-			
Trichloroethene	µg/kg	1	MCERTS	-	-			
Dibromomethane	µg/kg	1	MCERTS	-	-			
Bromodichloromethane	µg/kg	1	MCERTS	-	-			
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-			
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-			
Toluene	µg/kg	1	MCERTS	-	-			
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-			
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-			
Dibromochloromethane	µg/kg	1	ISO 17025	-	-			
Tetrachloroethene	µg/kg	1	NONE	-	-			
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-			
Chlorobenzene	µg/kg	1	MCERTS	-	-			
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-			
Ethylbenzene	µg/kg	1	MCERTS	-	-			
p & m-Xylene	µg/kg	1	MCERTS	-	-			
Styrene	µg/kg	1	MCERTS	-	-			
Tribromomethane	µg/kg	1	NONE	-	-			
o-Xylene	µg/kg	1	MCERTS	-	-			
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-			
Isopropylbenzene	µg/kg	1	MCERTS	-	-			
Bromobenzene	µg/kg	1	MCERTS	-	-			
n-Propylbenzene	µg/kg	1	ISO 17025	-	-			
2-Chlorotoluene	µg/kg	1	MCERTS	-	-			
4-Chlorotoluene	µg/kg	1	MCERTS	-	-			
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-			
tert-Butylbenzene	µg/kg	1	MCERTS	-	-			
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-			
sec-Butylbenzene	µg/kg	1	MCERTS	-	-			
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-			
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-			
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-			
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-			
Butylbenzene	µg/kg	1	MCERTS	-	-			
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-			
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-			
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-			
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-			

Analytical Report Number : 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
909736	WS1	tjv	0.25	Brown loam and clay with gravel and vegetation.
909737	WS2	tjv	2.50	Light brown clay and sand with gravel.
909738	WS2	tjv	0.50	Brown sand with rubble and brick.
909739	WS3	tjv	0.40	Grey clay and sand with rubble and brick.
909740	WS3	tjv	2.00	Brown clay.
909741	WS4	tjv	0.70	Brown clay.
909742	WS5	tjv	1.00	Brown clay.
909743	WS5	tjv	0.50	-
909744	WS5	tjv	1.60	Grey clay and sand.
909745	WS7	tjv	0.40	Brown sand with gravel and rubble.
909748	WS4	tjv	2.00	Brown clay.
909749	WS5	tjv	4.50	Brown clay.

The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS

Analytical Report Number : 18-76317

Project / Site name: 138-140 Highgate Road, Highgate, London, NW5 1PB

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

The results included within the report are representative of the samples submitted for analysis.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
WS4	tjv	S	18-76317	909741	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
WS4	tjv	S	18-76317	909741	b	TPHCWG (Soil)	L088/76-PL	b
WS4	tjv	S	18-76317	909741	b	Volatile organic compounds in soil	L073B-PL	b

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

APPENDIX 4 – GEOTECHNICAL LABORATORY TEST RESULTS

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.4 & 5: One Point Method

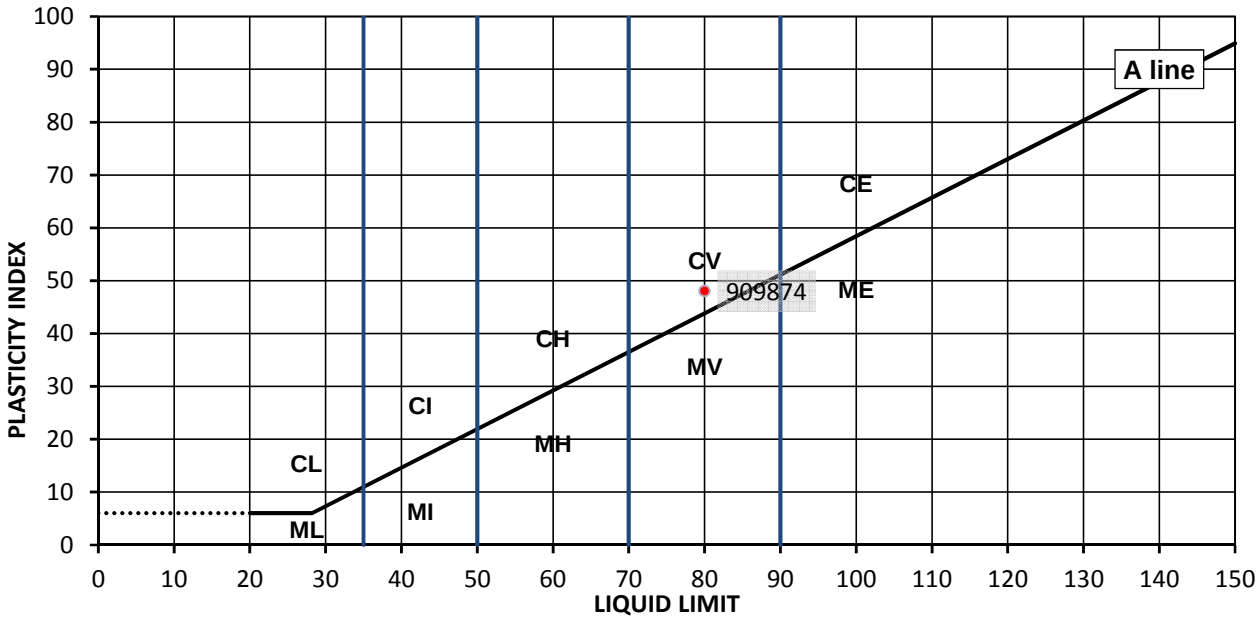
Client:	Jomas Associates Ltd	Client Reference:	JJ1303
Client Address:	Lakeside House 1 Furzeground Way Stockley Park UB11 1BD	Job Number:	18-76333
		Date Sampled:	Not Given
		Date Received:	15/02/2018
Contact:	Emma Hucker	Date Tested:	23/02/2018
Site Name:	138-140 Highgate Road, Highgate, London NW5 1PB	Sampled By:	Not Given
Site Address:	138-140 Highgate Road, Highgate, London NW5 1PB		

TEST RESULTS

Laboratory Reference: 909874
Sample Reference: Not Given

Description:	Brown CLAY	Sample Type:	B
Location:	BH1	Depth Top [m]:	2.50
Sample Preparation:	Tested in natural condition	Depth Base [m]:	Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
33	80	32	48	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

Dariusz Piotrowski
PL Laboratory Manager Geotechnical Section
Date Reported: 01/03/2018

Signed:

Darren Berrill
Geotechnical General Manager

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.4 & 5: One Point Method

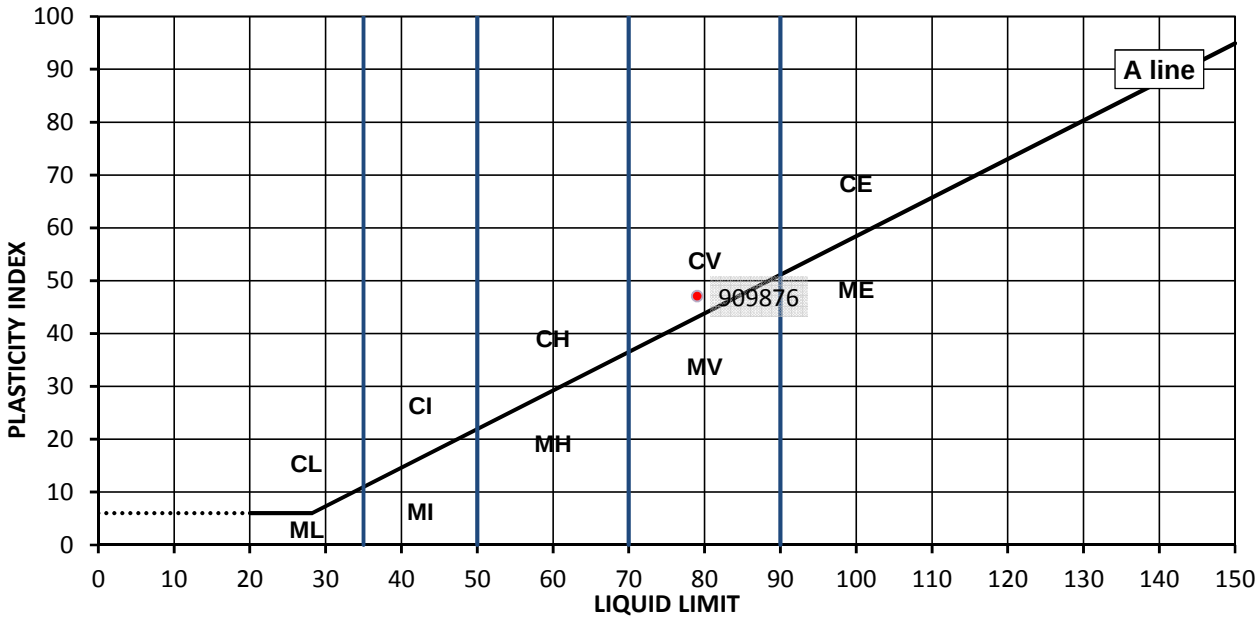
Client:	Jomas Associates Ltd	Client Reference:	JJ1303
Client Address:	Lakeside House 1 Furzeground Way Stockley Park UB11 1BD	Job Number:	18-76333
		Date Sampled:	Not Given
		Date Received:	15/02/2018
Contact:	Emma Hucker	Date Tested:	23/02/2018
Site Name:	138-140 Highgate Road, Highgate, London NW5 1PB	Sampled By:	Not Given
Site Address:	138-140 Highgate Road, Highgate, London NW5 1PB		

TEST RESULTS

Laboratory Reference: 909876
Sample Reference: Not Given

Description:	Yellowish brown CLAY	Sample Type:	B
Location:	BH1	Depth Top [m]:	3.50
Sample Preparation:	Tested in natural condition	Depth Base [m]:	Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
32	79	32	47	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

Dariusz Piotrowski
PL Laboratory Manager Geotechnical Section
Date Reported: 01/03/2018

Signed:

Darren Berrill
Geotechnical General Manager

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

4041

Tested in Accordance with BS1377-2: 1990: Clause 4.4 & 5: One Point Method

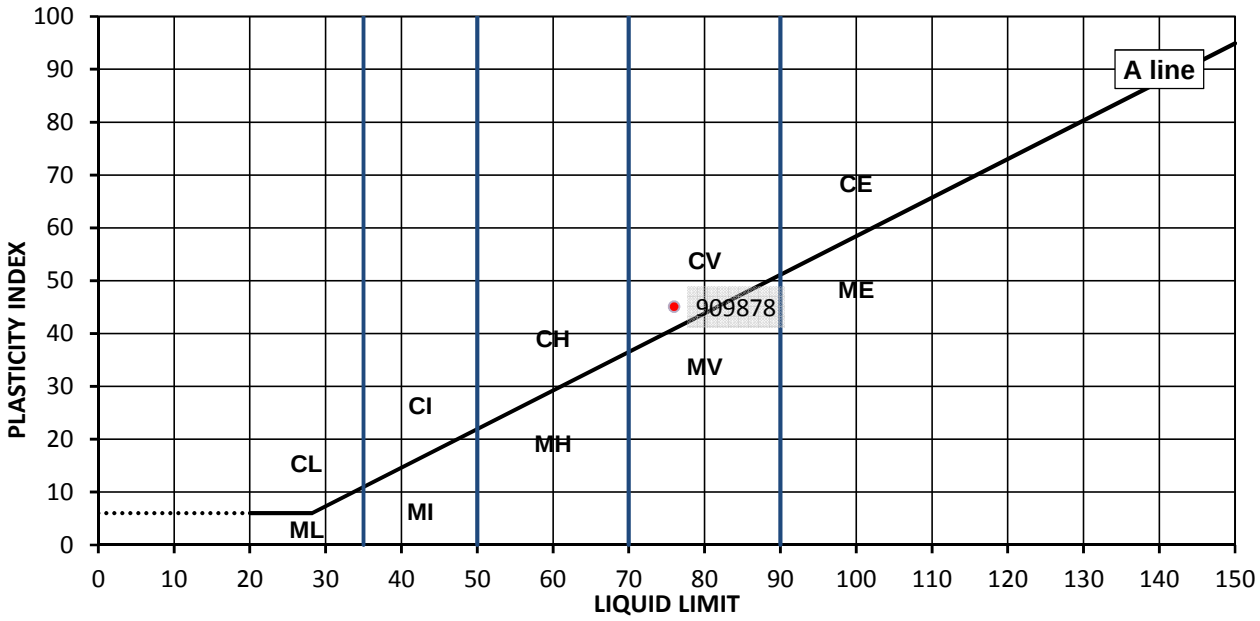
Client:	Jomas Associates Ltd	Client Reference:	JJ1303
Client Address:	Lakeside House 1 Furzeground Way Stockley Park UB11 1BD	Job Number:	18-76333
		Date Sampled:	Not Given
		Date Received:	15/02/2018
Contact:	Emma Hucker	Date Tested:	26/02/2018
Site Name:	138-140 Highgate Road, Highgate, London NW5 1PB	Sampled By:	Not Given
Site Address:	138-140 Highgate Road, Highgate, London NW5 1PB		

TEST RESULTS

Laboratory Reference: 909878
Sample Reference: Not Given

Description:	Dark brown CLAY	Sample Type:	U
Location:	BH1	Depth Top [m]:	10.50
Sample Preparation:	Tested in natural condition	Depth Base [m]:	10.95

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
27	76	31	45	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

Dariusz Piotrowski
PL Laboratory Manager Geotechnical Section
Date Reported: 01/03/2018

Signed:

Darren Berrill
Geotechnical General Manager

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

4041

Tested in Accordance with BS1377-2: 1990: Clause 4.4 & 5: One Point Method

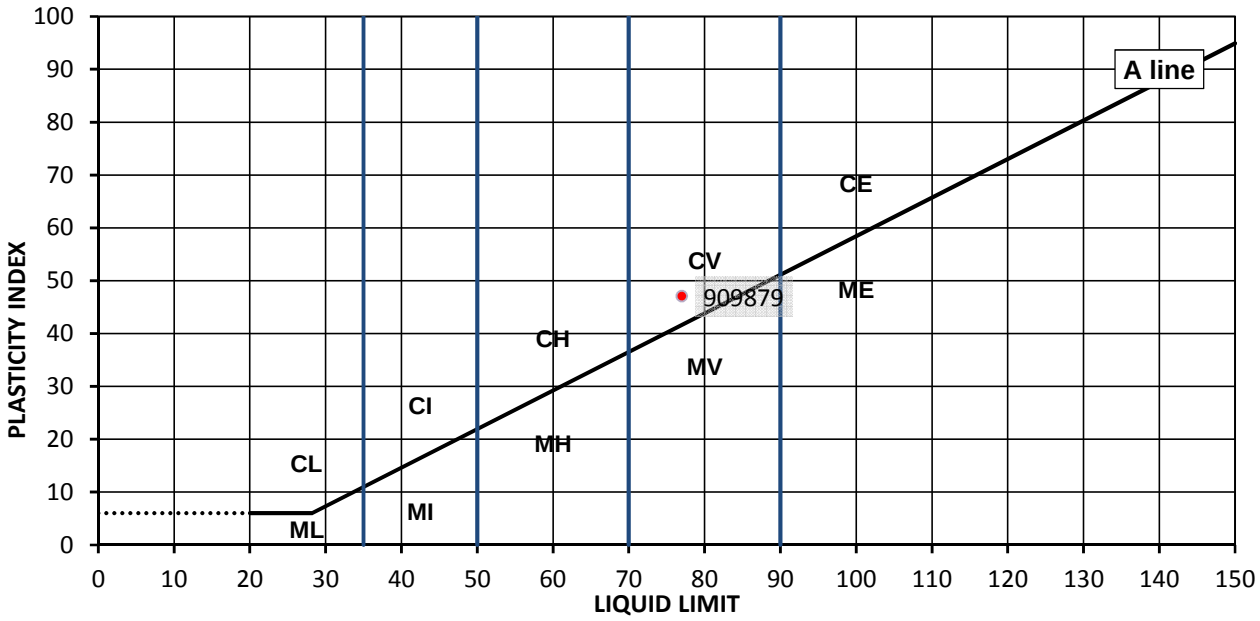
Client:	Jomas Associates Ltd	Client Reference:	JJ1303
Client Address:	Lakeside House 1 Furzeground Way Stockley Park UB11 1BD	Job Number:	18-76333
		Date Sampled:	Not Given
		Date Received:	15/02/2018
Contact:	Emma Hucker	Date Tested:	23/02/2018
Site Name:	138-140 Highgate Road, Highgate, London NW5 1PB	Sampled By:	Not Given
Site Address:	138-140 Highgate Road, Highgate, London NW5 1PB		

TEST RESULTS

Laboratory Reference: 909879
Sample Reference: Not Given

Description:	Dark brown CLAY	Sample Type:	D
Location:	BH1	Depth Top [m]:	12.50
Sample Preparation:	Tested in natural condition	Depth Base [m]:	Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
26	77	30	47	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

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Geotechnical General Manager

for and on behalf of i2 Analytical Ltd

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Determination of Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.4 & 5: One Point Method

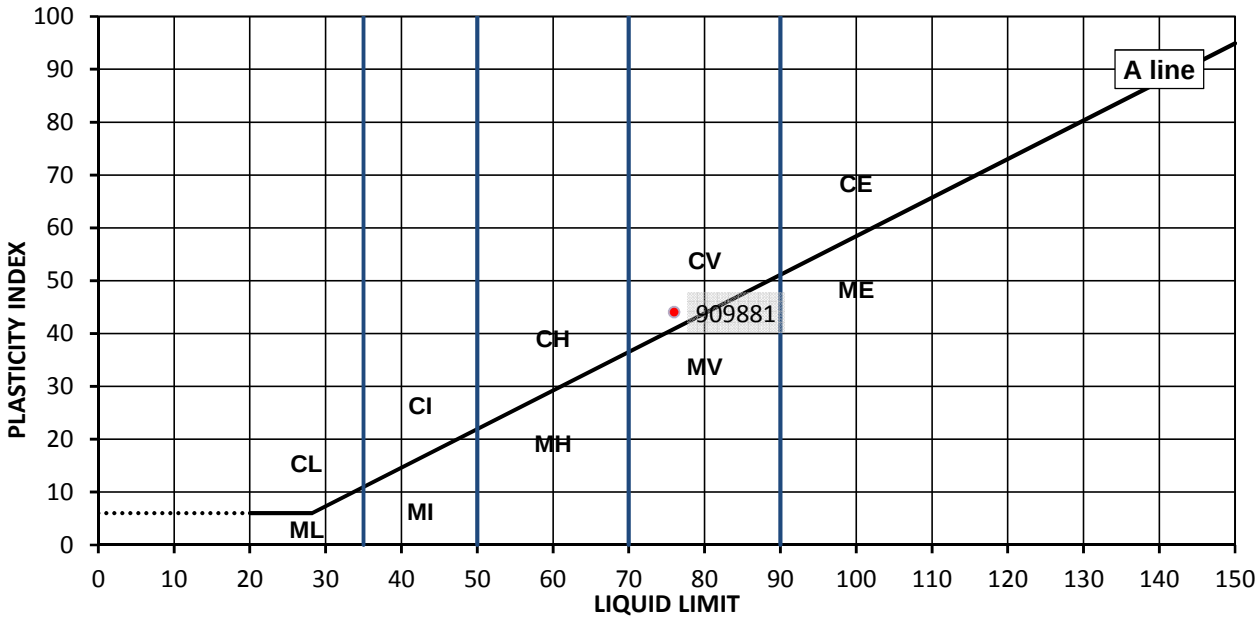
Client:	Jomas Associates Ltd	Client Reference:	JJ1303
Client Address:	Lakeside House 1 Furzeground Way Stockley Park UB11 1BD	Job Number:	18-76333
		Date Sampled:	Not Given
		Date Received:	15/02/2018
Contact:	Emma Hucker	Date Tested:	26/02/2018
Site Name:	138-140 Highgate Road, Highgate, London NW5 1PB	Sampled By:	Not Given
Site Address:	138-140 Highgate Road, Highgate, London NW5 1PB		

TEST RESULTS

Laboratory Reference: 909881
Sample Reference: Not Given

Description:	Dark brown slightly gravelly CLAY	Sample Type:	U
Location:	BH1	Depth Top [m]:	23.50
Sample Preparation:	Tested after >425um removed by hand	Depth Base [m]:	23.95

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
27	76	32	44	99



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

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Geotechnical General Manager

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

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4041

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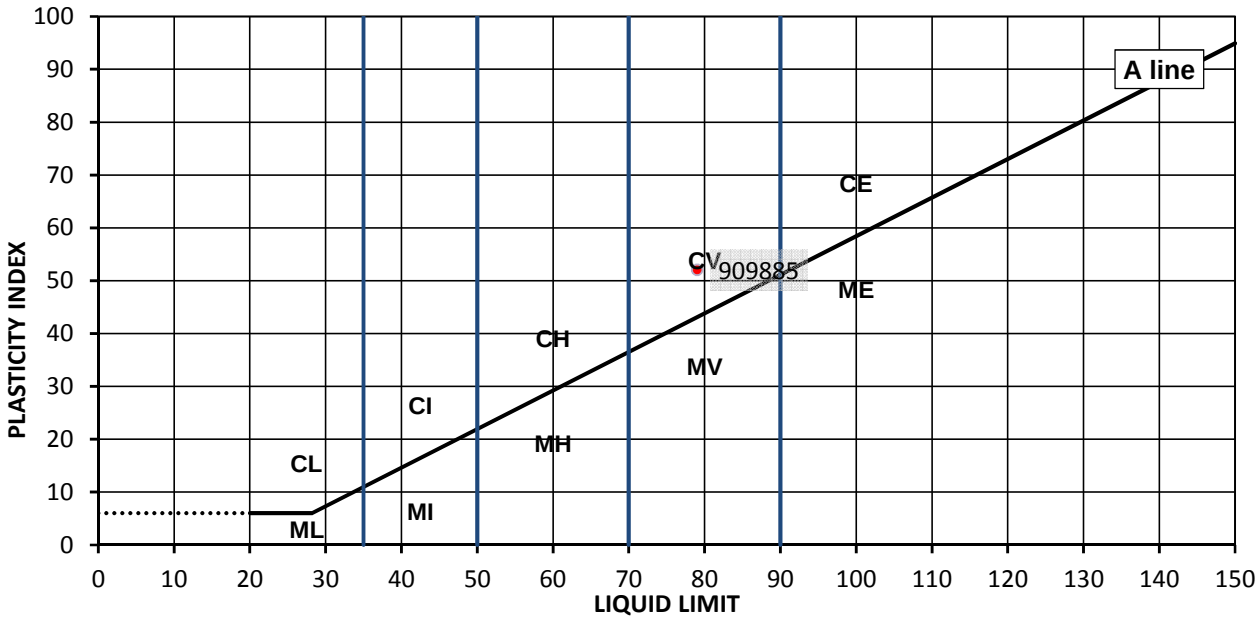
Client:	Jomas Associates Ltd	Client Reference:	JJ1303
Client Address:	Lakeside House 1 Furzeground Way Stockley Park UB11 1BD	Job Number:	18-76333
		Date Sampled:	Not Given
		Date Received:	15/02/2018
Contact:	Emma Hucker	Date Tested:	23/02/2018
Site Name:	138-140 Highgate Road, Highgate, London NW5 1PB	Sampled By:	Not Given
Site Address:	138-140 Highgate Road, Highgate, London NW5 1PB		

TEST RESULTS

Laboratory Reference: 909885
Sample Reference: Not Given

Description:	Dark brown CLAY	Sample Type:	B
Location:	BH2	Depth Top [m]:	18.50
Sample Preparation:	Tested in natural condition	Depth Base [m]:	Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
26	79	27	52	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

Dariusz Piotrowski
PL Laboratory Manager Geotechnical Section
Date Reported: 01/03/2018

Signed:

Darren Berrill
Geotechnical General Manager

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.4 & 5: One Point Method

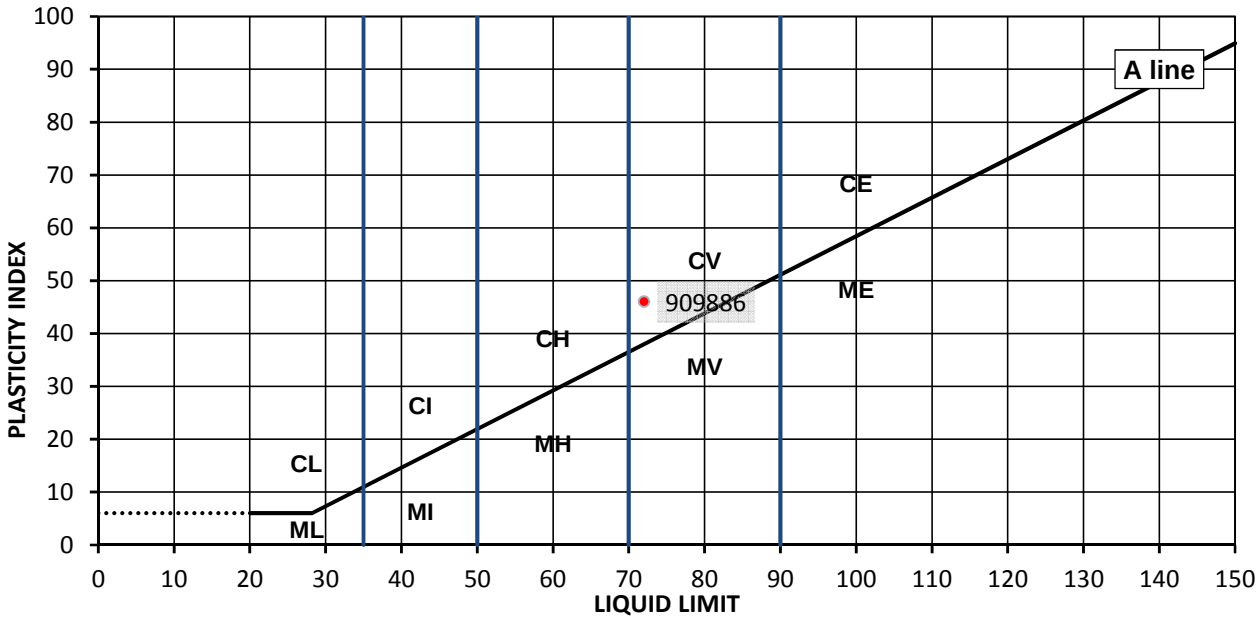
Client:	Jomas Associates Ltd	Client Reference:	JJ1303
Client Address:	Lakeside House 1 Furzeground Way Stockley Park UB11 1BD	Job Number:	18-76333
		Date Sampled:	Not Given
		Date Received:	15/02/2018
Contact:	Emma Hucker	Date Tested:	23/02/2018
Site Name:	138-140 Highgate Road, Highgate, London NW5 1PB	Sampled By:	Not Given
Site Address:	138-140 Highgate Road, Highgate, London NW5 1PB		

TEST RESULTS

Laboratory Reference: 909886
Sample Reference: Not Given

Description:	Dark brown CLAY	Sample Type:	D
Location:	BH2	Depth Top [m]:	9.50
Sample Preparation:	Tested in natural condition	Depth Base [m]:	Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
27	72	26	46	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

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PL Laboratory Manager Geotechnical Section
Date Reported: 01/03/2018

Signed:

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Geotechnical General Manager

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.4 & 5: One Point Method

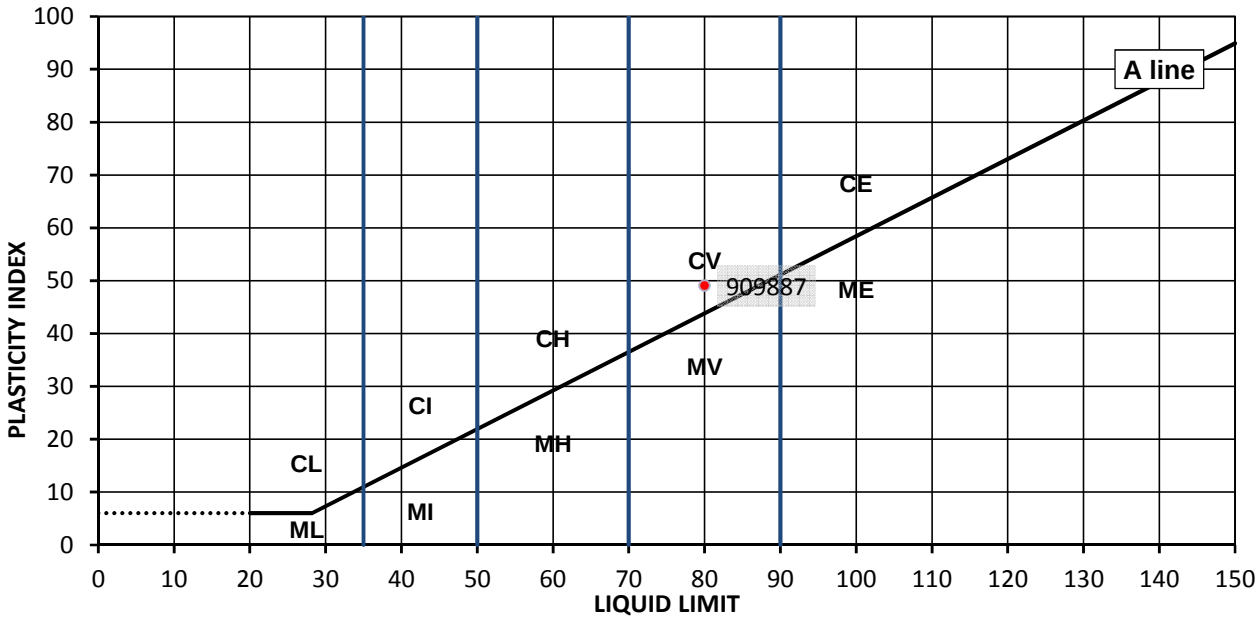
Client:	Jomas Associates Ltd	Client Reference:	JJ1303
Client Address:	Lakeside House 1 Furzeground Way Stockley Park UB11 1BD	Job Number:	18-76333
		Date Sampled:	Not Given
		Date Received:	15/02/2018
Contact:	Emma Hucker	Date Tested:	23/02/2018
Site Name:	138-140 Highgate Road, Highgate, London NW5 1PB	Sampled By:	Not Given
Site Address:	138-140 Highgate Road, Highgate, London NW5 1PB		

TEST RESULTS

Laboratory Reference: 909887
Sample Reference: Not Given

Description:	Brown CLAY	Sample Type:	D
Location:	BH2	Depth Top [m]:	2.00
Sample Preparation:	Tested in natural condition	Depth Base [m]:	Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
34	80	31	49	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

Dariusz Piotrowski
PL Laboratory Manager Geotechnical Section
Date Reported: 01/03/2018

Signed:

Darren Berrill
Geotechnical General Manager

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Summary of Classification Test Results

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

Client: Jomas Associates Ltd
Client Address: Lakeside House
1 Furzeground Way
Stockley Park
UB11 1BD
Contact: Emma Hucker
Site Name: 138-140 Highgate Road, Highgate, London NW5 1PB
Site Address: 138-140 Highgate Road, Highgate, London NW5 1PB

Client Reference: JJ1303
Job Number: 18-76333
Date Sampled: Not Given
Date Received: 15/02/2018
Date Tested: 23/02 - 26/02/2018
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Soil Description	Density		M/C	Atterberg				PD
		Reference	Top depth [m]	Base depth [m]	Type		bulk Mg/m3	dry Mg/m3	%	% Passing 425um %	LL %	PL %	PI %	Mg/m3
909874	BH1	Not Given	2.50	Not Given	B	Brown CLAY			33	100	80	32	48	
909876	BH1	Not Given	3.50	Not Given	B	Yellowish brown CLAY			32	100	79	32	47	
909878	BH1	Not Given	10.50	10.95	U	Dark brown CLAY			27	100	76	31	45	
909879	BH1	Not Given	12.50	Not Given	D	Dark brown CLAY			26	100	77	30	47	
909881	BH1	Not Given	23.50	23.95	U	Dark brown slightly gravelly CLAY			27	99	76	32	44	
909887	BH2	Not Given	2.00	Not Given	D	Brown CLAY			34	100	80	31	49	
909886	BH2	Not Given	9.50	Not Given	D	Dark brown CLAY			27	100	72	26	46	
909885	BH2	Not Given	18.50	Not Given	B	Dark brown CLAY			26	100	79	27	52	

Comments:

Approved:

Dariusz Piotrowski
PL Laboratory Manager
Geotechnical Section

Date Reported: 01/03/2018

Signed:

Darren Berrill
Geotechnical General Manager

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Unconsolidated Undrained Triaxial Compression

Tested in Accordance with BS1377: Part 7: 1990, clause 8, single specimen

4041

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

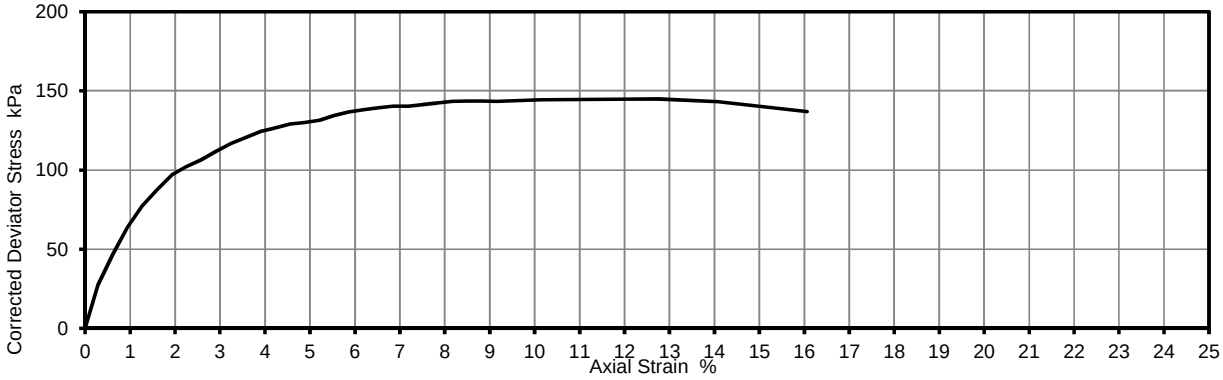
Client:	Jomas Associates Ltd	Client Reference:	JJ1303
Client Address:	Lakeside House 1 Furzeground Way Stockley Park UB11 1BD	Job Number:	18-76333
		Date Sampled:	Not Given
		Date Received:	15/02/2018
Contact:	Emma Hucker	Date Tested:	26/02/2018
Site Name:	138-140 Highgate Road, Highgate, London NW5 1PB	Sampled By:	Not Given
Site Address:	138-140 Highgate Road, Highgate, London NW5 1PB		

Test Result

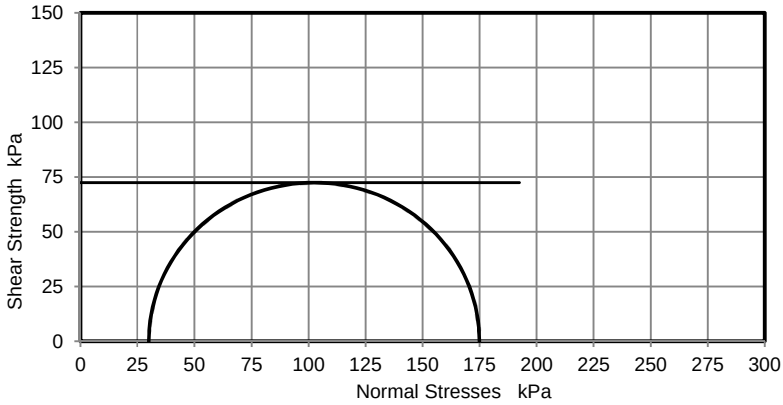
Laboratory Reference:	909873	Depth Top [m]:	1.50
Hole No.:	BH1	Depth Base [m]:	1.95
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Yellowish brown CLAY		

Test Number	1		Rate of Strain	2.00	%/min	
Length	193.07	mm	Cell Pressure	30	kPa	
Diameter	101.23	mm	Axial Strain at failure	12.8	%	
Bulk Density	1.88	Mg/m3	Deviator Stress, (σ1 - σ3)f	145	kPa	
Moisture Content	30	%	Undrained Shear Strength, cu	72	kPa	½(σ1 - σ3)f
Dry Density	1.44	Mg/m3	Mode of Failure	Brittle		
			Membrane thickness	0.30	mm	

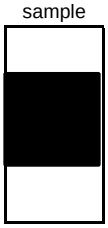
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Notes:

Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Comments:

Approved:

Dariusz Piotrowski
PL Laboratory Manager
Geotechnical Section

Signed:

Darren Berrill
Geotechnical General Manager

Date Reported: 01/03/2018

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Unconsolidated Undrained Triaxial Compression

Tested in Accordance with BS1377: Part 7: 1990, clause 8, single specimen

UKAS TESTING 4041

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

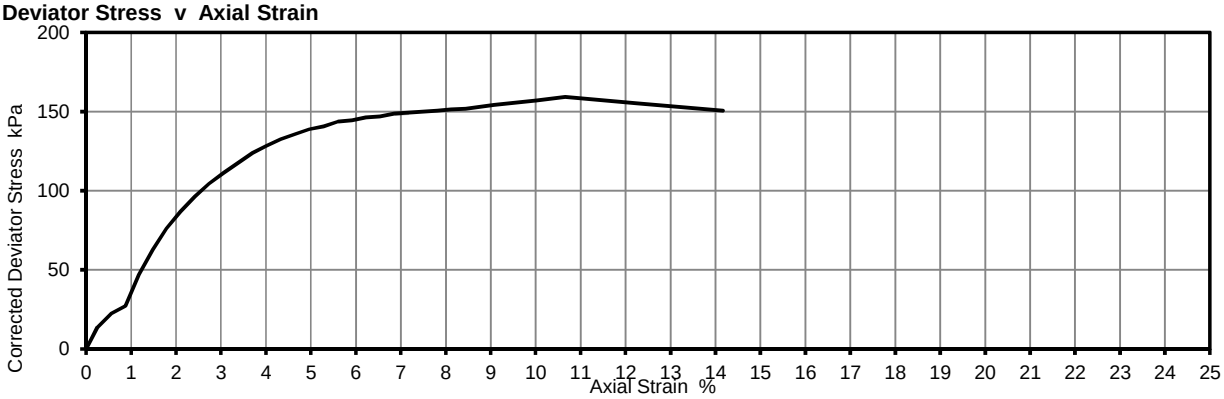
Client:	Jomas Associates Ltd	Client Reference:	JJ1303
Client Address:	Lakeside House 1 Furzeground Way Stockley Park UB11 1BD	Job Number:	18-76333
		Date Sampled:	Not Given
		Date Received:	15/02/2018
Contact:	Emma Hucker	Date Tested:	26/02/2018
Site Name:	138-140 Highgate Road, Highgate, London NW5 1PB	Sampled By:	Not Given
Site Address:	138-140 Highgate Road, Highgate, London NW5 1PB		

Test Result

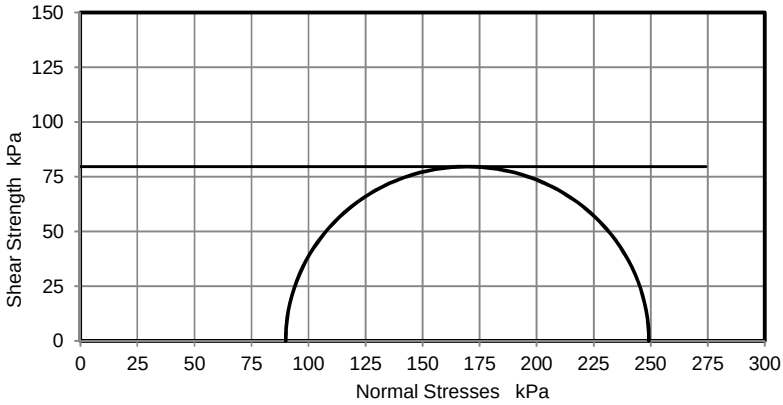
Laboratory Reference:	909875
Hole No.:	BH1
Sample Reference:	Not Given
Sample Description:	Brown CLAY

Depth Top [m]:	4.50				
Depth Base [m]:	4.95				
Sample Type:	U				
Test Number	1		Rate of Strain	1.94	%/min
Length	206.42	mm	Cell Pressure	90	kPa
Diameter	100.86	mm	Axial Strain at failure	10.7	%
Bulk Density	1.98	Mg/m3	Deviator Stress, (σ1 - σ3)f	159	kPa
Moisture Content	32	%	Undrained Shear Strength, cu	80	kPa ½(σ1 - σ3)f
Dry Density	1.50	Mg/m3	Mode of Failure	Brittle	
			Membrane thickness	0.29	mm

Deviator Stress v Axial Strain



Mohr Circles



Position within sample

Notes:

Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Comments:

Approved:

Dariusz Piotrowski
PL Laboratory Manager
Geotechnical Section

Signed:

Darren Berrill
Geotechnical General Manager

Date Reported: 01/03/2018

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Unconsolidated Undrained Triaxial Compression

Tested in Accordance with BS1377: Part 7: 1990, clause 8, single specimen

4041

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

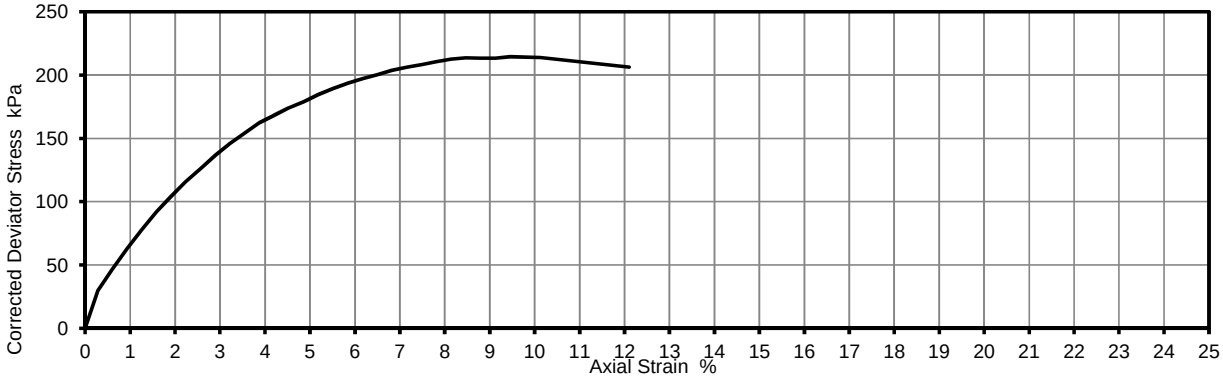
Client:	Jomas Associates Ltd	Client Reference:	JJ1303
Client Address:	Lakeside House 1 Furzeground Way Stockley Park UB11 1BD	Job Number:	18-76333
		Date Sampled:	Not Given
		Date Received:	15/02/2018
Contact:	Emma Hucker	Date Tested:	26/02/2018
Site Name:	138-140 Highgate Road, Highgate, London NW5 1PB	Sampled By:	Not Given
Site Address:	138-140 Highgate Road, Highgate, London NW5 1PB		

Test Result

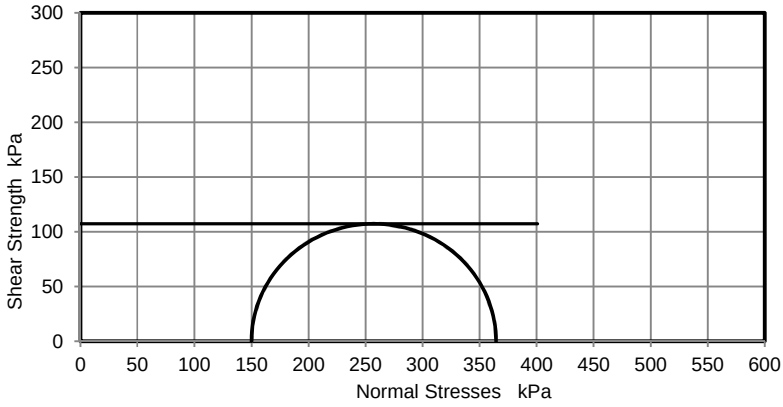
Laboratory Reference:	909877	Depth Top [m]:	7.50
Hole No.:	BH1	Depth Base [m]:	7.95
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Brown CLAY		

Test Number	1		Rate of Strain	2.00	%/min
Length	198.66	mm	Cell Pressure	150	kPa
Diameter	102.32	mm	Axial Strain at failure	9.5	%
Bulk Density	1.90	Mg/m3	Deviator Stress, (σ1 - σ3)f	214	kPa
Moisture Content	29	%	Undrained Shear Strength, cu	107	kPa ½(σ1 - σ3)f
Dry Density	1.47	Mg/m3	Mode of Failure	Brittle	
			Membrane thickness	0.29	mm

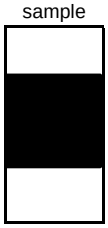
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Notes:

Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Comments:

Approved:

Dariusz Piotrowski
PL Laboratory Manager
Geotechnical Section

Signed:

Darren Berrill
Geotechnical General Manager

Date Reported: 01/03/2018

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Unconsolidated Undrained Triaxial Compression

Tested in Accordance with BS1377: Part 7: 1990, clause 8, single specimen

4041

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

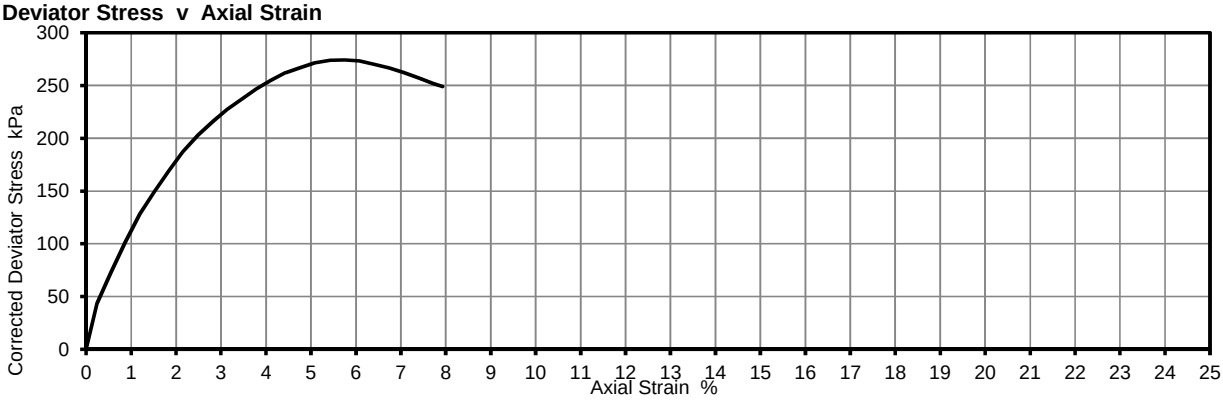
Client:	Jomas Associates Ltd	Client Reference:	JJ1303
Client Address:	Lakeside House 1 Furzeground Way Stockley Park UB11 1BD	Job Number:	18-76333
		Date Sampled:	Not Given
		Date Received:	15/02/2018
Contact:	Emma Hucker	Date Tested:	26/02/2018
Site Name:	138-140 Highgate Road, Highgate, London NW5 1PB	Sampled By:	Not Given
Site Address:	138-140 Highgate Road, Highgate, London NW5 1PB		

Test Result

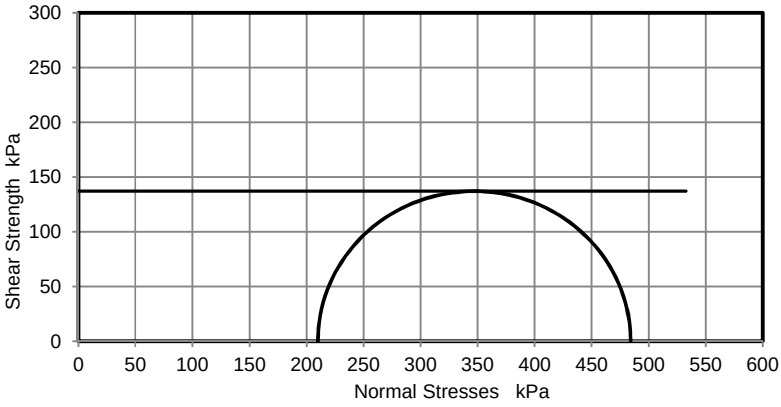
Laboratory Reference:	909878	Depth Top [m]:	10.50
Hole No.:	BH1	Depth Base [m]:	10.95
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Dark brown CLAY		

Test Number	1		Rate of Strain	2.00	%/min
Length	184.76	mm	Cell Pressure	210	kPa
Diameter	102.83	mm	Axial Strain at failure	5.8	%
Bulk Density	1.93	Mg/m3	Deviator Stress, (σ1 - σ3)f	274	kPa
Moisture Content	27	%	Undrained Shear Strength, cu	137	kPa ½(σ1 - σ3)f
Dry Density	1.52	Mg/m3	Mode of Failure	Brittle	
			Membrane thickness	0.28	mm

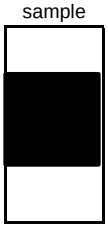
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Notes:

Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Comments:

Approved:

Dariusz Piotrowski
PL Laboratory Manager
Geotechnical Section

Signed:

Darren Berrill
Geotechnical General Manager

Date Reported: 01/03/2018

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Unconsolidated Undrained Triaxial Compression

Tested in Accordance with BS1377: Part 7: 1990, clause 8, single specimen

4041

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

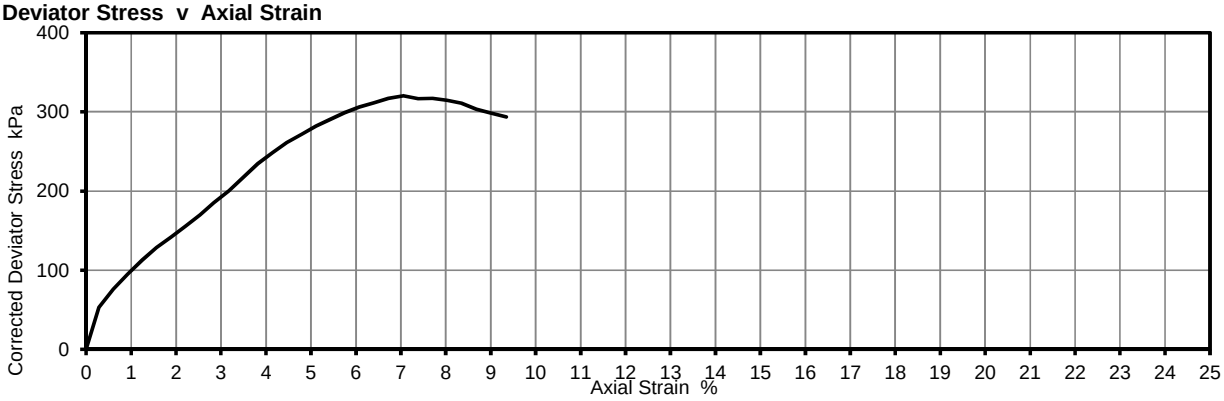
Client:	Jomas Associates Ltd	Client Reference:	JJ1303
Client Address:	Lakeside House 1 Furzeground Way Stockley Park UB11 1BD	Job Number:	18-76333
		Date Sampled:	Not Given
		Date Received:	15/02/2018
Contact:	Emma Hucker	Date Tested:	26/02/2018
Site Name:	138-140 Highgate Road, Highgate, London NW5 1PB	Sampled By:	Not Given
Site Address:	138-140 Highgate Road, Highgate, London NW5 1PB		

Test Result

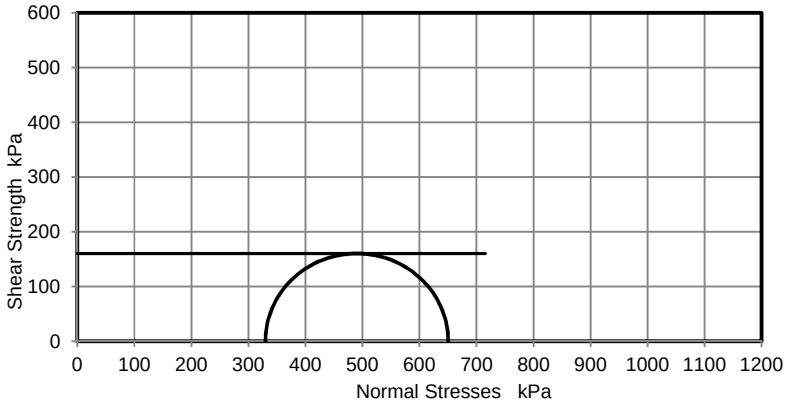
Laboratory Reference:	909880	Depth Top [m]:	16.50
Hole No.:	BH1	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Dark grey CLAY		

Test Number	1		Rate of Strain	1.98	%/min
Length	202.53	mm	Cell Pressure	330	kPa
Diameter	103.13	mm	Axial Strain at failure	7.1	%
Bulk Density	1.96	Mg/m3	Deviator Stress, (σ1 - σ3)f	320	kPa
Moisture Content	26	%	Undrained Shear Strength, cu	160	kPa ½(σ1 - σ3)f
Dry Density	1.55	Mg/m3	Mode of Failure	Brittle	
			Membrane thickness	0.29	mm

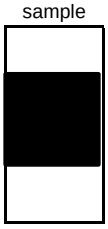
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Notes:

Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Comments:

Approved:

Dariusz Piotrowski
PL Laboratory Manager
Geotechnical Section

Signed:

Darren Berrill
Geotechnical General Manager

Date Reported: 01/03/2018

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Unconsolidated Undrained Triaxial Compression

Tested in Accordance with BS1377: Part 7: 1990, clause 8, single specimen

4041

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

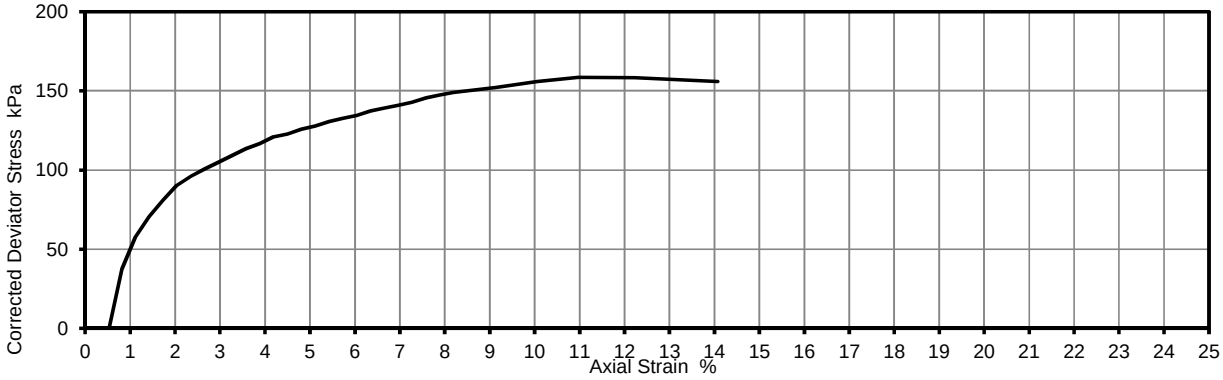
Client:	Jomas Associates Ltd	Client Reference:	JJ1303
Client Address:	Lakeside House 1 Furzeground Way Stockley Park UB11 1BD	Job Number:	18-76333
		Date Sampled:	Not Given
		Date Received:	15/02/2018
Contact:	Emma Hucker	Date Tested:	26/02/2018
Site Name:	138-140 Highgate Road, Highgate, London NW5 1PB	Sampled By:	Not Given
Site Address:	138-140 Highgate Road, Highgate, London NW5 1PB		

Test Result

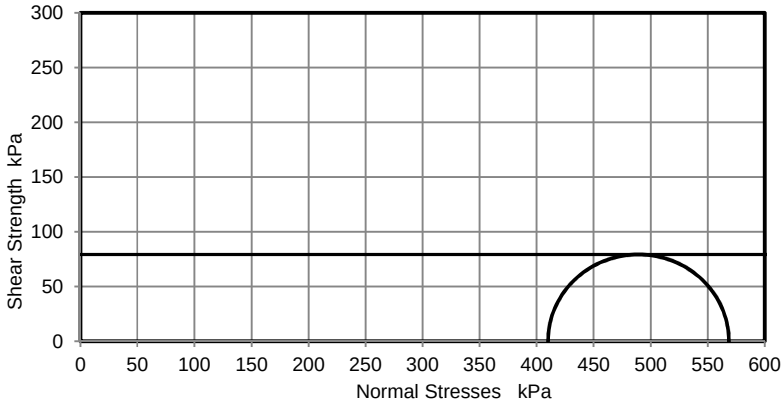
Laboratory Reference:	909882	Depth Top [m]:	20.50
Hole No.:	BH2	Depth Base [m]:	20.95
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Dark grey CLAY		

Test Number	1		Rate of Strain	1.88	%/min
Length	212.21	mm	Cell Pressure	410	kPa
Diameter	102.31	mm	Axial Strain at failure	11.0	%
Bulk Density	1.81	Mg/m3	Deviator Stress, (σ1 - σ3)f	159	kPa
Moisture Content	29	%	Undrained Shear Strength, cu	79	kPa ½(σ1 - σ3)f
Dry Density	1.40	Mg/m3	Mode of Failure	Brittle	
			Membrane thickness	0.28	mm

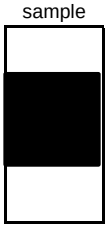
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Notes:

Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Comments:

Approved:

Dariusz Piotrowski
PL Laboratory Manager
Geotechnical Section

Signed:

Darren Berrill
Geotechnical General Manager

Date Reported: 01/03/2018

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of Unconsolidated Undrained Triaxial Compression

Tested in Accordance with BS1377: Part 7: 1990, clause 8, single specimen

4041

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

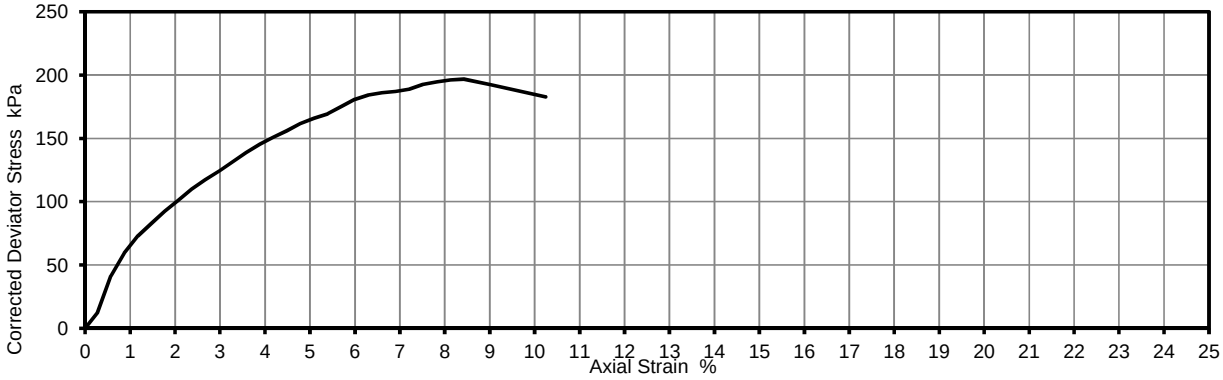
Client:	Jomas Associates Ltd	Client Reference:	JJ1303
Client Address:	Lakeside House 1 Furzeground Way Stockley Park UB11 1BD	Job Number:	18-76333
		Date Sampled:	Not Given
		Date Received:	15/02/2018
Contact:	Emma Hucker	Date Tested:	26/02/2018
Site Name:	138-140 Highgate Road, Highgate, London NW5 1PB	Sampled By:	Not Given
Site Address:	138-140 Highgate Road, Highgate, London NW5 1PB		

Test Result

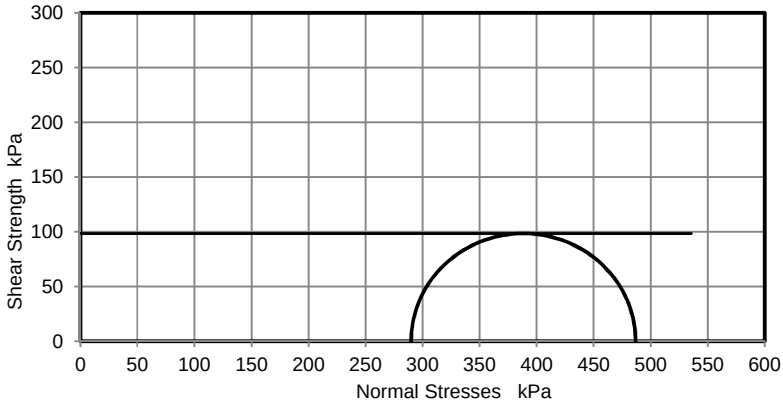
Laboratory Reference:	909883	Depth Top [m]:	14.50
Hole No.:	BH2	Depth Base [m]:	14.95
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Dark grey CLAY		

Test Number	1		Rate of Strain	1.84	%/min	
Length	217.26	mm	Cell Pressure	290	kPa	
Diameter	102.28	mm	Axial Strain at failure	8.4	%	
Bulk Density	1.99	Mg/m3	Deviator Stress, (σ1 - σ3)f	197	kPa	
Moisture Content	26	%	Undrained Shear Strength, cu	98	kPa	½(σ1 - σ3)f
Dry Density	1.58	Mg/m3	Mode of Failure	Brittle		
			Membrane thickness	0.27	mm	

Deviator Stress v Axial Strain



Mohr Circles



Position within sample

Notes:

Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

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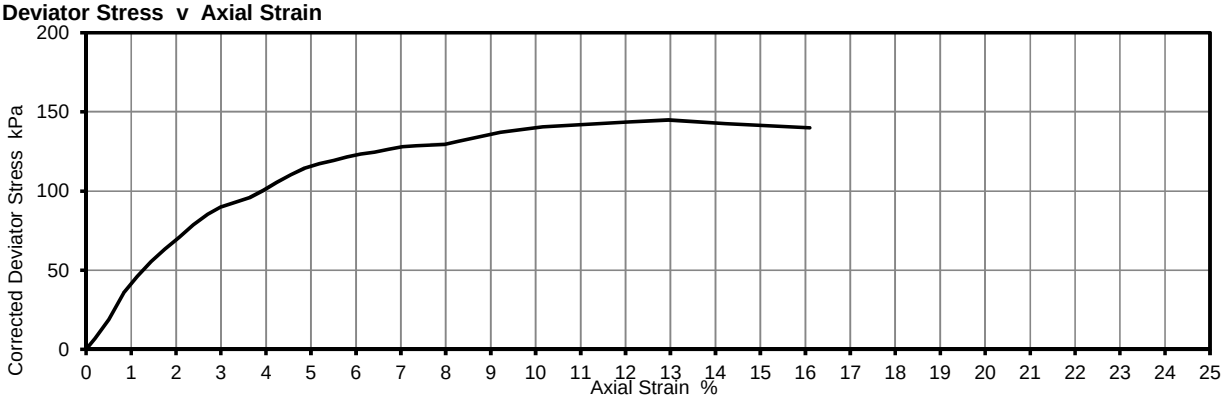
Client:	Jomas Associates Ltd	Client Reference:	JJ1303
Client Address:	Lakeside House 1 Furzeground Way Stockley Park UB11 1BD	Job Number:	18-76333
		Date Sampled:	Not Given
		Date Received:	15/02/2018
Contact:	Emma Hucker	Date Tested:	26/02/2018
Site Name:	138-140 Highgate Road, Highgate, London NW5 1PB	Sampled By:	Not Given
Site Address:	138-140 Highgate Road, Highgate, London NW5 1PB		

Test Result

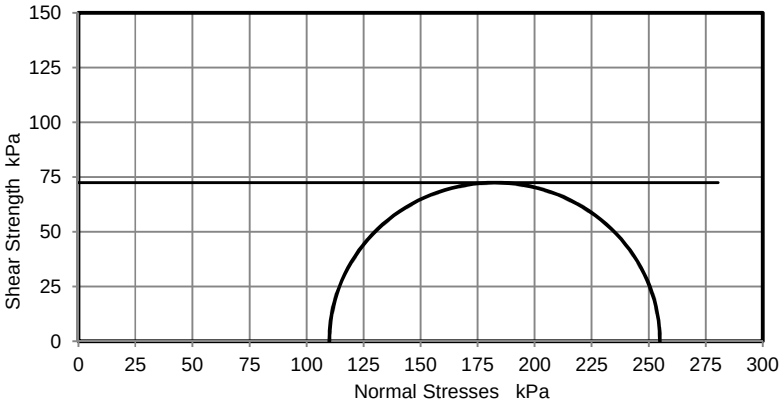
Laboratory Reference:	909884	Depth Top [m]:	5.50
Hole No.:	BH2	Depth Base [m]:	5.95
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Yellowish brown CLAY		

Test Number	1		Rate of Strain	1.90	%/min	
Length	210.47	mm	Cell Pressure	110	kPa	
Diameter	103.15	mm	Axial Strain at failure	13.0	%	
Bulk Density	1.86	Mg/m3	Deviator Stress, (σ1 - σ3)f	145	kPa	
Moisture Content	33	%	Undrained Shear Strength, cu	72	kPa	½(σ1 - σ3)f
Dry Density	1.39	Mg/m3	Mode of Failure	Brittle		
			Membrane thickness	0.27	mm	

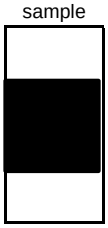
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Notes:

Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Comments:

Approved:

Dariusz Piotrowski
PL Laboratory Manager
Geotechnical Section

Signed:

Darren Berrill
Geotechnical General Manager

Date Reported: 01/03/2018

for and on behalf of i2 Analytical Ltd

APPENDIX 5 – SOIL GAS MONITORING TEST RESULTS

GAS AND GROUNDWATER MONITORING BOREHOLE RECORD SHEET

Site: Highgate Road	**Operative(s):** AJH	**Date:** 21/02/18	**Time:** 09:00	**Round: 1**	**Page:**

MONITORING EQUIPMENT

Instrument Type	**Instrument Make**	**Serial No.**	**Date Last Calibrated**
Analox	GA5000	G501805	10/01/2018
PID	Phocheck tiger	T-106448	03/10/2017
Dip Meter	GeoTech		

MONITORING CONDITIONS

Weather Conditions: Overcast	**Ground Conditions:** Dry	**Temperature**: 7°C
Barometric Pressure (mbar): 1023	**Barometric Pressure Trend (24hr):** Steady	**Ambient Concentration: 0.0** %CH_4, 0.2 %CO_2, 21.0%O_2

MONITORING RESULTS

Monitoring Point Location	Flow		Atmospheric Pressure (mbar)	CH_4 %	CH_4 % LEL	CO_2 %	O_2 %	VOC (ppm)		H_2S (ppm)	CO (ppm)	Depth to product (mbgl)	Depth to water (mbgl)	Depth to Base of well (mbgl)
	Peak	Steady						Peak	steady					
BH1	+0.1	+0.1	1023	0.0	/	1.1	19.5	5	5	0	17	/	Dry	5.10
WS1	0.0	0.0	1023	0.0	/	2.1	20.3	0	0	0	0	/	Dry	5.00
WS2**	0.0	0.0	1024	0.0	/	0.2	21.6	6	6	0	0	1.56	3.41	3.42
WS3*	0.0	0.0	1024	0.0	/	0.6	20.9	1	1	0	0	/	4.88	4.88
WS4	+0.2	+0.2	1024	0.0	/	0.5	20.3	0	0	0	4	/	4.67	4.93
WS5**	0.0	0.0	1023	4.9	/	0.8	4.4	54	54	0	8	1.52	1.77	4.95

* Open tap

** Oil layer, HC odour noted

GAS AND GROUNDWATER MONITORING BOREHOLE RECORD SHEET

Site: Highgate Road	**Operative(s):** AJH	**Date:** 26/02/18	**Time:** 12:00	**Round: 2**	**Page:**

MONITORING EQUIPMENT

Instrument Type	**Instrument Make**	**Serial No.**	**Date Last Calibrated**
Analox	GA5000	G501805	10/01/2018
PID	Phocheck tiger	T-106448	03/10/2017
Dip Meter	GeoTech		

MONITORING CONDITIONS

Weather Conditions: Clear	**Ground Conditions:** Dry	**Temperature**: 1°C
Barometric Pressure (mbar): 1026	**Barometric Pressure Trend (24hr):** Steady then falling	**Ambient Concentration: 0.0** %CH_4, 0.3 %CO_2, 20.7%O_2

MONITORING RESULTS

Monitoring Point Location	Flow		Atmospheric Pressure (mbar)	CH_4 %	CH_4 % LEL	CO_2 %	O_2 %	VOC (ppm)		H_2S (ppm)	CO (ppm)	Depth to product (mbgl)	Depth to water (mbgl)	Depth to Base of well (mbgl)
	Peak	Steady						Peak	steady					
BH1	+0.1	+0.1	1026	0.0	/	1.9	18.9	2	2	0	7	/	Dry	5.07
WS1	+0.1	+0.1	1027	0.0	/	3.4	19.2	0	0	0	0	/	Dry	5.02
WS2*	0.0	0.0	1027	0.0	/	0.2	21.0	18	18	0	0	1.55	2.23	3.42
WS3	+0.1	+0.1	1027	0.0	/	1.1	20.3	0	0	0	0	/	4.86	4.89
WS4	0.0	0.0	1026	0.0	/	1.1	19.0	1	1	0	0	/	4.90	4.94
WS5*	-0.1	-0.1	1026	3.5	/	1.0	4.1	145	145	0	1	1.54	1.85	4.95

* Oil layer, HC odour noted

GAS AND GROUNDWATER MONITORING BOREHOLE RECORD SHEET

Site: Highgate Road	**Operative(s):** JWT	**Date:** 26/02/18	**Time:** 09:30	**Round: 3**	**Page:**

MONITORING EQUIPMENT

Instrument Type	**Instrument Make**	**Serial No.**	**Date Last Calibrated**
Analox	GA5000	G501805	10/01/2018
PID	Phocheck tiger	T-106448	03/10/2017
Dip Meter	GeoTech		

MONITORING CONDITIONS

Weather Conditions: Sunny	**Ground Conditions:** Wet	**Temperature**: 6°C
Barometric Pressure (mbar): 986	**Barometric Pressure Trend (24hr):** Steady then falling	**Ambient Concentration: 0.0** %CH_4, 0.2 %CO_2, 21.0%O_2

MONITORING RESULTS

Monitoring Point Location	Flow		Atmospheric Pressure (mbar)	CH_4 %	CH_4 % LEL	CO_2 %	O_2 %	VOC (ppm)		H_2S (ppm)	CO (ppm)	Depth to product (mbgl)	Depth to water (mbgl)	Depth to Base of well (mbgl)
	Peak	Steady						Peak	steady					
BH1	+0.2	+0.2	987	0.0	/	1.6	19.2	0	0	0	0	/	Dry	5.07
WS1	0.0	0.0	987	0.0	/	3.4	19.2	0	0	0	0	/	Dry	5.02
WS2*	-0.1	-0.1	987	0.0	/	0.3	20.7	16	16	0	1	1.52	2.62	3.42
WS3	+0.1	+0.1	987	0.0	/	0.3	20.9	2	1	0	0	/	4.81	4.89
WS4	+0.2	+0.2	987	0.0	/	1.6	18.4	3	3	0	0	/	Dry	4.94
WS5*	-0.4	-0.4	987	3.0	/	0.9	0.4	27	27	1	2	1.49	1.64	4.95

* Oil layer, HC odour noted

GAS AND GROUNDWATER MONITORING BOREHOLE RECORD SHEET

Site: Highgate Road	**Operative(s):** JWT	**Date:** 15/03/18	**Time:** 09:40	**Round: 4**	**Page:**

MONITORING EQUIPMENT

Instrument Type	**Instrument Make**	**Serial No.**	**Date Last Calibrated**
Analox	GA5000	G501805	10/01/2018
PID	Phocheck tiger	T-106448	03/10/2017
Dip Meter	GeoTech		

MONITORING CONDITIONS

Weather Conditions: Overcast	**Ground Conditions:** Wet	**Temperature**: 10°C
Barometric Pressure (mbar): 985	**Barometric Pressure Trend (24hr):** Steady then falling	**Ambient Concentration: 0.0** %CH_4, 0.2 %CO_2, 20.8%O_2

MONITORING RESULTS

Monitoring Point Location	Flow		Atmospheric Pressure (mbar)	CH_4 %	CH_4 % LEL	CO_2 %	O_2 %	VOC (ppm)		H_2S (ppm)	CO (ppm)	Depth to product (mbgl)	Depth to water (mbgl)	Depth to Base of well (mbgl)
	Peak	Steady						Peak	steady					
BH1*	/	/	/	/	/	/	/	/	/	/	/	/	/	/
WS1	0.0	0.0	985	0.0	/	3.5	18.7	8	8	0	0	/	Dry	5.01
WS2**	+0.1	+0.1	986	0.1	/	0.7	20.1	21	21	0	2	1.49	**	3.42
WS3	0.0	0.0	986	0.0	/	1.3	20.3	4	2	0	0	/	4.66	4.86
WS4	+0.4	+0.4	986	0.0	/	2.3	16.4	5	4	0	0	/	4.37	4.93
WS5**	-0.3	-0.3	985	4.3	/	0.9	1.2	76	76	1	2	1.48	**	4.92

*Could not be accessed due to parked vehicle
**No interface probe to measure difference in product/water. Dip-meter used to measure depth to product.

LOW FLOW GROUNDWATER MONITORING BOREHOLE RECORD SHEET

Site: Highgate Road	**Operative(s):** AJH	**Date:** 21/02/18	**Time:** 09:00	**Round: 1**	**Page:** 1 of

MONITORING EQUIPMENT

Instrument Type	**Instrument Make**	**Serial No.**	**Date Last Calibrated**
SmarTROLL MP	In-Situ		
Dip Meter	In-Situ		

MONITORING CONDITIONS

Weather Conditions: Overcast	**Ground Conditions:** Dry	**Temperature**: 7°C

Hole ID	Temperature (°C)	Specific Conductivity (µS/cm)	pH	(ORP) Oxidation-Reduction Potential (mV)	(RDO) Rugged Dissolved Oxygen Concentration (mg/L)	Water Level (Start of testing)	Water Level (End of testing)	Hole Depth	Comments
WS2	-	-	-	-	-	-	-	-	Clear with layer of oil, sheen, strong H/C odour. Oil sticking to sample piping
WS4	10.39	6101.3	6.93	214.9	2.95	4.80	Full Purge	4.95	Turbid, no odour, no sheen, did not stabilise, no recharge rate.
WS5	-	-	-	-	-	-	-	-	Clear with droplets of oil, sheen, strong H/C odour. Oil sticking to sample piping

Specific Conductivity (µS/cm)

This is a measure of the capability of a solution such as water in a stream to pass an electric current. This is an indicator of the concentration of dissolved electrolyte ions in the water. It doesn't identify the specific ions in the water. However, significant increases in conductivity may be an indicator that polluting discharges have entered the water.

Every creek will have a baseline conductivity depending on the local geology and soils. Higher conductivity will result from the presence of various ions including nitrate, phosphate, and sodium.

The basic unit of measurement for conductivity is micromhos per centimeter (µmhos/cm) or microsiemens per centimeter (µS/cm). Either can be used, they are the same. It is a measure of the inverse of the amount of resistance an electric charge meets in traveling through the water. Distilled water has a conductivity ranging from 0.5 to 3 µS/cm, while most streams range between 50 to 1500 µS/cm. Freshwater streams ideally should have a conductivity between 150 to 500 µS/cm to support diverse aquatic life.

pH

A measure of a solution's acidity. In water, small numbers of water molecules (H2O) will break apart or disassociate into hydrogen ions (H+) and hydroxide ions (OH-). Other compounds entering the water may react with these, leaving an imbalance in the numbers of hydrogen and hydroxide ions. When more hydrogen ions react, more hydroxide ions are left in solution and the water is basic; when more hydroxide ions react, more hydrogen ions are left and the water is acidic. pH is a measure of the number of hydrogen ions and thus a measure of acidity.

pH is measured on a logarithmic scale between 1 and 14 with 1 being extremely acid, 7 neutral, and 14 extremely basic. Because it is a logarithmic scale there is a ten fold increase in acidity for a change of one unit of pH, e.g. 5 is 100 times more acid than 7 on the pH scale. The largest variety of freshwater aquatic organisms prefer a pH range between 6.5 to 8.0.

(RDO) Rugged Dissolved Oxygen Concentration (mg/L)

Dissolved oxygen is oxygen gas molecules (O2) present in the water. Plants and animals cannot directly use the oxygen that is part of the water molecule (H2O), instead depending on dissolved oxygen for respiration. Oxygen enters streams from the surrounding air and as a product of photosynthesis from aquatic plants. Consistently high levels of dissolved oxygen are best for a healthy ecosystem.

Levels of dissolved oxygen vary depending on factors including water temperature, time of day, season, depth, altitude, and rate of flow. Water at higher temperatures and altitudes will have less dissolved oxygen. Dissolved oxygen reaches its peak during the day. At night, it decreases as photosynthesis has stopped while oxygen consuming processes such as respiration, oxidation, and respiration continue, until shortly before dawn.

Human factors that affect dissolved oxygen in streams include addition of oxygen consuming organic wastes such as sewage, addition of nutrients, changing the flow of water, raising the water temperature, and the addition of chemicals.

Dissolved oxygen is measured in mg/L.

0-2 mg/L: not enough oxygen to support life.
2-4 mg/L: only a few fish and aquatic insects can survive.
4-7 mg/L: good for many aquatic animals, low for cold water fish
7-11 mg/L: very good for most stream fish

(ORP) Oxidation- Reduction Potential (mV)

ORP is a measure of the cleanliness of thewater & its ability to break down contaminants". It has a range of –2,000 to + 2,000 and units are in "mV" (millivolts).

APPENDIX 6 – OASYS GMA CALCULATIONS

Utility Strain Calculation Options

Neglect beneficial contribution of axial strains : No

Specific Building Damage Results - Horizontal Displacements

Structure: GVA-1 | Sub-structure: GVA-1

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	9.25200	89.52300	100.50000	0.0	0.0	0.0	0.0 d
0.48595	9.22654	89.03772	100.50000	0.0	0.0	0.0	0.0 d
0.97189	9.20108	88.55244	100.50000	0.0	0.0	0.0	0.0 d
1.4578	9.17562	88.06716	100.50000	0.0	0.0	0.0	0.0 d
1.9438	9.15016	87.58188	100.50000	0.0	0.0	0.0	0.0 d
2.4297	9.12470	87.09660	100.50000	0.0	0.0	0.0	0.0 d
2.9157	9.09924	86.61132	100.50000	0.0	0.0	0.0	0.0 d
3.4016	9.07378	86.12604	100.50000	0.0	0.0	0.0	0.0 d
3.8876	9.04832	85.64076	100.50000	0.0	0.0	0.0	0.0 d
4.3735	9.02286	85.15548	100.50000	0.0	0.0	0.0	0.0 d
4.8595	8.99740	84.67020	100.50000	0.0	0.0	0.0	0.0 d
5.3454	8.97194	84.18492	100.50000	0.0	0.0	0.0	0.0 d
5.8314	8.94648	83.69964	100.50000	0.0	0.0	0.0	0.0 d
6.3173	8.92102	83.21436	100.50000	0.0	0.0	0.0	0.0 d
6.8033	8.89556	82.72908	100.50000	0.0	0.0	0.0	0.0 d
7.2892	8.87010	82.24380	100.50000	0.0	0.0	0.0	0.0 d
7.7752	8.84464	81.75852	100.50000	0.0	0.0	0.0	0.0 d
8.2611	8.81918	81.27324	100.50000	0.0	0.0	0.0	0.0 d
8.7471	8.79372	80.78796	100.50000	0.0	0.0	0.0	0.0 d
9.2330	8.76826	80.30268	100.50000	0.0	0.0	0.0	0.0 d
9.7189	8.74280	79.81740	100.50000	0.0	0.0	0.0	0.0 d
10.205	8.71734	79.33212	100.50000	0.0	0.0	0.0	0.0 d
10.691	8.69188	78.84684	100.50000	0.0	0.0	0.0	0.0 d
11.177	8.66642	78.36156	100.50000	0.0	0.0	0.0	0.0 d
11.663	8.64096	77.87628	100.50000	0.0	0.0	0.0	0.0 d
12.149	8.61550	77.39100	100.50000	0.0	0.0	0.0	0.0 d
12.635	8.59004	76.90572	100.50000	0.0	0.0	0.0	0.0 d
13.121	8.56458	76.42044	100.50000	0.0	0.0	0.0	0.0 d
13.607	8.53912	75.93516	100.50000	0.0	0.0	0.0	0.0 d
14.092	8.51366	75.44988	100.50000	0.0	0.0	0.0	0.0 d
14.578	8.48820	74.96460	100.50000	0.0	0.0	0.0	0.0 d
15.064	8.46274	74.47932	100.50000	0.0	0.0	0.0	0.0 d
15.550	8.43728	73.99404	100.50000	0.0	0.0	0.0	0.0 d
16.036	8.41182	73.50876	100.50000	0.0	0.0	0.0	0.0 d
16.522	8.38636	73.02348	100.50000	0.0	0.0	0.0	0.0 d
17.008	8.36090	72.53820	100.50000	0.0	0.0	0.0	0.0 d
17.494	8.33544	72.05292	100.50000	0.0	0.0	0.0	0.0 d
17.980	8.30998	71.56764	100.50000	0.0	0.0	0.0	0.0 d
18.466	8.28452	71.08236	100.50000	0.0	0.0	0.0	0.0 d
18.952	8.25906	70.59708	100.50000	0.0	0.0	0.0	0.0 d
19.438	8.23360	70.11180	100.50000	0.0	0.0	0.0	0.0 d
19.924	8.20814	69.62652	100.50000	0.0	0.0	0.0	0.0 d
20.410	8.18268	69.14124	100.50000	0.0	0.0	0.0	0.0 d
20.896	8.15722	68.65596	100.50000	0.0	0.0	0.0	0.0 d
21.382	8.13176	68.17068	100.50000	0.0	0.0	0.0	0.0 d
21.868	8.10630	67.68540	100.50000	0.0	0.0	0.0	0.0 d
22.354	8.08084	67.20012	100.50000	0.0	0.0	0.0	0.0 d
22.840	8.05538	66.71484	100.50000	0.0	0.0	0.0	0.0 d
23.325	8.02992	66.22956	100.50000	0.0	0.0	0.0	0.0 d
23.811	8.00446	65.74428	100.50000	0.0	0.0	0.0	0.0 d
24.297	7.97900	65.25900	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-2 | Sub-structure: GVA-2

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	7.97900	65.25900	100.50000	0.0	0.0	0.0	0.0 d
0.48050	7.95067	64.77933	100.50000	0.0	0.0	0.0	0.0 d
0.96101	7.92233	64.29967	100.50000	0.0	0.0	0.0	0.0 d
1.4415	7.89400	63.82000	100.50000	0.0	0.0	0.0	0.0 d
1.9220	7.86567	63.34033	100.50000	0.0	0.0	0.0	0.0 d
2.4025	7.83733	62.86067	100.50000	0.0	0.0	0.0	0.0 d
2.8830	7.80900	62.38100	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-3 | Sub-structure: GVA-3

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	7.80900	62.38100	100.50000	0.0	0.0	0.0	0.0 d
0.47715	8.28487	62.34613	100.50000	0.0	0.0	0.0	0.0 d
0.95430	8.76075	62.31125	100.50000	0.0	0.0	0.0	0.0 d
1.4315	9.23663	62.27638	100.50000	0.0	0.0	0.0	0.0 d
1.9086	9.71250	62.24150	100.50000	0.0	0.0	0.0	0.0 d
2.3858	10.18838	62.20662	100.50000	0.0	0.0	0.0	0.0 d
2.8629	10.66425	62.17175	100.50000	0.0	0.0	0.0	0.0 d
3.3401	11.14012	62.13687	100.50000	0.0	0.0	0.0	0.0 d
3.8172	11.61600	62.10200	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-4 | Sub-structure: GVA-4

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	11.61600	62.10200	100.50000	0.0	0.0	0.0	0.0 d
0.47359	11.65050	62.57433	100.50000	0.0	0.0	0.0	0.0 d
0.94718	11.68500	63.04667	100.50000	0.0	0.0	0.0	0.0 d
1.4208	11.71950	63.51900	100.50000	0.0	0.0	0.0	0.0 d
1.8944	11.75400	63.99133	100.50000	0.0	0.0	0.0	0.0 d
2.3680	11.78850	64.46367	100.50000	0.0	0.0	0.0	0.0 d
2.8415	11.82300	64.93600	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-5 | Sub-structure: GVA-5

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	11.82300	64.93600	100.50000	0.0	0.0	0.0	0.0 d
0.48843	12.31013	64.90031	100.50000	0.0	0.0	0.0	0.0 d
0.97686	12.79725	64.86463	100.50000	0.0	0.0	0.0	0.0 d
1.4653	13.28438	64.82894	100.50000	0.0	0.0	0.0	0.0 d

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
1.9537	13.77150	64.79325	100.50000	0.0	0.0	0.0	0.0 d
2.4422	14.25863	64.75756	100.50000	0.0	0.0	0.0	0.0 d
2.9306	14.74575	64.72187	100.50000	0.0	0.0	0.0	0.0 d
3.4190	15.23288	64.68619	100.50000	0.0	0.0	0.0	0.0 d
3.9074	15.72000	64.65050	100.50000	0.0	0.0	0.0	0.0 d
4.3959	16.20713	64.61481	100.50000	0.0	0.0	0.0	0.0 d
4.8843	16.69425	64.57913	100.50000	0.0	0.0	0.0	0.0 d
5.3727	17.18138	64.54344	100.50000	0.0	0.0	0.0	0.0 d
5.8612	17.66850	64.50775	100.50000	0.0	0.0	0.0	0.0 d
6.3496	18.15563	64.47206	100.50000	0.0	0.0	0.0	0.0 d
6.8380	18.64275	64.43637	100.50000	0.0	0.0	0.0	0.0 d
7.3265	19.12988	64.40069	100.50000	0.0	0.0	0.0	0.0 d
7.8149	19.61700	64.36500	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-6 | Sub-structure: GVA-6

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	19.61700	64.36500	100.50000	0.0	0.0	0.0	0.0 d
0.49248	19.58100	63.87383	100.50000	0.0	0.0	0.0	0.0 d
0.98497	19.54500	63.38267	100.50000	0.0	0.0	0.0	0.0 d
1.4775	19.50900	62.89150	100.50000	0.0	0.0	0.0	0.0 d
1.9699	19.47300	62.40033	100.50000	0.0	0.0	0.0	0.0 d
2.4624	19.43700	61.90917	100.50000	0.0	0.0	0.0	0.0 d
2.9549	19.40100	61.41800	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-7 | Sub-structure: GVA-7

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	19.40100	61.41800	100.50000	0.0	0.0	0.0	0.0 d
0.46449	19.86425	61.38412	100.50000	0.0	0.0	0.0	0.0 d
0.92897	20.32750	61.35025	100.50000	0.0	0.0	0.0	0.0 d
1.3935	20.79075	61.31638	100.50000	0.0	0.0	0.0	0.0 d
1.8579	21.25400	61.28250	100.50000	0.0	0.0	0.0	0.0 d
2.3224	21.71725	61.24862	100.50000	0.0	0.0	0.0	0.0 d
2.7869	22.18050	61.21475	100.50000	0.0	0.0	0.0	0.0 d
3.2514	22.64375	61.18088	100.50000	0.0	0.0	0.0	0.0 d
3.7159	23.10700	61.14700	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-8 | Sub-structure: GVA-8

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	23.10700	61.14700	100.50000	0.0	0.0	0.0	0.0 d
0.49250	23.13267	61.63883	100.50000	0.0	0.0	0.0	0.0 d
0.98501	23.15833	62.13067	100.50000	0.0	0.0	0.0	0.0 d
1.4775	23.18400	62.62250	100.50000	0.0	0.0	0.0	0.0 d
1.9700	23.20967	63.11433	100.50000	0.0	0.0	0.0	0.0 d
2.4625	23.23533	63.60617	100.50000	0.0	0.0	0.0	0.0 d
2.9550	23.26100	64.09800	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-9 | Sub-structure: GVA-9

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	23.26100	64.09800	100.50000	0.0	0.0	0.0	0.0 d
0.49313	23.28670	64.59046	100.50000	0.0	0.0	0.0	0.0 d
0.98626	23.31240	65.08292	100.50000	0.0	0.0	0.0	0.0 d
1.4794	23.33810	65.57538	100.50000	0.0	0.0	0.0	0.0 d
1.9725	23.36380	66.06784	100.50000	0.0	0.0	0.0	0.0 d
2.4657	23.38950	66.56030	100.50000	0.0	0.0	0.0	0.0 d
2.9588	23.41520	67.05276	100.50000	0.0	0.0	0.0	0.0 d
3.4519	23.44090	67.54522	100.50000	0.0	0.0	0.0	0.0 d
3.9450	23.46660	68.03768	100.50000	0.0	0.0	0.0	0.0 d
4.4382	23.49230	68.53014	100.50000	0.0	0.0	0.0	0.0 d
4.9313	23.51800	69.02260	100.50000	0.0	0.0	0.0	0.0 d
5.4244	23.54370	69.51506	100.50000	0.0	0.0	0.0	0.0 d
5.9176	23.56940	70.00752	100.50000	0.0	0.0	0.0	0.0 d
6.4107	23.59510	70.49998	100.50000	0.0	0.0	0.0	0.0 d
6.9038	23.62080	70.99244	100.50000	0.0	0.0	0.0	0.0 d
7.3970	23.64650	71.48490	100.50000	0.0	0.0	0.0	0.0 d
7.8901	23.67220	71.97736	100.50000	0.0	0.0	0.0	0.0 d
8.3832	23.69790	72.46982	100.50000	0.0	0.0	0.0	0.0 d
8.8763	23.72360	72.96228	100.50000	0.0	0.0	0.0	0.0 d
9.3695	23.74930	73.45474	100.50000	0.0	0.0	0.0	0.0 d
9.8626	23.77500	73.94720	100.50000	0.0	0.0	0.0	0.0 d
10.356	23.80070	74.43966	100.50000	0.0	0.0	0.0	0.0 d
10.849	23.82640	74.93212	100.50000	0.0	0.0	0.0	0.0 d
11.342	23.85210	75.42458	100.50000	0.0	0.0	0.0	0.0 d
11.835	23.87780	75.91704	100.50000	0.0	0.0	0.0	0.0 d
12.328	23.90350	76.40950	100.50000	0.0	0.0	0.0	0.0 d
12.821	23.92920	76.90196	100.50000	0.0	0.0	0.0	0.0 d
13.315	23.95490	77.39442	100.50000	0.0	0.0	0.0	0.0 d
13.808	23.98060	77.88688	100.50000	0.0	0.0	0.0	0.0 d
14.301	24.00630	78.37934	100.50000	0.0	0.0	0.0	0.0 d
14.794	24.03200	78.87180	100.50000	0.0	0.0	0.0	0.0 d
15.287	24.05770	79.36426	100.50000	0.0	0.0	0.0	0.0 d
15.780	24.08340	79.85672	100.50000	0.0	0.0	0.0	0.0 d
16.273	24.10910	80.34918	100.50000	0.0	0.0	0.0	0.0 d
16.766	24.13480	80.84164	100.50000	0.0	0.0	0.0	0.0 d
17.260	24.16050	81.33410	100.50000	0.0	0.0	0.0	0.0 d
17.753	24.18620	81.82656	100.50000	0.0	0.0	0.0	0.0 d
18.246	24.21190	82.31902	100.50000	0.0	0.0	0.0	0.0 d
18.739	24.23760	82.81148	100.50000	0.0	0.0	0.0	0.0 d
19.232	24.26330	83.30394	100.50000	0.0	0.0	0.0	0.0 d
19.725	24.28900	83.79640	100.50000	0.0	0.0	0.0	0.0 d
20.218	24.31470	84.28886	100.50000	0.0	0.0	0.0	0.0 d
20.711	24.34040	84.78132	100.50000	0.0	0.0	0.0	0.0 d
21.205	24.36610	85.27378	100.50000	0.0	0.0	0.0	0.0 d
21.698	24.39180	85.76624	100.50000	0.0	0.0	0.0	0.0 d
22.191	24.41750	86.25870	100.50000	0.0	0.0	0.0	0.0 d
22.684	24.44320	86.75116	100.50000	0.0	0.0	0.0	0.0 d
23.177	24.46890	87.24362	100.50000	0.0	0.0	0.0	0.0 d
23.670	24.49460	87.73608	100.50000	0.0	0.0	0.0	0.0 d
24.163	24.52030	88.22854	100.50000	0.0	0.0	0.0	0.0 d
24.657	24.54600	88.72100	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-10 | Sub-structure: GVA-10

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement	Horizontal displacement

						along the Line	perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	24.54600	88.72100	100.50000	0.0	0.0	0.0	0.0	d
0.47859	24.06806	88.74606	100.50000	0.0	0.0	0.0	0.0	d
0.95719	23.59013	88.77112	100.50000	0.0	0.0	0.0	0.0	d
1.4358	23.11219	88.79619	100.50000	0.0	0.0	0.0	0.0	d
1.9144	22.63425	88.82125	100.50000	0.0	0.0	0.0	0.0	d
2.3930	22.15631	88.84631	100.50000	0.0	0.0	0.0	0.0	d
2.8716	21.67837	88.87138	100.50000	0.0	0.0	0.0	0.0	d
3.3502	21.20044	88.89644	100.50000	0.0	0.0	0.0	0.0	d
3.8288	20.72250	88.92150	100.50000	0.0	0.0	0.0	0.0	d
4.3073	20.24456	88.94656	100.50000	0.0	0.0	0.0	0.0	d
4.7859	19.76662	88.97163	100.50000	0.0	0.0	0.0	0.0	d
5.2645	19.28869	88.99669	100.50000	0.0	0.0	0.0	0.0	d
5.7431	18.81075	89.02175	100.50000	0.0	0.0	0.0	0.0	d
6.2217	18.33281	89.04681	100.50000	0.0	0.0	0.0	0.0	d
6.7003	17.85488	89.07188	100.50000	0.0	0.0	0.0	0.0	d
7.1789	17.37694	89.09694	100.50000	0.0	0.0	0.0	0.0	d
7.6575	16.89900	89.12200	100.50000	0.0	0.0	0.0	0.0	d
8.1361	16.42106	89.14706	100.50000	0.0	0.0	0.0	0.0	d
8.6147	15.94313	89.17212	100.50000	0.0	0.0	0.0	0.0	d
9.0933	15.46519	89.19719	100.50000	0.0	0.0	0.0	0.0	d
9.5719	14.98725	89.22225	100.50000	0.0	0.0	0.0	0.0	d
10.050	14.50931	89.24731	100.50000	0.0	0.0	0.0	0.0	d
10.529	14.03138	89.27237	100.50000	0.0	0.0	0.0	0.0	d
11.008	13.55344	89.29744	100.50000	0.0	0.0	0.0	0.0	d
11.486	13.07550	89.32250	100.50000	0.0	0.0	0.0	0.0	d
11.965	12.59756	89.34756	100.50000	0.0	0.0	0.0	0.0	d
12.443	12.11963	89.37262	100.50000	0.0	0.0	0.0	0.0	d
12.922	11.64169	89.39769	100.50000	0.0	0.0	0.0	0.0	d
13.401	11.16375	89.42275	100.50000	0.0	0.0	0.0	0.0	d
13.879	10.68581	89.44781	100.50000	0.0	0.0	0.0	0.0	d
14.358	10.20788	89.47288	100.50000	0.0	0.0	0.0	0.0	d
14.836	9.72994	89.49794	100.50000	0.0	0.0	0.0	0.0	d
15.315	9.25200	89.52300	100.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: GE-1 | Sub-structure: GE-1

Dist.	Coordinates					Displacements		
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	28.56700	64.11000	100.50000	0.0	0.0	0.0	0.0	d
0.49454	29.06094	64.13431	100.50000	0.0	0.0	0.0	0.0	d
0.98907	29.55487	64.15863	100.50000	0.0	0.0	0.0	0.0	d
1.4836	30.04881	64.18294	100.50000	0.0	0.0	0.0	0.0	d
1.9781	30.54275	64.20725	100.50000	0.0	0.0	0.0	0.0	d
2.4727	31.03669	64.23156	100.50000	0.0	0.0	0.0	0.0	d
2.9672	31.53063	64.25588	100.50000	0.0	0.0	0.0	0.0	d
3.4617	32.02456	64.28019	100.50000	0.0	0.0	0.0	0.0	d
3.9563	32.51850	64.30450	100.50000	0.0	0.0	0.0	0.0	d
4.4508	33.01244	64.32881	100.50000	0.0	0.0	0.0	0.0	d
4.9454	33.50637	64.35312	100.50000	0.0	0.0	0.0	0.0	d
5.4399	34.00031	64.37744	100.50000	0.0	0.0	0.0	0.0	d
5.9344	34.49425	64.40175	100.50000	0.0	0.0	0.0	0.0	d
6.4290	34.98819	64.42606	100.50000	0.0	0.0	0.0	0.0	d
6.9235	35.48212	64.45037	100.50000	0.0	0.0	0.0	0.0	d
7.4180	35.97606	64.47469	100.50000	0.0	0.0	0.0	0.0	d
7.9126	36.47000	64.49900	100.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: GE-2 | Sub-structure: GE-2

Dist.	Coordinates					Displacements		
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	36.47000	64.49900	100.50000	0.0	0.0	0.0	0.0	d
0.49291	36.44014	64.99100	100.50000	0.0	0.0	0.0	0.0	d
0.98581	36.41029	65.48300	100.50000	0.0	0.0	0.0	0.0	d
1.4787	36.38043	65.97500	100.50000	0.0	0.0	0.0	0.0	d
1.9716	36.35057	66.46700	100.50000	0.0	0.0	0.0	0.0	d
2.4645	36.32071	66.95900	100.50000	0.0	0.0	0.0	0.0	d
2.9574	36.29086	67.45100	100.50000	0.0	0.0	0.0	0.0	d
3.4503	36.26100	67.94300	100.50000	0.0	0.0	0.0	0.0	d
3.9432	36.23114	68.43500	100.50000	0.0	0.0	0.0	0.0	d
4.4361	36.20129	68.92700	100.50000	0.0	0.0	0.0	0.0	d
4.9291	36.17143	69.41900	100.50000	0.0	0.0	0.0	0.0	d
5.4220	36.14157	69.91100	100.50000	0.0	0.0	0.0	0.0	d
5.9149	36.11171	70.40300	100.50000	0.0	0.0	0.0	0.0	d
6.4078	36.08186	70.89500	100.50000	0.0	0.0	0.0	0.0	d
6.9007	36.05200	71.38700	100.50000	0.0	0.0	0.0	0.0	d
7.3936	36.02214	71.87900	100.50000	0.0	0.0	0.0	0.0	d
7.8865	35.99229	72.37100	100.50000	0.0	0.0	0.0	0.0	d
8.3794	35.96243	72.86300	100.50000	0.0	0.0	0.0	0.0	d
8.8723	35.93257	73.35500	100.50000	0.0	0.0	0.0	0.0	d
9.3652	35.90271	73.84700	100.50000	0.0	0.0	0.0	0.0	d
9.8581	35.87286	74.33900	100.50000	0.0	0.0	0.0	0.0	d
10.351	35.84300	74.83100	100.50000	0.0	0.0	0.0	0.0	d
10.844	35.81314	75.32300	100.50000	0.0	0.0	0.0	0.0	d
11.337	35.78329	75.81500	100.50000	0.0	0.0	0.0	0.0	d
11.830	35.75343	76.30700	100.50000	0.0	0.0	0.0	0.0	d
12.323	35.72357	76.79900	100.50000	0.0	0.0	0.0	0.0	d
12.816	35.69371	77.29100	100.50000	0.0	0.0	0.0	0.0	d
13.308	35.66386	77.78300	100.50000	0.0	0.0	0.0	0.0	d
13.801	35.63400	78.27500	100.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: GE-3 | Sub-structure: GE-3

Dist.	Coordinates					Displacements		
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	35.63400	78.27500	100.50000	0.0	0.0	0.0	0.0	d
0.47806	35.15681	78.24606	100.50000	0.0	0.0	0.0	0.0	d
0.95613	34.67963	78.21713	100.50000	0.0	0.0	0.0	0.0	d
1.4342	34.20244	78.18819	100.50000	0.0	0.0	0.0	0.0	d
1.9123	33.72525	78.15925	100.50000	0.0	0.0	0.0	0.0	d
2.3903	33.24806	78.13031	100.50000	0.0	0.0	0.0	0.0	d
2.8684	32.77087	78.10138	100.50000	0.0	0.0	0.0	0.0	d
3.3464	32.29369	78.07244	100.50000	0.0	0.0	0.0	0.0	d
3.8245	31.81650	78.04350	100.50000	0.0	0.0	0.0	0.0	d
4.3026	31.33931	78.01456	100.50000	0.0	0.0	0.0	0.0	d
4.7806	30.86212	77.98562	100.50000	0.0	0.0	0.0	0.0	d
5.2587	30.38494	77.95669	100.50000	0.0	0.0	0.0	0.0	d
5.7368	29.90775	77.92775	100.50000	0.0	0.0	0.0	0.0	d
6.2148	29.43056	77.89881	100.50000	0.0	0.0	0.0	0.0	d
6.6929	28.95338	77.86987	100.50000	0.0	0.0	0.0	0.0	d
7.1710	28.47619	77.84094	100.50000	0.0	0.0	0.0	0.0	d
7.6490	27.99900	77.81200	100.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: GE-4 | Sub-structure: GE-4

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal	Horizontal

						displacement along the Line	displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	27.99900	77.81200	100.50000	0.0	0.0	0.0	0.0	d
0.48978	28.01929	77.32264	100.50000	0.0	0.0	0.0	0.0	d
0.97955	28.03957	76.83329	100.50000	0.0	0.0	0.0	0.0	d
1.4693	28.05986	76.34393	100.50000	0.0	0.0	0.0	0.0	d
1.9591	28.08014	75.85457	100.50000	0.0	0.0	0.0	0.0	d
2.4489	28.10043	75.36521	100.50000	0.0	0.0	0.0	0.0	d
2.9387	28.12071	74.87586	100.50000	0.0	0.0	0.0	0.0	d
3.4284	28.14100	74.38650	100.50000	0.0	0.0	0.0	0.0	d
3.9182	28.16129	73.89714	100.50000	0.0	0.0	0.0	0.0	d
4.4080	28.18157	73.40779	100.50000	0.0	0.0	0.0	0.0	d
4.8978	28.20186	72.91843	100.50000	0.0	0.0	0.0	0.0	d
5.3876	28.22214	72.42907	100.50000	0.0	0.0	0.0	0.0	d
5.8773	28.24243	71.93971	100.50000	0.0	0.0	0.0	0.0	d
6.3671	28.26271	71.45036	100.50000	0.0	0.0	0.0	0.0	d
6.8569	28.28300	70.96100	100.50000	0.0	0.0	0.0	0.0	d
7.3467	28.30329	70.47164	100.50000	0.0	0.0	0.0	0.0	d
7.8364	28.32357	69.98229	100.50000	0.0	0.0	0.0	0.0	d
8.3262	28.34386	69.49293	100.50000	0.0	0.0	0.0	0.0	d
8.8160	28.36414	69.00357	100.50000	0.0	0.0	0.0	0.0	d
9.3058	28.38443	68.51421	100.50000	0.0	0.0	0.0	0.0	d
9.7955	28.40471	68.02486	100.50000	0.0	0.0	0.0	0.0	d
10.285	28.42500	67.53550	100.50000	0.0	0.0	0.0	0.0	d
10.775	28.44529	67.04614	100.50000	0.0	0.0	0.0	0.0	d
11.265	28.46557	66.55679	100.50000	0.0	0.0	0.0	0.0	d
11.755	28.48586	66.06743	100.50000	0.0	0.0	0.0	0.0	d
12.244	28.50614	65.57807	100.50000	0.0	0.0	0.0	0.0	d
12.734	28.52643	65.08871	100.50000	0.0	0.0	0.0	0.0	d
13.224	28.54671	64.59936	100.50000	0.0	0.0	0.0	0.0	d
13.714	28.56700	64.11000	100.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: DH-1 | Sub-structure: DH-1

Dist.	Coordinates			Displacements				
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	44.60300	87.23400	100.50000	0.0	0.0	0.0	0.0	d
0.48563	44.63204	86.74924	100.50000	0.0	0.0	0.0	0.0	d
0.97126	44.66109	86.26448	100.50000	0.0	0.0	0.0	0.0	d
1.4569	44.69013	85.77972	100.50000	0.0	0.0	0.0	0.0	d
1.9425	44.71917	85.29496	100.50000	0.0	0.0	0.0	0.0	d
2.4282	44.74822	84.81020	100.50000	0.0	0.0	0.0	0.0	d
2.9138	44.77726	84.32543	100.50000	0.0	0.0	0.0	0.0	d
3.3994	44.80630	83.84067	100.50000	0.0	0.0	0.0	0.0	d
3.8850	44.83535	83.35591	100.50000	0.0	0.0	0.0	0.0	d
4.3707	44.86439	82.87115	100.50000	0.0	0.0	0.0	0.0	d
4.8563	44.89343	82.38639	100.50000	0.0	0.0	0.0	0.0	d
5.3419	44.92248	81.90163	100.50000	0.0	0.0	0.0	0.0	d
5.8276	44.95152	81.41687	100.50000	0.0	0.0	0.0	0.0	d
6.3132	44.98057	80.93211	100.50000	0.0	0.0	0.0	0.0	d
6.7988	45.00961	80.44735	100.50000	0.0	0.0	0.0	0.0	d
7.2845	45.03865	79.96259	100.50000	0.0	0.0	0.0	0.0	d
7.7701	45.06770	79.47783	100.50000	0.0	0.0	0.0	0.0	d
8.2557	45.09674	78.99307	100.50000	0.0	0.0	0.0	0.0	d
8.7413	45.12578	78.50830	100.50000	0.0	0.0	0.0	0.0	d
9.2270	45.15483	78.02354	100.50000	0.0	0.0	0.0	0.0	d
9.7126	45.18387	77.53878	100.50000	0.0	0.0	0.0	0.0	d
10.198	45.21291	77.05402	100.50000	0.0	0.0	0.0	0.0	d
10.684	45.24196	76.56926	100.50000	0.0	0.0	0.0	0.0	d
11.169	45.27100	76.08450	100.50000	0.0	0.0	0.0	0.0	d
11.655	45.30004	75.59974	100.50000	0.0	0.0	0.0	0.0	d
12.141	45.32909	75.11498	100.50000	0.0	0.0	0.0	0.0	d
12.626	45.35813	74.63022	100.50000	0.0	0.0	0.0	0.0	d
13.112	45.38717	74.14546	100.50000	0.0	0.0	0.0	0.0	d
13.598	45.41622	73.66070	100.50000	0.0	0.0	0.0	0.0	d
14.083	45.44526	73.17593	100.50000	0.0	0.0	0.0	0.0	d
14.569	45.47430	72.69117	100.50000	0.0	0.0	0.0	0.0	d
15.055	45.50335	72.20641	100.50000	0.0	0.0	0.0	0.0	d
15.540	45.53239	71.72165	100.50000	0.0	0.0	0.0	0.0	d
16.026	45.56143	71.23689	100.50000	0.0	0.0	0.0	0.0	d
16.511	45.59048	70.75213	100.50000	0.0	0.0	0.0	0.0	d
16.997	45.61952	70.26737	100.50000	0.0	0.0	0.0	0.0	d
17.483	45.64857	69.78261	100.50000	0.0	0.0	0.0	0.0	d
17.968	45.67761	69.29785	100.50000	0.0	0.0	0.0	0.0	d
18.454	45.70665	68.81309	100.50000	0.0	0.0	0.0	0.0	d
18.940	45.73570	68.32833	100.50000	0.0	0.0	0.0	0.0	d
19.425	45.76474	67.84357	100.50000	0.0	0.0	0.0	0.0	d
19.911	45.79378	67.35880	100.50000	0.0	0.0	0.0	0.0	d
20.396	45.82283	66.87404	100.50000	0.0	0.0	0.0	0.0	d
20.882	45.85187	66.38928	100.50000	0.0	0.0	0.0	0.0	d
21.368	45.88091	65.90452	100.50000	0.0	0.0	0.0	0.0	d
21.853	45.90996	65.41976	100.50000	0.0	0.0	0.0	0.0	d
22.339	45.93900	64.93500	100.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: DH-2 | Sub-structure: DH-2

Dist.	Coordinates			Displacements				
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	45.93900	64.93500	100.50000	0.0	0.0	0.0	0.0	d
0.49257	46.43032	64.97005	100.50000	0.0	0.0	0.0	0.0	d
0.98513	46.92163	65.00510	100.50000	0.0	0.0	0.0	0.0	d
1.4777	47.41295	65.04014	100.50000	0.0	0.0	0.0	0.0	d
1.9703	47.90427	65.07519	100.50000	0.0	0.0	0.0	0.0	d
2.4628	48.39559	65.11024	100.50000	0.0	0.0	0.0	0.0	d
2.9554	48.88690	65.14529	100.50000	0.0	0.0	0.0	0.0	d
3.4480	49.37822	65.18034	100.50000	0.0	0.0	0.0	0.0	d
3.9405	49.86954	65.21538	100.50000	0.0	0.0	0.0	0.0	d
4.4331	50.36086	65.25043	100.50000	0.0	0.0	0.0	0.0	d
4.9257	50.85217	65.28548	100.50000	0.0	0.0	0.0	0.0	d
5.4182	51.34349	65.32053	100.50000	0.0	0.0	0.0	0.0	d
5.9108	51.83481	65.35558	100.50000	0.0	0.0	0.0	0.0	d
6.4034	52.32612	65.39063	100.50000	0.0	0.0	0.0	0.0	d
6.8959	52.81744	65.42567	100.50000	0.0	0.0	0.0	0.0	d
7.3885	53.30876	65.46072	100.50000	0.0	0.0	0.0	0.0	d
7.8811	53.80008	65.49577	100.50000	0.0	0.0	0.0	0.0	d
8.3736	54.29139	65.53082	100.50000	0.0	0.0	0.0	0.0	d
8.8662	54.78271	65.56587	100.50000	0.0	0.0	0.0	0.0	d
9.3588	55.27403	65.60091	100.50000	0.0	0.0	0.0	0.0	d
9.8513	55.76535	65.63596	100.50000	0.0	0.0	0.0	0.0	d
10.344	56.25666	65.67101	100.50000	0.0	0.0	0.0	0.0	d
10.836	56.74798	65.70606	100.50000	0.0	0.0	0.0	0.0	d
11.329	57.23930	65.74111	100.50000	0.0	0.0	0.0	0.0	d
11.822	57.73062	65.77615	100.50000	0.0	0.0	0.0	0.0	d
12.314	58.22193	65.81120	100.50000	0.0	0.0	0.0	0.0	d
12.807	58.71325	65.84625	100.50000	0.0	0.0	0.0	0.0	d
13.299	59.20457	65.88130	100.50000	0.0	0.0	0.0	0.0	d
13.792	59.69588	65.91635	100.50000	0.0	0.0	0.0	0.0	d
14.284	60.18720	65.95139	100.50000	0.0	0.0	0.0	0.0	d
14.777	60.67852	65.98644	100.50000	0.0	0.0	0.0	0.0	d
15.270	61.16984	66.02149	100.50000	0.0	0.0	0.0	0.0	d
15.762	61.66115	66.05654	100.50000	0.0	0.0	0.0	0.0	d
16.255	62.15247	66.09159	100.50000	0.0	0.0	0.0	0.0	d
16.747	62.64379	66.12663	100.50000	0.0	0.0	0.0	0.0	d
17.240	63.13511	66.16168	100.50000	0.0	0.0	0.0	0.0	d
17.732	63.62642	66.19673	100.50000	0.0	0.0	0.0	0.0	d
18.225	64.11774	66.23178	100.50000	0.0	0.0	0.0	0.0	d

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]
18.718	64.60906	66.26683	100.50000	0.0	0.0	0.0	0.0 d
19.210	65.10038	66.30187	100.50000	0.0	0.0	0.0	0.0 d
19.703	65.59169	66.33692	100.50000	0.0	0.0	0.0	0.0 d
20.195	66.08301	66.37197	100.50000	0.0	0.0	0.0	0.0 d
20.688	66.57433	66.40702	100.50000	0.0	0.0	0.0	0.0 d
21.180	67.06564	66.44207	100.50000	0.0	0.0	0.0	0.0 d
21.673	67.55696	66.47712	100.50000	0.0	0.0	0.0	0.0 d
22.165	68.04828	66.51216	100.50000	0.0	0.0	0.0	0.0 d
22.658	68.53960	66.54721	100.50000	0.0	0.0	0.0	0.0 d
23.151	69.03091	66.58226	100.50000	0.0	0.0	0.0	0.0 d
23.643	69.52223	66.61731	100.50000	0.0	0.0	0.0	0.0 d
24.136	70.01355	66.65236	100.50000	0.0	0.0	0.0	0.0 d
24.628	70.50487	66.68740	100.50000	0.0	0.0	0.0	0.0 d
25.121	70.99618	66.72245	100.50000	0.0	0.0	0.0	0.0 d
25.613	71.48750	66.75750	100.50000	0.0	0.0	0.0	0.0 d
26.106	71.97882	66.79255	100.50000	0.0	0.0	0.0	0.0 d
26.599	72.47013	66.82760	100.50000	0.0	0.0	0.0	0.0 d
27.091	72.96145	66.86264	100.50000	0.0	0.0	0.0	0.0 d
27.584	73.45277	66.89769	100.50000	0.0	0.0	0.0	0.0 d
28.076	73.94409	66.93274	100.50000	0.0	0.0	0.0	0.0 d
28.569	74.43540	66.96779	100.50000	0.0	0.0	0.0	0.0 d
29.061	74.92672	67.00284	100.50000	0.0	0.0	0.0	0.0 d
29.554	75.41804	67.03788	100.50000	0.0	0.0	0.0	0.0 d
30.047	75.90936	67.07293	100.50000	0.0	0.0	0.0	0.0 d
30.539	76.40067	67.10798	100.50000	0.0	0.0	0.0	0.0 d
31.032	76.89199	67.14303	100.50000	0.0	0.0	0.0	0.0 d
31.524	77.38331	67.17808	100.50000	0.0	0.0	0.0	0.0 d
32.017	77.87463	67.21313	100.50000	0.0	0.0	0.0	0.0 d
32.509	78.36594	67.24817	100.50000	0.0	0.0	0.0	0.0 d
33.002	78.85726	67.28322	100.50000	0.0	0.0	0.0	0.0 d
33.494	79.34858	67.31827	100.50000	0.0	0.0	0.0	0.0 d
33.987	79.83989	67.35332	100.50000	0.0	0.0	0.0	0.0 d
34.480	80.33121	67.38837	100.50000	0.0	0.0	0.0	0.0 d
34.972	80.82253	67.42341	100.50000	0.0	0.0	0.0	0.0 d
35.465	81.31385	67.45846	100.50000	0.0	0.0	0.0	0.0 d
35.957	81.80516	67.49351	100.50000	0.0	0.0	0.0	0.0 d
36.450	82.29648	67.52856	100.50000	0.0	0.0	0.0	0.0 d
36.942	82.78780	67.56361	100.50000	0.0	0.0	0.0	0.0 d
37.435	83.27912	67.59865	100.50000	0.0	0.0	0.0	0.0 d
37.928	83.77043	67.63370	100.50000	0.0	0.0	0.0	0.0 d
38.420	84.26175	67.66875	100.50000	0.0	0.0	0.0	0.0 d
38.913	84.75307	67.70380	100.50000	0.0	0.0	0.0	0.0 d
39.405	85.24438	67.73885	100.50000	0.0	0.0	0.0	0.0 d
39.898	85.73570	67.77389	100.50000	0.0	0.0	0.0	0.0 d
40.390	86.22702	67.80894	100.50000	0.0	0.0	0.0	0.0 d
40.883	86.71834	67.84399	100.50000	0.0	0.0	0.0	0.0 d
41.376	87.20965	67.87904	100.50000	0.0	0.0	0.0	0.0 d
41.868	87.70097	67.91409	100.50000	0.0	0.0	0.0	0.0 d
42.361	88.19229	67.94913	100.50000	0.0	0.0	0.0	0.0 d
42.853	88.68361	67.98418	100.50000	0.0	0.0	0.0	0.0 d
43.346	89.17492	68.01923	100.50000	0.0	0.0	0.0	0.0 d
43.838	89.66624	68.05428	100.50000	0.0	0.0	0.0	0.0 d
44.331	90.15756	68.08933	100.50000	0.0	0.0	0.0	0.0 d
44.823	90.64888	68.12438	100.50000	0.0	0.0	0.0	0.0 d
45.316	91.14019	68.15942	100.50000	0.0	0.0	0.0	0.0 d
45.809	91.63151	68.19447	100.50000	0.0	0.0	0.0	0.0 d
46.301	92.12283	68.22952	100.50000	0.0	0.0	0.0	0.0 d
46.794	92.61414	68.26457	100.50000	0.0	0.0	0.0	0.0 d
47.286	93.10546	68.29962	100.50000	0.0	0.0	0.0	0.0 d
47.779	93.59678	68.33466	100.50000	0.0	0.0	0.0	0.0 d
48.271	94.08810	68.36971	100.50000	0.0	0.0	0.0	0.0 d
48.764	94.57941	68.40476	100.50000	0.0	0.0	0.0	0.0 d
49.257	95.07073	68.43981	100.50000	0.0	0.0	0.0	0.0 d
49.749	95.56205	68.47486	100.50000	0.0	0.0	0.0	0.0 d
50.242	96.05337	68.50990	100.50000	0.0	0.0	0.0	0.0 d
50.734	96.54468	68.54495	100.50000	0.0	0.0	0.0	0.0 d
51.227	97.03600	68.58000	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: DH-3 | Sub-structure: DH-3

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]
0.0	97.03600	68.58000	100.50000	0.0	0.0	0.0	0.0 d
0.48909	96.99859	69.06765	100.50000	0.0	0.0	0.0	0.0 d
0.97817	96.96117	69.55530	100.50000	0.0	0.0	0.0	0.0 d
1.4673	96.92376	70.04296	100.50000	0.0	0.0	0.0	0.0 d
1.9563	96.88635	70.53061	100.50000	0.0	0.0	0.0	0.0 d
2.4454	96.84893	71.01826	100.50000	0.0	0.0	0.0	0.0 d
2.9345	96.81152	71.50591	100.50000	0.0	0.0	0.0	0.0 d
3.4236	96.77411	71.99357	100.50000	0.0	0.0	0.0	0.0 d
3.9127	96.73670	72.48122	100.50000	0.0	0.0	0.0	0.0 d
4.4018	96.69928	72.96887	100.50000	0.0	0.0	0.0	0.0 d
4.8909	96.66187	73.45652	100.50000	0.0	0.0	0.0	0.0 d
5.3799	96.62446	73.94417	100.50000	0.0	0.0	0.0	0.0 d
5.8690	96.58704	74.43183	100.50000	0.0	0.0	0.0	0.0 d
6.3581	96.54963	74.91948	100.50000	0.0	0.0	0.0	0.0 d
6.8472	96.51222	75.40713	100.50000	0.0	0.0	0.0	0.0 d
7.3363	96.47480	75.89478	100.50000	0.0	0.0	0.0	0.0 d
7.8254	96.43739	76.38243	100.50000	0.0	0.0	0.0	0.0 d
8.3144	96.39998	76.87009	100.50000	0.0	0.0	0.0	0.0 d
8.8035	96.36257	77.35774	100.50000	0.0	0.0	0.0	0.0 d
9.2926	96.32515	77.84539	100.50000	0.0	0.0	0.0	0.0 d
9.7817	96.28774	78.33304	100.50000	0.0	0.0	0.0	0.0 d
10.271	96.25033	78.82070	100.50000	0.0	0.0	0.0	0.0 d
10.760	96.21291	79.30835	100.50000	0.0	0.0	0.0	0.0 d
11.249	96.17550	79.79600	100.50000	0.0	0.0	0.0	0.0 d
11.738	96.13809	80.28365	100.50000	0.0	0.0	0.0	0.0 d
12.227	96.10067	80.77130	100.50000	0.0	0.0	0.0	0.0 d
12.716	96.06326	81.25896	100.50000	0.0	0.0	0.0	0.0 d
13.205	96.02585	81.74661	100.50000	0.0	0.0	0.0	0.0 d
13.694	95.98843	82.23426	100.50000	0.0	0.0	0.0	0.0 d
14.183	95.95102	82.72191	100.50000	0.0	0.0	0.0	0.0 d
14.673	95.91361	83.20957	100.50000	0.0	0.0	0.0	0.0 d
15.162	95.87620	83.69722	100.50000	0.0	0.0	0.0	0.0 d
15.651	95.83878	84.18487	100.50000	0.0	0.0	0.0	0.0 d
16.140	95.80137	84.67252	100.50000	0.0	0.0	0.0	0.0 d
16.629	95.76396	85.16017	100.50000	0.0	0.0	0.0	0.0 d
17.118	95.72654	85.64783	100.50000	0.0	0.0	0.0	0.0 d
17.607	95.68913	86.13548	100.50000	0.0	0.0	0.0	0.0 d
18.096	95.65172	86.62313	100.50000	0.0	0.0	0.0	0.0 d
18.585	95.61430	87.11078	100.50000	0.0	0.0	0.0	0.0 d
19.074	95.57689	87.59843	100.50000	0.0	0.0	0.0	0.0 d
19.563	95.53948	88.08609	100.50000	0.0	0.0	0.0	0.0 d
20.052	95.50207	88.57374	100.50000	0.0	0.0	0.0	0.0 d
20.542	95.46465	89.06139	100.50000	0.0	0.0	0.0	0.0 d
21.031	95.42724	89.54904	100.50000	0.0	0.0	0.0	0.0 d
21.520	95.38983	90.03670	100.50000	0.0	0.0	0.0	0.0 d
22.009	95.35241	90.52435	100.50000	0.0	0.0	0.0	0.0 d
22.498	95.31500	91.01200	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: DH-4 | Sub-structure: DH-4

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]
0.0	95.31500	91.01200	100.50000	0.0	0.0	0.0	0.0 d
0.47118	94.84520	90.97595	100.50000	0.0	0.0	0.0	0.0 d
0.94236	94.37540	90.93990	100.50000	0.0	0.0	0.0	0.0 d
1.4135	93.90560	90.90385	100.50000	0.0	0.0	0.0	0.0 d

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the	Horizontal displacement perpendicular
1.8847	93.43580	90.86780	100.50000	0.0	0.0	0.0	0.0 d
2.3559	92.96600	90.83175	100.50000	0.0	0.0	0.0	0.0 d
2.8271	92.49620	90.79570	100.50000	0.0	0.0	0.0	0.0 d
3.2983	92.02640	90.75965	100.50000	0.0	0.0	0.0	0.0 d
3.7694	91.55660	90.72360	100.50000	0.0	0.0	0.0	0.0 d
4.2406	91.08680	90.68755	100.50000	0.0	0.0	0.0	0.0 d
4.7118	90.61700	90.65150	100.50000	0.0	0.0	0.0	0.0 d
5.1830	90.14720	90.61545	100.50000	0.0	0.0	0.0	0.0 d
5.6542	89.67740	90.57940	100.50000	0.0	0.0	0.0	0.0 d
6.1254	89.20760	90.54335	100.50000	0.0	0.0	0.0	0.0 d
6.5965	88.73780	90.50730	100.50000	0.0	0.0	0.0	0.0 d
7.0677	88.26800	90.47125	100.50000	0.0	0.0	0.0	0.0 d
7.5389	87.79820	90.43520	100.50000	0.0	0.0	0.0	0.0 d
8.0101	87.32840	90.39915	100.50000	0.0	0.0	0.0	0.0 d
8.4813	86.85860	90.36310	100.50000	0.0	0.0	0.0	0.0 d
8.9524	86.38880	90.32705	100.50000	0.0	0.0	0.0	0.0 d
9.4236	85.91900	90.29100	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: DH-5 | Sub-structure: DH-5

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	85.91900	90.29100	100.50000	0.0	0.0	0.0	0.0 d
0.48006	85.95573	89.81235	100.50000	0.0	0.0	0.0	0.0 d
0.96012	85.99246	89.33369	100.50000	0.0	0.0	0.0	0.0 d
1.4402	86.02919	88.85504	100.50000	0.0	0.0	0.0	0.0 d
1.9202	86.06592	88.37638	100.50000	0.0	0.0	0.0	0.0 d
2.4003	86.10265	87.89773	100.50000	0.0	0.0	0.0	0.0 d
2.8804	86.13938	87.41908	100.50000	0.0	0.0	0.0	0.0 d
3.3604	86.17612	86.94042	100.50000	0.0	0.0	0.0	0.0 d
3.8405	86.21285	86.46177	100.50000	0.0	0.0	0.0	0.0 d
4.3205	86.24958	85.98312	100.50000	0.0	0.0	0.0	0.0 d
4.8006	86.28631	85.50446	100.50000	0.0	0.0	0.0	0.0 d
5.2807	86.32304	85.02581	100.50000	0.0	0.0	0.0	0.0 d
5.7607	86.35977	84.54715	100.50000	0.0	0.0	0.0	0.0 d
6.2408	86.39650	84.06850	100.50000	0.0	0.0	0.0	0.0 d
6.7209	86.43323	83.58985	100.50000	0.0	0.0	0.0	0.0 d
7.2009	86.46996	83.11119	100.50000	0.0	0.0	0.0	0.0 d
7.6810	86.50669	82.63254	100.50000	0.0	0.0	0.0	0.0 d
8.1610	86.54342	82.15388	100.50000	0.0	0.0	0.0	0.0 d
8.6411	86.58015	81.67523	100.50000	0.0	0.0	0.0	0.0 d
9.1212	86.61688	81.19658	100.50000	0.0	0.0	0.0	0.0 d
9.6012	86.65362	80.71792	100.50000	0.0	0.0	0.0	0.0 d
10.081	86.69035	80.23927	100.50000	0.0	0.0	0.0	0.0 d
10.561	86.72708	79.76062	100.50000	0.0	0.0	0.0	0.0 d
11.041	86.76381	79.28196	100.50000	0.0	0.0	0.0	0.0 d
11.521	86.80054	78.80331	100.50000	0.0	0.0	0.0	0.0 d
12.002	86.83727	78.32465	100.50000	0.0	0.0	0.0	0.0 d
12.482	86.87400	77.84600	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: DH-6 | Sub-structure: DH-6

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	86.87400	77.84600	100.50000	0.0	0.0	0.0	0.0 d
0.49556	86.37989	77.80809	100.50000	0.0	0.0	0.0	0.0 d
0.99112	85.88579	77.77018	100.50000	0.0	0.0	0.0	0.0 d
1.4867	85.39168	77.73227	100.50000	0.0	0.0	0.0	0.0 d
1.9822	84.89758	77.69436	100.50000	0.0	0.0	0.0	0.0 d
2.4778	84.40347	77.65645	100.50000	0.0	0.0	0.0	0.0 d
2.9733	83.90936	77.61855	100.50000	0.0	0.0	0.0	0.0 d
3.4689	83.41526	77.58064	100.50000	0.0	0.0	0.0	0.0 d
3.9645	82.92115	77.54273	100.50000	0.0	0.0	0.0	0.0 d
4.4600	82.42705	77.50482	100.50000	0.0	0.0	0.0	0.0 d
4.9556	81.93294	77.46691	100.50000	0.0	0.0	0.0	0.0 d
5.4511	81.43883	77.42900	100.50000	0.0	0.0	0.0	0.0 d
5.9467	80.94473	77.39109	100.50000	0.0	0.0	0.0	0.0 d
6.4423	80.45062	77.35318	100.50000	0.0	0.0	0.0	0.0 d
6.9378	79.95652	77.31527	100.50000	0.0	0.0	0.0	0.0 d
7.4334	79.46241	77.27736	100.50000	0.0	0.0	0.0	0.0 d
7.9289	78.96830	77.23945	100.50000	0.0	0.0	0.0	0.0 d
8.4245	78.47420	77.20155	100.50000	0.0	0.0	0.0	0.0 d
8.9200	77.98009	77.16364	100.50000	0.0	0.0	0.0	0.0 d
9.4156	77.48598	77.12573	100.50000	0.0	0.0	0.0	0.0 d
9.9112	76.99188	77.08782	100.50000	0.0	0.0	0.0	0.0 d
10.407	76.49777	77.04991	100.50000	0.0	0.0	0.0	0.0 d
10.902	76.00367	77.01200	100.50000	0.0	0.0	0.0	0.0 d
11.398	75.50956	76.97409	100.50000	0.0	0.0	0.0	0.0 d
11.893	75.01545	76.93618	100.50000	0.0	0.0	0.0	0.0 d
12.389	74.52135	76.89827	100.50000	0.0	0.0	0.0	0.0 d
12.885	74.02724	76.86036	100.50000	0.0	0.0	0.0	0.0 d
13.380	73.53314	76.82245	100.50000	0.0	0.0	0.0	0.0 d
13.876	73.03903	76.78455	100.50000	0.0	0.0	0.0	0.0 d
14.371	72.54492	76.74664	100.50000	0.0	0.0	0.0	0.0 d
14.867	72.05082	76.70873	100.50000	0.0	0.0	0.0	0.0 d
15.362	71.55671	76.67082	100.50000	0.0	0.0	0.0	0.0 d
15.858	71.06261	76.63291	100.50000	0.0	0.0	0.0	0.0 d
16.353	70.56850	76.59500	100.50000	0.0	0.0	0.0	0.0 d
16.849	70.07439	76.55709	100.50000	0.0	0.0	0.0	0.0 d
17.345	69.58029	76.51918	100.50000	0.0	0.0	0.0	0.0 d
17.840	69.08618	76.48127	100.50000	0.0	0.0	0.0	0.0 d
18.336	68.59208	76.44336	100.50000	0.0	0.0	0.0	0.0 d
18.831	68.09797	76.40545	100.50000	0.0	0.0	0.0	0.0 d
19.327	67.60386	76.36755	100.50000	0.0	0.0	0.0	0.0 d
19.822	67.10976	76.32964	100.50000	0.0	0.0	0.0	0.0 d
20.318	66.61565	76.29173	100.50000	0.0	0.0	0.0	0.0 d
20.813	66.12155	76.25382	100.50000	0.0	0.0	0.0	0.0 d
21.309	65.62744	76.21591	100.50000	0.0	0.0	0.0	0.0 d
21.805	65.13333	76.17800	100.50000	0.0	0.0	0.0	0.0 d
22.300	64.63923	76.14009	100.50000	0.0	0.0	0.0	0.0 d
22.796	64.14512	76.10218	100.50000	0.0	0.0	0.0	0.0 d
23.291	63.65102	76.06427	100.50000	0.0	0.0	0.0	0.0 d
23.787	63.15691	76.02636	100.50000	0.0	0.0	0.0	0.0 d
24.282	62.66280	75.98845	100.50000	0.0	0.0	0.0	0.0 d
24.778	62.16870	75.95055	100.50000	0.0	0.0	0.0	0.0 d
25.273	61.67459	75.91264	100.50000	0.0	0.0	0.0	0.0 d
25.769	61.18048	75.87473	100.50000	0.0	0.0	0.0	0.0 d
26.265	60.68638	75.83682	100.50000	0.0	0.0	0.0	0.0 d
26.760	60.19227	75.79891	100.50000	0.0	0.0	0.0	0.0 d
27.256	59.69817	75.76100	100.50000	0.0	0.0	0.0	0.0 d
27.751	59.20406	75.72309	100.50000	0.0	0.0	0.0	0.0 d
28.247	58.70995	75.68518	100.50000	0.0	0.0	0.0	0.0 d
28.742	58.21585	75.64727	100.50000	0.0	0.0	0.0	0.0 d
29.238	57.72174	75.60936	100.50000	0.0	0.0	0.0	0.0 d
29.733	57.22764	75.57145	100.50000	0.0	0.0	0.0	0.0 d
30.229	56.73353	75.53355	100.50000	0.0	0.0	0.0	0.0 d
30.725	56.23942	75.49564	100.50000	0.0	0.0	0.0	0.0 d
31.220	55.74532	75.45773	100.50000	0.0	0.0	0.0	0.0 d
31.716	55.25121	75.41982	100.50000	0.0	0.0	0.0	0.0 d
32.211	54.75711	75.38191	100.50000	0.0	0.0	0.0	0.0 d
32.707	54.26300	75.34400	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: DH-7 | Sub-structure: DH-7

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal	Horizontal

[m]	[m]	[m]	[m]	[mm]	[mm]	displacement along the Line [mm]	displacement perpendicular to Line [mm]
0.0	54.26300	75.34400	100.50000	0.0	0.0	0.0	0.0 d
0.48103	54.22619	75.82362	100.50000	0.0	0.0	0.0	0.0 d
0.96205	54.18938	76.30323	100.50000	0.0	0.0	0.0	0.0 d
1.4431	54.15258	76.78285	100.50000	0.0	0.0	0.0	0.0 d
1.9241	54.11577	77.26246	100.50000	0.0	0.0	0.0	0.0 d
2.4051	54.07896	77.74208	100.50000	0.0	0.0	0.0	0.0 d
2.8862	54.04215	78.22169	100.50000	0.0	0.0	0.0	0.0 d
3.3672	54.00535	78.70131	100.50000	0.0	0.0	0.0	0.0 d
3.8482	53.96854	79.18092	100.50000	0.0	0.0	0.0	0.0 d
4.3292	53.93173	79.66054	100.50000	0.0	0.0	0.0	0.0 d
4.8103	53.89492	80.14015	100.50000	0.0	0.0	0.0	0.0 d
5.2913	53.85812	80.61977	100.50000	0.0	0.0	0.0	0.0 d
5.7723	53.82131	81.09938	100.50000	0.0	0.0	0.0	0.0 d
6.2533	53.78450	81.57900	100.50000	0.0	0.0	0.0	0.0 d
6.7344	53.74769	82.05862	100.50000	0.0	0.0	0.0	0.0 d
7.2154	53.71088	82.53823	100.50000	0.0	0.0	0.0	0.0 d
7.6964	53.67408	83.01785	100.50000	0.0	0.0	0.0	0.0 d
8.1774	53.63727	83.49746	100.50000	0.0	0.0	0.0	0.0 d
8.6585	53.60046	83.97708	100.50000	0.0	0.0	0.0	0.0 d
9.1395	53.56365	84.45669	100.50000	0.0	0.0	0.0	0.0 d
9.6205	53.52685	84.93631	100.50000	0.0	0.0	0.0	0.0 d
10.102	53.49004	85.41592	100.50000	0.0	0.0	0.0	0.0 d
10.583	53.45323	85.89554	100.50000	0.0	0.0	0.0	0.0 d
11.064	53.41642	86.37515	100.50000	0.0	0.0	0.0	0.0 d
11.545	53.37962	86.85477	100.50000	0.0	0.0	0.0	0.0 d
12.026	53.34281	87.33438	100.50000	0.0	0.0	0.0	0.0 d
12.507	53.30600	87.81400	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: DH-8 | Sub-structure: DH-8

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	53.30600	87.81400	100.50000	0.0	0.0	0.0	0.0 d
0.48457	52.82250	87.78178	100.50000	0.0	0.0	0.0	0.0 d
0.96915	52.33900	87.74956	100.50000	0.0	0.0	0.0	0.0 d
1.4537	51.85550	87.71733	100.50000	0.0	0.0	0.0	0.0 d
1.9383	51.37200	87.68511	100.50000	0.0	0.0	0.0	0.0 d
2.4229	50.88850	87.65289	100.50000	0.0	0.0	0.0	0.0 d
2.9074	50.40500	87.62067	100.50000	0.0	0.0	0.0	0.0 d
3.3920	49.92150	87.58844	100.50000	0.0	0.0	0.0	0.0 d
3.8766	49.43800	87.55622	100.50000	0.0	0.0	0.0	0.0 d
4.3612	48.95450	87.52400	100.50000	0.0	0.0	0.0	0.0 d
4.8457	48.47100	87.49178	100.50000	0.0	0.0	0.0	0.0 d
5.3303	47.98750	87.45956	100.50000	0.0	0.0	0.0	0.0 d
5.8149	47.50400	87.42733	100.50000	0.0	0.0	0.0	0.0 d
6.2994	47.02050	87.39511	100.50000	0.0	0.0	0.0	0.0 d
6.7840	46.53700	87.36289	100.50000	0.0	0.0	0.0	0.0 d
7.2686	46.05350	87.33067	100.50000	0.0	0.0	0.0	0.0 d
7.7532	45.57000	87.29844	100.50000	0.0	0.0	0.0	0.0 d
8.2377	45.08650	87.26622	100.50000	0.0	0.0	0.0	0.0 d
8.7223	44.60300	87.23400	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Specific Building Damage Results - Vertical Displacements

Structure: GVA-1 | Sub-structure: GVA-1

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	9.25200	89.52300	100.50000	0.18107 d
0.48595	9.22654	89.03772	100.50000	0.18303 d
0.97189	9.20108	88.55244	100.50000	0.18499 d
1.4578	9.17562	88.06716	100.50000	0.18697 d
1.9438	9.15016	87.58188	100.50000	0.18895 d
2.4297	9.12470	87.09660	100.50000	0.19093 d
2.9157	9.09924	86.61132	100.50000	0.19291 d
3.4016	9.07378	86.12604	100.50000	0.19490 d
3.8876	9.04832	85.64076	100.50000	0.19689 d
4.3735	9.02286	85.15548	100.50000	0.19888 d
4.8595	8.99740	84.67020	100.50000	0.20086 d
5.3454	8.97194	84.18492	100.50000	0.20285 d
5.8314	8.94648	83.69964	100.50000	0.20484 d
6.3173	8.92102	83.21436	100.50000	0.20682 d
6.8033	8.89556	82.72908	100.50000	0.20879 d
7.2892	8.87010	82.24380	100.50000	0.21076 d
7.7752	8.84464	81.75852	100.50000	0.21272 d
8.2611	8.81918	81.27324	100.50000	0.21467 d
8.7471	8.79372	80.78796	100.50000	0.21662 d
9.2330	8.76826	80.30268	100.50000	0.21855 d
9.7189	8.74280	79.81740	100.50000	0.22047 d
10.205	8.71734	79.33212	100.50000	0.22238 d
10.691	8.69188	78.84684	100.50000	0.22427 d
11.177	8.66642	78.36156	100.50000	0.22615 d
11.663	8.64096	77.87628	100.50000	0.22801 d
12.149	8.61550	77.39100	100.50000	0.22985 d
12.635	8.59004	76.90572	100.50000	0.23167 d
13.121	8.56458	76.42044	100.50000	0.23347 d
13.607	8.53912	75.93516	100.50000	0.23525 d
14.092	8.51366	75.44988	100.50000	0.23701 d
14.578	8.48820	74.96460	100.50000	0.23873 d
15.064	8.46274	74.47932	100.50000	0.24044 d
15.550	8.43728	73.99404	100.50000	0.24211 d
16.036	8.41182	73.50876	100.50000	0.24376 d
16.522	8.38636	73.02348	100.50000	0.24537 d
17.008	8.36090	72.53820	100.50000	0.24696 d
17.494	8.33544	72.05292	100.50000	0.24851 d
17.980	8.30998	71.56764	100.50000	0.25003 d
18.466	8.28452	71.08236	100.50000	0.25151 d
18.952	8.25906	70.59708	100.50000	0.25296 d
19.438	8.23360	70.11180	100.50000	0.25437 d
19.924	8.20814	69.62652	100.50000	0.25574 d
20.410	8.18268	69.14124	100.50000	0.25708 d
20.896	8.15722	68.65596	100.50000	0.25837 d
21.382	8.13176	68.17068	100.50000	0.25963 d
21.868	8.10630	67.68540	100.50000	0.26085 d
22.354	8.08084	67.20012	100.50000	0.26202 d
22.840	8.05538	66.71484	100.50000	0.26316 d
23.325	8.02992	66.22956	100.50000	0.26425 d
23.811	8.00446	65.74428	100.50000	0.26530 d
24.297	7.97900	65.25900	100.50000	0.26631 d

d - Displacements include imported displacements.

Structure: GVA-2 | Sub-structure: GVA-2

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	7.97900	65.25900	100.50000	0.26631 d
0.48050	7.95067	64.77933	100.50000	0.26725 d
0.96101	7.92233	64.29967	100.50000	0.26815 d
1.4415	7.89400	63.82000	100.50000	0.26901 d
1.9220	7.86567	63.34033	100.50000	0.26983 d

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
2.4025	7.83733	62.86067	100.50000	0.27061 d
2.8830	7.80900	62.38100	100.50000	0.27136 d

d - Displacements include imported displacements.

Structure: GVA-3 | Sub-structure: GVA-3

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	7.80900	62.38100	100.50000	0.27136 d
0.47715	8.28487	62.34613	100.50000	0.27326 d
0.95430	8.76075	62.31125	100.50000	0.27502 d
1.4315	9.23663	62.27638	100.50000	0.27662 d
1.9086	9.71250	62.24150	100.50000	0.27804 d
2.3858	10.18838	62.20662	100.50000	0.27926 d
2.8629	10.66425	62.17175	100.50000	0.28028 d
3.3401	11.14012	62.13687	100.50000	0.28106 d
3.8172	11.61600	62.10200	100.50000	0.28158 d

d - Displacements include imported displacements.

Structure: GVA-4 | Sub-structure: GVA-4

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	11.61600	62.10200	100.50000	0.28158 d
0.47359	11.65050	62.57433	100.50000	0.28146 d
0.94718	11.68500	63.04667	100.50000	0.28129 d
1.4208	11.71950	63.51900	100.50000	0.28106 d
1.8944	11.75400	63.99133	100.50000	0.28079 d
2.3680	11.78850	64.46367	100.50000	0.28045 d
2.8415	11.82300	64.93600	100.50000	0.28006 d

d - Displacements include imported displacements.

Structure: GVA-5 | Sub-structure: GVA-5

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	11.82300	64.93600	100.50000	0.28006 d
0.48843	12.31013	64.90031	100.50000	0.28100 d
0.97686	12.79725	64.86463	100.50000	0.28171 d
1.4653	13.28438	64.82894	100.50000	0.28216 d
1.9537	13.77150	64.79325	100.50000	0.28234 d
2.4422	14.25863	64.75756	100.50000	0.28221 d
2.9306	14.74575	64.72187	100.50000	0.28177 d
3.4190	15.23288	64.68619	100.50000	0.28097 d
3.9074	15.72000	64.65050	100.50000	0.27980 d
4.3959	16.20713	64.61481	100.50000	0.27822 d
4.8843	16.69425	64.57913	100.50000	0.27621 d
5.3727	17.18138	64.54344	100.50000	0.27373 d
5.8612	17.66850	64.50775	100.50000	0.27075 d
6.3496	18.15563	64.47206	100.50000	0.26723 d
6.8380	18.64275	64.43637	100.50000	0.26314 d
7.3265	19.12988	64.40069	100.50000	0.25843 d
7.8149	19.61700	64.36500	100.50000	0.25306 d

d - Displacements include imported displacements.

Structure: GVA-6 | Sub-structure: GVA-6

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	19.61700	64.36500	100.50000	0.25306 d
0.49248	19.58100	63.87383	100.50000	0.24915 d
0.98497	19.54500	63.38267	100.50000	0.24503 d
1.4775	19.50900	62.89150	100.50000	0.24071 d
1.9699	19.47300	62.40033	100.50000	0.23620 d
2.4624	19.43700	61.90917	100.50000	0.23151 d
2.9549	19.40100	61.41800	100.50000	0.22664 d

d - Displacements include imported displacements.

Structure: GVA-7 | Sub-structure: GVA-7

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	19.40100	61.41800	100.50000	0.22664 d
0.46449	19.86425	61.38412	100.50000	0.21746 d
0.92897	20.32750	61.35025	100.50000	0.20728 d
1.3935	20.79075	61.31638	100.50000	0.19604 d
1.8579	21.25400	61.28250	100.50000	0.18367 d
2.3224	21.71725	61.24862	100.50000	0.17010 d
2.7869	22.18050	61.21475	100.50000	0.15523 d
3.2514	22.64375	61.18088	100.50000	0.13899 d
3.7159	23.10700	61.14700	100.50000	0.12128 d

d - Displacements include imported displacements.

Structure: GVA-8 | Sub-structure: GVA-8

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	23.10700	61.14700	100.50000	0.12128 d
0.49250	23.13267	61.63883	100.50000	0.13346 d
0.98501	23.15833	62.13067	100.50000	0.14519 d
1.4775	23.18400	62.62250	100.50000	0.15647 d
1.9700	23.20967	63.11433	100.50000	0.16727 d
2.4625	23.23533	63.60617	100.50000	0.17758 d
2.9550	23.26100	64.09800	100.50000	0.18739 d

d - Displacements include imported displacements.

Structure: GVA-9 | Sub-structure: GVA-9

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	23.26100	64.09800	100.50000	0.18739 d
0.49313	23.28670	64.59046	100.50000	0.19670 d
0.98626	23.31240	65.08292	100.50000	0.20551 d
1.4794	23.33810	65.57538	100.50000	0.21381 d
1.9725	23.36380	66.06784	100.50000	0.22161 d
2.4657	23.38950	66.56030	100.50000	0.22890 d
2.9588	23.41520	67.05276	100.50000	0.23569 d
3.4519	23.44090	67.54522	100.50000	0.24200 d
3.9450	23.46660	68.03768	100.50000	0.24783 d
4.4382	23.49230	68.53014	100.50000	0.25320 d
4.9313	23.51800	69.02260	100.50000	0.25811 d

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
5.4244	23.54370	69.51506	100.50000	0.26258 d
5.9176	23.56940	70.00752	100.50000	0.26663 d
6.4107	23.59510	70.49998	100.50000	0.27026 d
6.9038	23.62080	70.99244	100.50000	0.27350 d
7.3970	23.64650	71.48490	100.50000	0.27635 d
7.8901	23.67220	71.97736	100.50000	0.27884 d
8.3832	23.69790	72.46982	100.50000	0.28097 d
8.8763	23.72360	72.96228	100.50000	0.28277 d
9.3695	23.74930	73.45474	100.50000	0.28424 d
9.8626	23.77500	73.94720	100.50000	0.28542 d
10.356	23.80070	74.43966	100.50000	0.28630 d
10.849	23.82640	74.93212	100.50000	0.28690 d
11.342	23.85210	75.42458	100.50000	0.28725 d
11.835	23.87780	75.91704	100.50000	0.28735 d
12.328	23.90350	76.40950	100.50000	0.28721 d
12.821	23.92920	76.90196	100.50000	0.28686 d
13.315	23.95490	77.39442	100.50000	0.28629 d
13.808	23.98060	77.88688	100.50000	0.28554 d
14.301	24.00630	78.37934	100.50000	0.28460 d
14.794	24.03200	78.87180	100.50000	0.28349 d
15.287	24.05770	79.36426	100.50000	0.28223 d
15.780	24.08340	79.85672	100.50000	0.28081 d
16.273	24.10910	80.34918	100.50000	0.27926 d
16.766	24.13480	80.84164	100.50000	0.27758 d
17.260	24.16050	81.33410	100.50000	0.27578 d
17.753	24.18620	81.82656	100.50000	0.27387 d
18.246	24.21190	82.31902	100.50000	0.27186 d
18.739	24.23760	82.81148	100.50000	0.26976 d
19.232	24.26330	83.30394	100.50000	0.26758 d
19.725	24.28900	83.79640	100.50000	0.26532 d
20.218	24.31470	84.28886	100.50000	0.26298 d
20.711	24.34040	84.78132	100.50000	0.26059 d
21.205	24.36610	85.27378	100.50000	0.25814 d
21.698	24.39180	85.76624	100.50000	0.25564 d
22.191	24.41750	86.25870	100.50000	0.25309 d
22.684	24.44320	86.75116	100.50000	0.25050 d
23.177	24.46890	87.24362	100.50000	0.24788 d
23.670	24.49460	87.73608	100.50000	0.24523 d
24.163	24.52030	88.22854	100.50000	0.24256 d
24.657	24.54600	88.72100	100.50000	0.23986 d

d - Displacements include imported displacements.

Structure: GVA-10 | Sub-structure: GVA-10

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	24.54600	88.72100	100.50000	0.23986 d
0.47859	24.06806	88.74606	100.50000	0.23819 d
0.95719	23.59013	88.77112	100.50000	0.23651 d
1.4358	23.11219	88.79619	100.50000	0.23480 d
1.9144	22.63425	88.82125	100.50000	0.23308 d
2.3930	22.15631	88.84631	100.50000	0.23134 d
2.8716	21.67837	88.87138	100.50000	0.22958 d
3.3502	21.20044	88.89644	100.50000	0.22781 d
3.8288	20.72250	88.92150	100.50000	0.22602 d
4.3073	20.24456	88.94656	100.50000	0.22422 d
4.7859	19.76662	88.97163	100.50000	0.22241 d
5.2645	19.28869	88.99669	100.50000	0.22058 d
5.7431	18.81075	89.02175	100.50000	0.21874 d
6.2217	18.33281	89.04681	100.50000	0.21690 d
6.7003	17.85488	89.07188	100.50000	0.21504 d
7.1789	17.37694	89.09694	100.50000	0.21318 d
7.6575	16.89900	89.12200	100.50000	0.21131 d
8.1361	16.42106	89.14706	100.50000	0.20943 d
8.6147	15.94313	89.17212	100.50000	0.20755 d
9.0933	15.46519	89.19719	100.50000	0.20566 d
9.5719	14.98725	89.22225	100.50000	0.20377 d
10.050	14.50931	89.24731	100.50000	0.20187 d
10.529	14.03138	89.27237	100.50000	0.19998 d
11.008	13.55344	89.29744	100.50000	0.19808 d
11.486	13.07550	89.32250	100.50000	0.19618 d
11.965	12.59756	89.34756	100.50000	0.19428 d
12.443	12.11963	89.37262	100.50000	0.19239 d
12.922	11.64169	89.39769	100.50000	0.19049 d
13.401	11.16375	89.42275	100.50000	0.18860 d
13.879	10.68581	89.44781	100.50000	0.18671 d
14.358	10.20788	89.47288	100.50000	0.18482 d
14.836	9.72994	89.49794	100.50000	0.18294 d
15.315	9.25200	89.52300	100.50000	0.18107 d

d - Displacements include imported displacements.

Structure: GE-1 | Sub-structure: GE-1

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	28.56700	64.11000	100.50000	-0.0017025 d
0.49454	29.06094	64.13431	100.50000	-0.025004 d
0.98907	29.55487	64.15863	100.50000	-0.049350 d
1.4836	30.04881	64.18294	100.50000	-0.074714 d
1.9781	30.54275	64.20725	100.50000	-0.10106 d
2.4727	31.03669	64.23156	100.50000	-0.12834 d
2.9672	31.53063	64.25588	100.50000	-0.15649 d
3.4617	32.02456	64.28019	100.50000	-0.18545 d
3.9563	32.51850	64.30450	100.50000	-0.21514 d
4.4508	33.01244	64.32881	100.50000	-0.24546 d
4.9454	33.50637	64.35312	100.50000	-0.27632 d
5.4399	34.00031	64.37744	100.50000	-0.30761 d
5.9344	34.49425	64.40175	100.50000	-0.33920 d
6.4290	34.98819	64.42606	100.50000	-0.37098 d
6.9235	35.48212	64.45037	100.50000	-0.40281 d
7.4180	35.97606	64.47469	100.50000	-0.43455 d
7.9126	36.47000	64.49900	100.50000	-0.46607 d

d - Displacements include imported displacements.

Structure: GE-2 | Sub-structure: GE-2

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	36.47000	64.49900	100.50000	-0.46607 d
0.49291	36.44014	64.99100	100.50000	-0.39171 d
0.98581	36.41029	65.48300	100.50000	-0.32393 d
1.4787	36.38043	65.97500	100.50000	-0.26215 d
1.9716	36.35057	66.46700	100.50000	-0.20582 d
2.4645	36.32071	66.95900	100.50000	-0.15448 d
2.9574	36.29086	67.45100	100.50000	-0.10769 d
3.4503	36.26100	67.94300	100.50000	-0.065080 d
3.9432	36.23114	68.43500	100.50000	-0.026287 d
4.4361	36.20129	68.92700	100.50000	0.0090015 d
4.9291	36.17143	69.41900	100.50000	0.041075 d
5.4220	36.14157	69.91100	100.50000	0.070196 d
5.9149	36.11171	70.40300	100.50000	0.096606 d
6.4078	36.08186	70.89500	100.50000	0.12052 d
6.9007	36.05200	71.38700	100.50000	0.14215 d
7.3936	36.02214	71.87900	100.50000	0.16166 d
7.8865	35.99229	72.37100	100.50000	0.17924 d
8.3794	35.96243	72.86300	100.50000	0.19503 d
8.8723	35.93257	73.35500	100.50000	0.20917 d
9.3652	35.90271	73.84700	100.50000	0.22181 d

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
9.8581	35.87286	74.33900	100.50000	0.23306 d
10.351	35.84300	74.83100	100.50000	0.24302 d
10.844	35.81314	75.32300	100.50000	0.25181 d
11.337	35.78329	75.81500	100.50000	0.25952 d
11.830	35.75343	76.30700	100.50000	0.26623 d
12.323	35.72357	76.79900	100.50000	0.27202 d
12.816	35.69371	77.29100	100.50000	0.27697 d
13.308	35.66386	77.78300	100.50000	0.28116 d
13.801	35.63400	78.27500	100.50000	0.28463 d

d - Displacements include imported displacements.

Structure: GE-3 | Sub-structure: GE-3

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	35.63400	78.27500	100.50000	0.28463 d
0.47806	35.15681	78.24606	100.50000	0.28520 d
0.95613	34.67963	78.21713	100.50000	0.28576 d
1.4342	34.20244	78.18819	100.50000	0.28629 d
1.9123	33.72525	78.15925	100.50000	0.28680 d
2.3903	33.24806	78.13031	100.50000	0.28728 d
2.8684	32.77087	78.10138	100.50000	0.28772 d
3.3464	32.29369	78.07244	100.50000	0.28813 d
3.8245	31.81650	78.04350	100.50000	0.28849 d
4.3026	31.33931	78.01456	100.50000	0.28881 d
4.7806	30.86212	77.98562	100.50000	0.28908 d
5.2587	30.38494	77.95669	100.50000	0.28930 d
5.7368	29.90775	77.92775	100.50000	0.28946 d
6.2148	29.43056	77.89881	100.50000	0.28957 d
6.6929	28.95338	77.86987	100.50000	0.28962 d
7.1710	28.47619	77.84094	100.50000	0.28960 d
7.6490	27.99900	77.81200	100.50000	0.28952 d

d - Displacements include imported displacements.

Structure: GE-4 | Sub-structure: GE-4

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	27.99900	77.81200	100.50000	0.28952 d
0.48978	28.01929	77.32264	100.50000	0.28901 d
0.97955	28.03957	76.83329	100.50000	0.28815 d
1.4693	28.05986	76.34393	100.50000	0.28689 d
1.9591	28.08014	75.85457	100.50000	0.28521 d
2.4489	28.10043	75.36521	100.50000	0.28308 d
2.9387	28.12071	74.87586	100.50000	0.28046 d
3.4284	28.14100	74.38650	100.50000	0.27731 d
3.9182	28.16129	73.89714	100.50000	0.27360 d
4.4080	28.18157	73.40779	100.50000	0.26929 d
4.8978	28.20186	72.91843	100.50000	0.26433 d
5.3876	28.22214	72.42907	100.50000	0.25867 d
5.8773	28.24243	71.93971	100.50000	0.25228 d
6.3671	28.26271	71.45036	100.50000	0.24509 d
6.8569	28.28300	70.96100	100.50000	0.23705 d
7.3467	28.30329	70.47164	100.50000	0.22811 d
7.8364	28.32357	69.98229	100.50000	0.21820 d
8.3262	28.34386	69.49293	100.50000	0.20727 d
8.8160	28.36414	69.00357	100.50000	0.19525 d
9.3058	28.38443	68.51421	100.50000	0.18206 d
9.7955	28.40471	68.02486	100.50000	0.16764 d
10.285	28.42500	67.53550	100.50000	0.15192 d
10.775	28.44529	67.04614	100.50000	0.13480 d
11.265	28.46557	66.55679	100.50000	0.11622 d
11.755	28.48586	66.06743	100.50000	0.096092 d
12.244	28.50614	65.57807	100.50000	0.074323 d
12.734	28.52643	65.08871	100.50000	0.050828 d
13.224	28.54671	64.59936	100.50000	0.025516 d
13.714	28.56700	64.11000	100.50000	-0.0017025 d

d - Displacements include imported displacements.

Structure: DH-1 | Sub-structure: DH-1

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	44.60300	87.23400	100.50000	0.28623 d
0.48563	44.63204	86.74924	100.50000	0.28833 d
0.97126	44.66109	86.26448	100.50000	0.29024 d
1.4569	44.69013	85.77972	100.50000	0.29195 d
1.9425	44.71917	85.29496	100.50000	0.29342 d
2.4282	44.74822	84.81020	100.50000	0.29465 d
2.9138	44.77726	84.32543	100.50000	0.29559 d
3.3994	44.80630	83.84067	100.50000	0.29622 d
3.8850	44.83535	83.35591	100.50000	0.29651 d
4.3707	44.86439	82.87115	100.50000	0.29643 d
4.8563	44.89343	82.38639	100.50000	0.29593 d
5.3419	44.92248	81.90163	100.50000	0.29497 d
5.8276	44.95152	81.41687	100.50000	0.29352 d
6.3132	44.98057	80.93211	100.50000	0.29152 d
6.7988	45.00961	80.44735	100.50000	0.28892 d
7.2845	45.03865	79.96259	100.50000	0.28566 d
7.7701	45.06770	79.47783	100.50000	0.28169 d
8.2557	45.09674	78.99307	100.50000	0.27693 d
8.7413	45.12578	78.50830	100.50000	0.27132 d
9.2270	45.15483	78.02354	100.50000	0.26477 d
9.7126	45.18387	77.53878	100.50000	0.25720 d
10.198	45.21291	77.05402	100.50000	0.24852 d
10.684	45.24196	76.56926	100.50000	0.23862 d
11.169	45.27100	76.08450	100.50000	0.22740 d
11.655	45.30004	75.59974	100.50000	0.21473 d
12.141	45.32909	75.11498	100.50000	0.20050 d
12.626	45.35813	74.63022	100.50000	0.18455 d
13.112	45.38717	74.14546	100.50000	0.16673 d
13.598	45.41622	73.66070	100.50000	0.14687 d
14.083	45.44526	73.17593	100.50000	0.12480 d
14.569	45.47430	72.69117	100.50000	0.10030 d
15.055	45.50335	72.20641	100.50000	0.073170 d
15.540	45.53239	71.72165	100.50000	0.043162 d
16.026	45.56143	71.23689	100.50000	0.010017 d
16.511	45.59048	70.75213	100.50000	-0.026551 d
16.997	45.61952	70.26737	100.50000	-0.066857 d
17.483	45.64857	69.78261	100.50000	-0.11124 d
17.968	45.67761	69.29785	100.50000	-0.16009 d
18.454	45.70665	68.81309	100.50000	-0.21382 d
18.940	45.73570	68.32833	100.50000	-0.27288 d
19.425	45.76474	67.84357	100.50000	-0.33778 d
19.911	45.79378	67.35880	100.50000	-0.40909 d
20.396	45.82283	66.87404	100.50000	-0.48743 d
20.882	45.85187	66.38928	100.50000	-0.57349 d
21.368	45.88091	65.90452	100.50000	-0.66803 d
21.853	45.90996	65.41976	100.50000	-0.77193 d
22.339	45.93900	64.93500	100.50000	-0.88614 d

d - Displacements include imported displacements.

Structure: DH-2 | Sub-structure: DH-2

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

Vertical Offset 1

0.0	45.93900	64.93500	100.50000	-0.88614	d
0.49257	46.43032	64.97005	100.50000	-0.89016	d
0.98513	46.92163	65.00510	100.50000	-0.89250	d
1.4777	47.41295	65.04014	100.50000	-0.89314	d
1.9703	47.90427	65.07519	100.50000	-0.89210	d
2.4628	48.39559	65.11024	100.50000	-0.88939	d
2.9554	48.88690	65.14529	100.50000	-0.88504	d
3.4480	49.37822	65.18034	100.50000	-0.87905	d
3.9405	49.86954	65.21538	100.50000	-0.87145	d
4.4331	50.36086	65.25043	100.50000	-0.86228	d
4.9257	50.85217	65.28548	100.50000	-0.85154	d
5.4182	51.34349	65.32053	100.50000	-0.83928	d
5.9108	51.83481	65.35558	100.50000	-0.82553	d
6.4034	52.32612	65.39063	100.50000	-0.81034	d
6.8959	52.81744	65.42567	100.50000	-0.79373	d
7.3885	53.30876	65.46072	100.50000	-0.77575	d
7.8811	53.80008	65.49577	100.50000	-0.75647	d
8.3736	54.29139	65.53082	100.50000	-0.73592	d
8.8662	54.78271	65.56587	100.50000	-0.71418	d
9.3588	55.27403	65.60091	100.50000	-0.69130	d
9.8513	55.76535	65.63596	100.50000	-0.66735	d
10.344	56.25666	65.67101	100.50000	-0.64240	d
10.836	56.74798	65.70606	100.50000	-0.61654	d
11.329	57.23930	65.74111	100.50000	-0.58985	d
11.822	57.73062	65.77615	100.50000	-0.56241	d
12.314	58.22193	65.81120	100.50000	-0.53432	d
12.807	58.71325	65.84625	100.50000	-0.50568	d
13.299	59.20457	65.88130	100.50000	-0.47657	d
13.792	59.69588	65.91635	100.50000	-0.44712	d
14.284	60.18720	65.95139	100.50000	-0.41741	d
14.777	60.67852	65.98644	100.50000	-0.38756	d
15.270	61.16984	66.02149	100.50000	-0.35767	d
15.762	61.66115	66.05654	100.50000	-0.32784	d
16.255	62.15247	66.09159	100.50000	-0.29817	d
16.747	62.64379	66.12663	100.50000	-0.26876	d
17.240	63.13511	66.16168	100.50000	-0.23972	d
17.732	63.62642	66.19673	100.50000	-0.21111	d
18.225	64.11774	66.23178	100.50000	-0.18304	d
18.718	64.60906	66.26683	100.50000	-0.15558	d
19.210	65.10038	66.30187	100.50000	-0.12879	d
19.703	65.59169	66.33692	100.50000	-0.10274	d
20.195	66.08301	66.37197	100.50000	-0.077484	d
20.688	66.57433	66.40702	100.50000	-0.053072	d
21.180	67.06564	66.44207	100.50000	-0.029542	d
21.673	67.55696	66.47712	100.50000	-0.0069256	d
22.165	68.04828	66.51216	100.50000	0.014752	d
22.658	68.53960	66.54721	100.50000	0.035473	d
23.151	69.03091	66.58226	100.50000	0.055225	d
23.643	69.52223	66.61731	100.50000	0.074005	d
24.136	70.01355	66.65236	100.50000	0.091811	d
24.628	70.50487	66.68740	100.50000	0.10865	d
25.121	70.99618	66.72245	100.50000	0.12453	d
25.613	71.48750	66.75750	100.50000	0.13947	d
26.106	71.97882	66.79255	100.50000	0.15348	d
26.599	72.47013	66.82760	100.50000	0.16659	d
27.091	72.96145	66.86264	100.50000	0.17882	d
27.584	73.45277	66.89769	100.50000	0.19018	d
28.076	73.94409	66.93274	100.50000	0.20072	d
28.569	74.43540	66.96779	100.50000	0.21046	d
29.061	74.92672	67.00284	100.50000	0.21942	d
29.554	75.41804	67.03788	100.50000	0.22764	d
30.047	75.90936	67.07293	100.50000	0.23515	d
30.539	76.40067	67.10798	100.50000	0.24198	d
31.032	76.89199	67.14303	100.50000	0.24816	d
31.524	77.38331	67.17808	100.50000	0.25371	d
32.017	77.87463	67.21313	100.50000	0.25868	d
32.509	78.36594	67.24817	100.50000	0.26309	d
33.002	78.85726	67.28322	100.50000	0.26696	d
33.494	79.34858	67.31827	100.50000	0.27033	d
33.987	79.83989	67.35332	100.50000	0.27323	d
34.480	80.33121	67.38837	100.50000	0.27568	d
34.972	80.82253	67.42341	100.50000	0.27770	d
35.465	81.31385	67.45846	100.50000	0.27933	d
35.957	81.80516	67.49351	100.50000	0.28059	d
36.450	82.29648	67.52856	100.50000	0.28149	d
36.942	82.78780	67.56361	100.50000	0.28207	d
37.435	83.27912	67.59865	100.50000	0.28234	d
37.928	83.77043	67.63370	100.50000	0.28232	d
38.420	84.26175	67.66875	100.50000	0.28204	d
38.913	84.75307	67.70380	100.50000	0.28152	d
39.405	85.24438	67.73885	100.50000	0.28076	d
39.898	85.73570	67.77389	100.50000	0.27979	d
40.390	86.22702	67.80894	100.50000	0.27862	d
40.883	86.71834	67.84399	100.50000	0.27727	d
41.376	87.20965	67.87904	100.50000	0.27575	d
41.868	87.70097	67.91409	100.50000	0.27408	d
42.361	88.19229	67.94913	100.50000	0.27227	d
42.853	88.68361	67.98418	100.50000	0.27032	d
43.346	89.17492	68.01923	100.50000	0.26826	d
43.838	89.66624	68.05428	100.50000	0.26610	d
44.331	90.15756	68.08933	100.50000	0.26384	d
44.823	90.64888	68.12438	100.50000	0.26148	d
45.316	91.14019	68.15942	100.50000	0.25906	d
45.809	91.63151	68.19447	100.50000	0.25656	d
46.301	92.12283	68.22952	100.50000	0.25400	d
46.794	92.61414	68.26457	100.50000	0.25138	d
47.286	93.10546	68.29962	100.50000	0.24872	d
47.779	93.59678	68.33466	100.50000	0.24602	d
48.271	94.08810	68.36971	100.50000	0.24328	d
48.764	94.57941	68.40476	100.50000	0.24051	d
49.257	95.07073	68.43981	100.50000	0.23772	d
49.749	95.56205	68.47486	100.50000	0.23491	d
50.242	96.05337	68.50990	100.50000	0.23208	d
50.734	96.54468	68.54495	100.50000	0.22924	d
51.227	97.03600	68.58000	100.50000	0.22640	d

d - Displacements include imported displacements.

Structure: DH-3 | Sub-structure: DH-3

Dist. [m]	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	97.03600	68.58000	100.50000	0.22640	d
0.48909	96.99859	69.06765	100.50000	0.22517	d
0.97817	96.96117	69.55530	100.50000	0.22393	d
1.4673	96.92376	70.04296	100.50000	0.22265	d
1.9563	96.88635	70.53061	100.50000	0.22136	d
2.4454	96.84893	71.01826	100.50000	0.22005	d
2.9345	96.81152	71.50591	100.50000	0.21871	d
3.4236	96.77411	71.99357	100.50000	0.21735	d
3.9127	96.73670	72.48122	100.50000	0.21598	d
4.4018	96.69928	72.96887	100.50000	0.21458	d
4.8909	96.66187	73.45652	100.50000	0.21316	d
5.3799	96.62446	73.94417	100.50000	0.21173	d
5.8690	96.58704	74.43183	100.50000	0.21028	d
6.3581	96.54963	74.91948	100.50000	0.20882	d
6.8472	96.51222	75.40713	100.50000	0.20734	d
7.3363	96.47480	75.89478	100.50000	0.20584	d
7.8254	96.43739	76.38243	100.50000	0.20433	d
8.3144	96.39998	76.87009	100.50000	0.20281	d
8.8035	96.36257	77.35774	100.50000	0.20127	d
9.2926	96.32515	77.84539	100.50000	0.19973	d
9.7817	96.28774	78.33304	100.50000	0.19817	d
10.271	96.25033	78.82070	100.50000	0.19660	d
10.760	96.21291	79.30835	100.50000	0.19502	d
11.249	96.17550	79.79600	100.50000	0.19344	d

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
11.738	96.13809	80.28365	100.50000	0.19184 d
12.227	96.10067	80.77130	100.50000	0.19024 d
12.716	96.06326	81.25896	100.50000	0.18864 d
13.205	96.02585	81.74661	100.50000	0.18702 d
13.694	95.98843	82.23426	100.50000	0.18540 d
14.183	95.95102	82.72191	100.50000	0.18378 d
14.673	95.91361	83.20957	100.50000	0.18216 d
15.162	95.87620	83.69722	100.50000	0.18053 d
15.651	95.83878	84.18487	100.50000	0.17890 d
16.140	95.80137	84.67252	100.50000	0.17727 d
16.629	95.76396	85.16017	100.50000	0.17563 d
17.118	95.72654	85.64783	100.50000	0.17400 d
17.607	95.68913	86.13548	100.50000	0.17237 d
18.096	95.65172	86.62313	100.50000	0.17074 d
18.585	95.61430	87.11078	100.50000	0.16911 d
19.074	95.57689	87.59843	100.50000	0.16748 d
19.563	95.53948	88.08609	100.50000	0.16586 d
20.052	95.50207	88.57374	100.50000	0.16424 d
20.542	95.46465	89.06139	100.50000	0.16262 d
21.031	95.42724	89.54904	100.50000	0.16101 d
21.520	95.38983	90.03670	100.50000	0.15940 d
22.009	95.35241	90.52435	100.50000	0.15780 d
22.498	95.31500	91.01200	100.50000	0.15620 d

d - Displacements include imported displacements.

Structure: DH-4 | Sub-structure: DH-4

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	95.31500	91.01200	100.50000	0.15620 d
0.47118	94.84520	90.97595	100.50000	0.15793 d
0.94236	94.37540	90.93990	100.50000	0.15966 d
1.4135	93.90560	90.90385	100.50000	0.16141 d
1.8847	93.43580	90.86780	100.50000	0.16317 d
2.3559	92.96600	90.83175	100.50000	0.16493 d
2.8271	92.49620	90.79570	100.50000	0.16671 d
3.2983	92.02640	90.75965	100.50000	0.16850 d
3.7694	91.55660	90.72360	100.50000	0.17030 d
4.2406	91.08680	90.68755	100.50000	0.17210 d
4.7118	90.61700	90.65150	100.50000	0.17391 d
5.1830	90.14720	90.61545	100.50000	0.17574 d
5.6542	89.67740	90.57940	100.50000	0.17756 d
6.1254	89.20760	90.54335	100.50000	0.17940 d
6.5965	88.73780	90.50730	100.50000	0.18124 d
7.0677	88.26800	90.47125	100.50000	0.18308 d
7.5389	87.79820	90.43520	100.50000	0.18494 d
8.0101	87.32840	90.39915	100.50000	0.18679 d
8.4813	86.85860	90.36310	100.50000	0.18865 d
8.9524	86.38880	90.32705	100.50000	0.19051 d
9.4236	85.91900	90.29100	100.50000	0.19238 d

d - Displacements include imported displacements.

Structure: DH-5 | Sub-structure: DH-5

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	85.91900	90.29100	100.50000	0.19238 d
0.48006	85.95573	89.81235	100.50000	0.19448 d
0.96012	85.99246	89.33369	100.50000	0.19658 d
1.4402	86.02919	88.85504	100.50000	0.19869 d
1.9202	86.06592	88.37638	100.50000	0.20081 d
2.4003	86.10265	87.89773	100.50000	0.20292 d
2.8804	86.13938	87.41908	100.50000	0.20504 d
3.3604	86.17612	86.94042	100.50000	0.20716 d
3.8405	86.21285	86.46177	100.50000	0.20927 d
4.3205	86.24958	85.98312	100.50000	0.21139 d
4.8006	86.28631	85.50446	100.50000	0.21350 d
5.2807	86.32304	85.02581	100.50000	0.21560 d
5.7607	86.35977	84.54715	100.50000	0.21770 d
6.2408	86.39650	84.06850	100.50000	0.21979 d
6.7209	86.43323	83.58985	100.50000	0.22187 d
7.2009	86.46996	83.11119	100.50000	0.22394 d
7.6810	86.50669	82.63254	100.50000	0.22600 d
8.1610	86.54342	82.15388	100.50000	0.22804 d
8.6411	86.58015	81.67523	100.50000	0.23007 d
9.1212	86.61688	81.19658	100.50000	0.23208 d
9.6012	86.65362	80.71792	100.50000	0.23407 d
10.081	86.69035	80.23927	100.50000	0.23604 d
10.561	86.72708	79.76062	100.50000	0.23799 d
11.041	86.76381	79.28196	100.50000	0.23992 d
11.521	86.80054	78.80331	100.50000	0.24182 d
12.002	86.83727	78.32465	100.50000	0.24369 d
12.482	86.87400	77.84600	100.50000	0.24553 d

d - Displacements include imported displacements.

Structure: DH-6 | Sub-structure: DH-6

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	86.87400	77.84600	100.50000	0.24553 d
0.49556	86.37989	77.80809	100.50000	0.24794 d
0.99112	85.88579	77.77018	100.50000	0.25032 d
1.4867	85.39168	77.73227	100.50000	0.25266 d
1.9822	84.89758	77.69436	100.50000	0.25497 d
2.4778	84.40347	77.65645	100.50000	0.25723 d
2.9733	83.90936	77.61855	100.50000	0.25945 d
3.4689	83.41526	77.58064	100.50000	0.26161 d
3.9645	82.92115	77.54273	100.50000	0.26372 d
4.4600	82.42705	77.50482	100.50000	0.26577 d
4.9556	81.93294	77.46691	100.50000	0.26776 d
5.4511	81.43883	77.42900	100.50000	0.26967 d
5.9467	80.94473	77.39109	100.50000	0.27152 d
6.4423	80.45062	77.35318	100.50000	0.27329 d
6.9378	79.95652	77.31527	100.50000	0.27498 d
7.4334	79.46241	77.27736	100.50000	0.27658 d
7.9289	78.96830	77.23945	100.50000	0.27809 d
8.4245	78.47420	77.20155	100.50000	0.27950 d
8.9200	77.98009	77.16364	100.50000	0.28082 d
9.4156	77.48598	77.12573	100.50000	0.28203 d
9.9112	76.99188	77.08782	100.50000	0.28313 d
10.407	76.49777	77.04991	100.50000	0.28411 d
10.902	76.00367	77.01200	100.50000	0.28498 d
11.398	75.50956	76.97409	100.50000	0.28573 d
11.893	75.01545	76.93618	100.50000	0.28635 d
12.389	74.52135	76.89827	100.50000	0.28685 d
12.885	74.02724	76.86036	100.50000	0.28721 d
13.380	73.53314	76.82245	100.50000	0.28743 d
13.876	73.03903	76.78455	100.50000	0.28751 d
14.371	72.54492	76.74664	100.50000	0.28745 d
14.867	72.05082	76.70873	100.50000	0.28725 d
15.362	71.55671	76.67082	100.50000	0.28690 d
15.858	71.06261	76.63291	100.50000	0.28640 d
16.353	70.56850	76.59500	100.50000	0.28576 d
16.849	70.07439	76.55709	100.50000	0.28496 d
17.345	69.58029	76.51918	100.50000	0.28402 d
17.840	69.08618	76.48127	100.50000	0.28293 d
18.336	68.59208	76.44336	100.50000	0.28168 d
18.831	68.09797	76.40545	100.50000	0.28030 d

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
19.327	67.60386	76.36755	100.50000	0.27877 d
19.822	67.10976	76.32964	100.50000	0.27709 d
20.318	66.61565	76.29173	100.50000	0.27529 d
20.813	66.12155	76.25382	100.50000	0.27334 d
21.309	65.62744	76.21591	100.50000	0.27127 d
21.805	65.13333	76.17800	100.50000	0.26908 d
22.300	64.63923	76.14009	100.50000	0.26677 d
22.796	64.14512	76.10218	100.50000	0.26434 d
23.291	63.65102	76.06427	100.50000	0.26182 d
23.787	63.15691	76.02636	100.50000	0.25920 d
24.282	62.66280	75.98845	100.50000	0.25649 d
24.778	62.16870	75.95055	100.50000	0.25371 d
25.273	61.67459	75.91264	100.50000	0.25085 d
25.769	61.18048	75.87473	100.50000	0.24794 d
26.265	60.68638	75.83682	100.50000	0.24497 d
26.760	60.19227	75.79891	100.50000	0.24197 d
27.256	59.69817	75.76100	100.50000	0.23894 d
27.751	59.20406	75.72309	100.50000	0.23590 d
28.247	58.70995	75.68518	100.50000	0.23285 d
28.742	58.21585	75.64727	100.50000	0.22980 d
29.238	57.72174	75.60936	100.50000	0.22677 d
29.733	57.22764	75.57145	100.50000	0.22377 d
30.229	56.73353	75.53355	100.50000	0.22081 d
30.725	56.23942	75.49564	100.50000	0.21790 d
31.220	55.74532	75.45773	100.50000	0.21506 d
31.716	55.25121	75.41982	100.50000	0.21228 d
32.211	54.75711	75.38191	100.50000	0.20960 d
32.707	54.26300	75.34400	100.50000	0.20700 d

d - Displacements include imported displacements.

Structure: DH-7 | Sub-structure: DH-7

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	54.26300	75.34400	100.50000	0.20700 d
0.48103	54.22619	75.82362	100.50000	0.22019 d
0.96205	54.18938	76.30323	100.50000	0.23194 d
1.4431	54.15258	76.78285	100.50000	0.24236 d
1.9241	54.11577	77.26246	100.50000	0.25157 d
2.4051	54.07896	77.74208	100.50000	0.25966 d
2.8862	54.04215	78.22169	100.50000	0.26672 d
3.3672	54.00535	78.70131	100.50000	0.27284 d
3.8482	53.96854	79.18092	100.50000	0.27809 d
4.3292	53.93173	79.66054	100.50000	0.28254 d
4.8103	53.89492	80.14015	100.50000	0.28626 d
5.2913	53.85812	80.61977	100.50000	0.28931 d
5.7723	53.82131	81.09938	100.50000	0.29174 d
6.2533	53.78450	81.57900	100.50000	0.29361 d
6.7344	53.74769	82.05862	100.50000	0.29496 d
7.2154	53.71088	82.53823	100.50000	0.29584 d
7.6964	53.67408	83.01785	100.50000	0.29629 d
8.1774	53.63727	83.49746	100.50000	0.29635 d
8.6585	53.60046	83.97708	100.50000	0.29605 d
9.1395	53.56365	84.45669	100.50000	0.29542 d
9.6205	53.52685	84.93631	100.50000	0.29449 d
10.102	53.49004	85.41592	100.50000	0.29330 d
10.583	53.45323	85.89554	100.50000	0.29186 d
11.064	53.41642	86.37515	100.50000	0.29020 d
11.545	53.37962	86.85477	100.50000	0.28835 d
12.026	53.34281	87.33438	100.50000	0.28631 d
12.507	53.30600	87.81400	100.50000	0.28411 d

d - Displacements include imported displacements.

Structure: DH-8 | Sub-structure: DH-8

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	53.30600	87.81400	100.50000	0.28411 d
0.48457	52.82250	87.78178	100.50000	0.28447 d
0.96915	52.33900	87.74956	100.50000	0.28480 d
1.4537	51.85550	87.71733	100.50000	0.28510 d
1.9383	51.37200	87.68511	100.50000	0.28537 d
2.4229	50.88850	87.65289	100.50000	0.28562 d
2.9074	50.40500	87.62067	100.50000	0.28583 d
3.3920	49.92150	87.58844	100.50000	0.28602 d
3.8766	49.43800	87.55622	100.50000	0.28618 d
4.3612	48.95450	87.52400	100.50000	0.28631 d
4.8457	48.47100	87.49178	100.50000	0.28641 d
5.3303	47.98750	87.45956	100.50000	0.28648 d
5.8149	47.50400	87.42733	100.50000	0.28653 d
6.2994	47.02050	87.39511	100.50000	0.28655 d
6.7840	46.53700	87.36289	100.50000	0.28654 d
7.2686	46.05350	87.33067	100.50000	0.28650 d
7.7532	45.57000	87.29844	100.50000	0.28644 d
8.2377	45.08650	87.26622	100.50000	0.28635 d
8.7223	44.60300	87.23400	100.50000	0.28623 d

d - Displacements include imported displacements.

Specific Building Damage Results - All Segments

Structure: GVA-1 | Sub-structure: GVA-1

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	4.0544	Hogging	0.0	0.0	0.0	0.0	-4.0926E-6	36.149E+6	0 (Negligible)
	2	4.0544	20.243	Sagging	27.185E-6	0.0	40.805E-6	0.0	-4.0926E-6	5.6202E+6	0 (Negligible)

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

Structure: GVA-2 | Sub-structure: GVA-2

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	2.8830	Sagging	6.2208E-6	0.0	5.9009E-6	0.0	-1.9600E-6	5.6920E+6	0 (Negligible)

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

Structure: GVA-3 | Sub-structure: GVA-3

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	3.8170	Sagging	41.030E-6	0.0	37.158E-6	0.0	-3.9926E-6	877300.	0 (Negligible)

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

Vertical Offset from Line for Vertical Movement	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement	Min Radius of Curvature	Damage Category
Calculations		[m]	[m]		[%]	[%]	[%]	Curve		[m]	
[m]											
0.0	1	0.0	2.8410	Sagging	8.4318E-6	0.0	7.9751E-6	0.0	0.0	3.9566E+6	0 (Negligible)

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

Structure: GVA-5 | Sub-structure: GVA-5

Vertical Offset from Line for Vertical Movement	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement	Min Radius of Curvature	Damage Category
Calculations		[m]	[m]		[%]	[%]	[%]	Curve		[m]	
[m]											
0.0	1	0.0	7.8140	Sagging	170.63E-6	0.0	154.17E-6	0.0	10.986E-6	357220.	0 (Negligible)

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

Structure: GVA-6 | Sub-structure: GVA-6

Vertical Offset from Line for Vertical Movement	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement	Min Radius of Curvature	Damage Category
Calculations		[m]	[m]		[%]	[%]	[%]	Curve		[m]	
[m]											
0.0	1	0.0	2.9540	Sagging	29.042E-6	0.0	27.359E-6	0.0	9.8734E-6	1.1438E+6	0 (Negligible)

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

Structure: GVA-7 | Sub-structure: GVA-7

Vertical Offset from Line for Vertical Movement	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement	Min Radius of Curvature	Damage Category
Calculations		[m]	[m]		[%]	[%]	[%]	Curve		[m]	
[m]											
0.0	1	0.0	3.7150	Sagging	260.84E-6	0.0	237.50E-6	0.0	38.120E-6	144940.	0 (Negligible)

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

Structure: GVA-8 | Sub-structure: GVA-8

Vertical Offset from Line for Vertical Movement	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement	Min Radius of Curvature	Damage Category
Calculations		[m]	[m]		[%]	[%]	[%]	Curve		[m]	
[m]											
0.0	1	0.0	2.9550	Sagging	72.021E-6	0.0	67.770E-6	0.0	-24.723E-6	484110.	0 (Negligible)

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

Structure: GVA-9 | Sub-structure: GVA-9

Vertical Offset from Line for Vertical Movement	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement	Min Radius of Curvature	Damage Category
Calculations		[m]	[m]		[%]	[%]	[%]	Curve		[m]	
[m]											
0.0	1	0.0	24.656	Sagging	312.32E-6	0.0	474.04E-6	0.0	-18.894E-6	477970.	0 (Negligible)

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

Structure: GVA-10 | Sub-structure: GVA-10

Vertical Offset from Line for Vertical Movement	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement	Min Radius of Curvature	Damage Category
Calculations		[m]	[m]		[%]	[%]	[%]	Curve		[m]	
[m]											
0.0	1	0.0	11.314	Sagging	6.4865E-6	0.0	7.6890E-6	0.0	3.9661E-6	11.318E+6	0 (Negligible)
	2	11.314	4.0008	Hogging	0.0	0.0	0.0	0.0	3.9661E-6	43.020E+6	0 (Negligible)

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

Structure: GE-1 | Sub-structure: GE-1

Vertical Offset from Line for Vertical Movement	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement	Min Radius of Curvature	Damage Category
Calculations		[m]	[m]		[%]	[%]	[%]	Curve		[m]	
[m]											
0.0	1	1.9781	4.6366	Sagging	133.08E-6	0.0	137.22E-6	0.0	64.358E-6	262770.	0 (Negligible)
	2	6.6148	1.2972	Hogging	11.956E-6	0.0	11.909E-6	0.0	64.358E-6	963580.	0 (Negligible)

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

Structure: GE-2 | Sub-structure: GE-2

Vertical Offset from Line for Vertical Movement	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement	Min Radius of Curvature	Damage Category
Calculations		[m]	[m]		[%]	[%]	[%]	Curve		[m]	
[m]											
0.0	1	0.0	13.801	Sagging	0.0017487	0.0	0.0026258	0.0	-150.87E-6	36090.	0 (Negligible)

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

Structure: GE-3 | Sub-structure: GE-3

Vertical Offset from Line for Vertical Movement	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement	Min Radius of Curvature	Damage Category
Calculations		[m]	[m]		[%]	[%]	[%]	Curve		[m]	
[m]											
0.0	1	0.0	7.6490	Sagging	18.675E-6	0.0	25.856E-6	0.0	-1.1997E-6	3.5037E+6	0 (Negligible)

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

Structure: GE-4 | Sub-structure: GE-4

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	11.265	Sagging	475.03E-6	0.0	720.73E-6	0.0	41.104E-6	154580.	0 (Negligible)

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

Structure: DH-1 | Sub-structure: DH-1

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	22.338	Sagging	0.0025888	0.0	0.0035433	0.0	235.18E-6	22321.	0 (Negligible)

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

Structure: DH-2 | Sub-structure: DH-2

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	14.974	Hogging	952.79E-6	0.0	912.34E-6	0.0	-60.689E-6	142790.	0 (Negligible)
	2	14.974	36.252	Sagging	996.09E-6	0.0	0.0015129	0.0	-60.689E-6	249690.	0 (Negligible)

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

Structure: DH-3 | Sub-structure: DH-3

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	16.739	Sagging	11.074E-6	0.0	12.982E-6	0.0	3.3382E-6	10.086E+6	0 (Negligible)
	2	16.739	5.7584	Hogging	1.0392E-6	0.0	1.0371E-6	0.0	3.3382E-6	40.240E+6	0 (Negligible)

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

Structure: DH-4 | Sub-structure: DH-4

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	9.4230	Hogging	4.0064E-6	0.0	3.9697E-6	0.0	-3.9565E-6	19.461E+6	0 (Negligible)

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

Structure: DH-5 | Sub-structure: DH-5

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	2.8530	Hogging	0.0	0.0	0.0	0.0	-4.4104E-6	41.857E+6	0 (Negligible)
	2	2.8530	9.6280	Sagging	7.6604E-6	0.0	7.1168E-6	0.0	-4.4104E-6	7.7146E+6	0 (Negligible)

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

Structure: DH-6 | Sub-structure: DH-6

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	27.993	Sagging	170.16E-6	0.0	251.31E-6	0.0	6.1573E-6	1.6460E+6	0 (Negligible)
	2	27.993	4.7130	Hogging	13.170E-6	0.0	13.125E-6	0.0	6.1573E-6	2.5316E+6	0 (Negligible)

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

Structure: DH-7 | Sub-structure: DH-7

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	12.506	Sagging	397.11E-6	0.0	377.69E-6	0.0	-27.414E-6	157750.	0 (Negligible)

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

Structure: DH-8 | Sub-structure: DH-8

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	8.7220	Sagging	12.978E-6	0.0	12.267E-6	0.0	0.0	7.9026E+6	0 (Negligible)

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

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

Structure: GVA-1 | Sub-structure: GVA-1

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

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	27.185E-6	0.0	-4.0926E-6	0.26631	40.805E-6	0.0	-4.0926E-6	36.149E+6	5.6202E+6	0 (Negligible)

Structure: GVA-2 | Sub-structure: GVA-2

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	6.2208E-6	0.0	-1.9600E-6	0.27136	5.9009E-6	0.0	-1.9600E-6	-	5.6920E+6	0 (Negligible)

Structure: GVA-3 | Sub-structure: GVA-3

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	41.030E-6	0.0	-3.9926E-6	0.28158	37.158E-6	0.0	-3.9926E-6	-	877300.	0 (Negligible)

Structure: GVA-4 | Sub-structure: GVA-4

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	8.4318E-6	0.0	0.0	0.28158	7.9751E-6	0.0	0.0	-	3.9566E+6	0 (Negligible)

Structure: GVA-5 | Sub-structure: GVA-5

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	170.63E-6	0.0	10.986E-6	0.28233	154.17E-6	0.0	10.986E-6	-	357220.	0 (Negligible)

Structure: GVA-6 | Sub-structure: GVA-6

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	29.042E-6	0.0	9.8734E-6	0.25306	27.359E-6	0.0	9.8734E-6	-	1.1438E+6	0 (Negligible)

Structure: GVA-7 | Sub-structure: GVA-7

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	260.84E-6	0.0	38.120E-6	0.22664	237.50E-6	0.0	38.120E-6	-	144940.	0 (Negligible)

Structure: GVA-8 | Sub-structure: GVA-8

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	72.021E-6	0.0	-24.723E-6	0.18739	67.770E-6	0.0	-24.723E-6	-	484110.	0 (Negligible)

Structure: GVA-9 | Sub-structure: GVA-9

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	312.32E-6	0.0	-18.894E-6	0.28732	474.04E-6	0.0	-18.894E-6	-	477970.	0 (Negligible)

Structure: GVA-10 | Sub-structure: GVA-10

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	6.4865E-6	0.0	3.9661E-6	0.23986	7.6890E-6	0.0	3.9661E-6	43.020E+6	11.318E+6	0 (Negligible)

Structure: GE-1 | Sub-structure: GE-1

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	133.08E-6	0.0	64.358E-6	0.46604	137.22E-6	0.0	64.358E-6	963580.	262770.	0 (Negligible)

Structure: GE-2 | Sub-structure: GE-2

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0017487	0.0	-150.87E-6	0.46607	0.0026258	0.0	-150.87E-6	-	36090.	0 (Negligible)

Structure: GE-3 | Sub-structure: GE-3

Vertical Offset from Line for Vertical	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	18.675E-6	0.0	-1.1997E-6	0.28962	25.856E-6	0.0	-1.1997E-6		- 3.5037E+6	0 (Negligible)

Structure: GE-4 | Sub-structure: GE-4

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	475.03E-6	0.0	41.104E-6	0.28952	720.73E-6	0.0	41.104E-6		- 154580.	0 (Negligible)

Structure: DH-1 | Sub-structure: DH-1

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0025888	0.0	235.18E-6	0.88590	0.0035433	0.0	235.18E-6		- 22321.	0 (Negligible)

Structure: DH-2 | Sub-structure: DH-2

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	996.09E-6	0.0	-60.689E-6	0.89306	0.0015129	0.0	-60.689E-6	142790.	249690.	0 (Negligible)

Structure: DH-3 | Sub-structure: DH-3

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	11.074E-6	0.0	3.3382E-6	0.22640	12.982E-6	0.0	3.3382E-6	40.240E+6	10.086E+6	0 (Negligible)

Structure: DH-4 | Sub-structure: DH-4

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	4.0064E-6	0.0	-3.9565E-6	0.19237	3.9697E-6	0.0	-3.9565E-6	19.461E+6		- 0 (Negligible)

Structure: DH-5 | Sub-structure: DH-5

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	7.6604E-6	0.0	-4.4104E-6	0.24553	7.1168E-6	0.0	-4.4104E-6	41.857E+6	7.7146E+6	0 (Negligible)

Structure: DH-6 | Sub-structure: DH-6

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	170.16E-6	0.0	6.1573E-6	0.28751	251.31E-6	0.0	6.1573E-6	2.5316E+6	1.6460E+6	0 (Negligible)

Structure: DH-7 | Sub-structure: DH-7

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	397.11E-6	0.0	-27.414E-6	0.29634	377.69E-6	0.0	-27.414E-6		- 157750.	0 (Negligible)

Structure: DH-8 | Sub-structure: DH-8

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	12.978E-6	0.0	0.0	0.28655	12.267E-6	0.0	0.0		- 7.9026E+6	0 (Negligible)

Specific Building Damage Results - Critical Segments within Each Structure

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Max Slope	Max Settlement	Max Tensile Strain	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
				[m]	[m]			[mm]	[%]	[m]	[m]	
GVA-1	Max Slope	GVA-1	1	0.0	4.0544	Hogging	**4.0926E-6**	0.19757	0.0	36.149E+6	- 0	(Negligible)
	Max Settlement	GVA-1	2	4.0544	24.297	Sagging	4.0926E-6	**0.26631**	40.805E-6	- 5.6202E+6	0	(Negligible)
	Max Tensile Strain	GVA-1	2	4.0544	24.297	Sagging	4.0926E-6	0.26631	**40.805E-6**	- 5.6202E+6	0	(Negligible)
	Min Radius of Curvature (Hogging)	GVA-1	1	0.0	4.0544	Hogging	4.0926E-6	0.19757	0.0	**36.149E+6**	- 0	(Negligible)
	Min Radius of Curvature (Sagging)	GVA-1	2	4.0544	24.297	Sagging	4.0926E-6	0.26631	40.805E-6	- **5.6202E+6**	0	(Negligible)

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Max Slope	Max Settlement	Max Tensile Strain	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
GVA-2	Max Slope	GVA-2	1	0.0	2.8830	Sagging	**1.9600E-6**	0.27136	5.9009E-6	-	5.6920E+6	0 (Negligible)
	Max Settlement	GVA-2	1	0.0	2.8830	Sagging	1.9600E-6	**0.27136**	5.9009E-6	-	5.6920E+6	0 (Negligible)
	Max Tensile Strain	GVA-2	1	0.0	2.8830	Sagging	1.9600E-6	0.27136	**5.9009E-6**	-	5.6920E+6	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	GVA-2	1	0.0	2.8830	Sagging	1.9600E-6	0.27136	5.9009E-6	-	**5.6920E+6**	0 (Negligible)
GVA-3	Max Slope	GVA-3	1	0.0	3.8170	Sagging	**3.9926E-6**	0.28158	37.158E-6	-	877300.	0 (Negligible)
	Max Settlement	GVA-3	1	0.0	3.8170	Sagging	3.9926E-6	**0.28158**	37.158E-6	-	877300.	0 (Negligible)
	Max Tensile Strain	GVA-3	1	0.0	3.8170	Sagging	3.9926E-6	0.28158	**37.158E-6**	-	877300.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	GVA-3	1	0.0	3.8170	Sagging	3.9926E-6	0.28158	37.158E-6	-	**877300.**	0 (Negligible)
GVA-4	Max Slope	GVA-4	1	0.0	2.8410	Sagging	**0.0**	0.28158	7.9751E-6	-	3.9566E+6	0 (Negligible)
	Max Settlement	GVA-4	1	0.0	2.8410	Sagging	0.0	**0.28158**	7.9751E-6	-	3.9566E+6	0 (Negligible)
	Max Tensile Strain	GVA-4	1	0.0	2.8410	Sagging	0.0	0.28158	**7.9751E-6**	-	3.9566E+6	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	GVA-4	1	0.0	2.8410	Sagging	0.0	0.28158	7.9751E-6	-	**3.9566E+6**	0 (Negligible)
GVA-5	Max Slope	GVA-5	1	0.0	7.8140	Sagging	**10.986E-6**	0.28233	154.17E-6	-	357220.	0 (Negligible)
	Max Settlement	GVA-5	1	0.0	7.8140	Sagging	10.986E-6	**0.28233**	154.17E-6	-	357220.	0 (Negligible)
	Max Tensile Strain	GVA-5	1	0.0	7.8140	Sagging	10.986E-6	0.28233	**154.17E-6**	-	357220.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	GVA-5	1	0.0	7.8140	Sagging	10.986E-6	0.28233	154.17E-6	-	**357220.**	0 (Negligible)
GVA-6	Max Slope	GVA-6	1	0.0	2.9540	Sagging	**9.8734E-6**	0.25306	27.359E-6	-	1.1438E+6	0 (Negligible)
	Max Settlement	GVA-6	1	0.0	2.9540	Sagging	9.8734E-6	**0.25306**	27.359E-6	-	1.1438E+6	0 (Negligible)
	Max Tensile Strain	GVA-6	1	0.0	2.9540	Sagging	9.8734E-6	0.25306	**27.359E-6**	-	1.1438E+6	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	GVA-6	1	0.0	2.9540	Sagging	9.8734E-6	0.25306	27.359E-6	-	**1.1438E+6**	0 (Negligible)
GVA-7	Max Slope	GVA-7	1	0.0	3.7150	Sagging	**38.120E-6**	0.22664	237.50E-6	-	144940.	0 (Negligible)
	Max Settlement	GVA-7	1	0.0	3.7150	Sagging	38.120E-6	**0.22664**	237.50E-6	-	144940.	0 (Negligible)
	Max Tensile Strain	GVA-7	1	0.0	3.7150	Sagging	38.120E-6	0.22664	**237.50E-6**	-	144940.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	GVA-7	1	0.0	3.7150	Sagging	38.120E-6	0.22664	237.50E-6	-	**144940.**	0 (Negligible)
GVA-8	Max Slope	GVA-8	1	0.0	2.9550	Sagging	**24.723E-6**	0.18739	67.770E-6	-	484110.	0 (Negligible)
	Max Settlement	GVA-8	1	0.0	2.9550	Sagging	24.723E-6	**0.18739**	67.770E-6	-	484110.	0 (Negligible)
	Max Tensile Strain	GVA-8	1	0.0	2.9550	Sagging	24.723E-6	0.18739	**67.770E-6**	-	484110.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	GVA-8	1	0.0	2.9550	Sagging	24.723E-6	0.18739	67.770E-6	-	**484110.**	0 (Negligible)
GVA-9	Max Slope	GVA-9	1	0.0	24.656	Sagging	**18.894E-6**	0.28732	474.04E-6	-	477970.	0 (Negligible)
	Max Settlement	GVA-9	1	0.0	24.656	Sagging	18.894E-6	**0.28732**	474.04E-6	-	477970.	0 (Negligible)
	Max Tensile Strain	GVA-9	1	0.0	24.656	Sagging	18.894E-6	0.28732	**474.04E-6**	-	477970.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	GVA-9	1	0.0	24.656	Sagging	18.894E-6	0.28732	474.04E-6	-	**477970.**	0 (Negligible)
GVA-10	Max Slope	GVA-10	1	0.0	11.314	Sagging	**3.9661E-6**	0.23986	7.6890E-6	-	11.318E+6	0 (Negligible)
	Max Settlement	GVA-10	1	0.0	11.314	Sagging	3.9661E-6	**0.23986**	7.6890E-6	-	11.318E+6	0 (Negligible)
	Max Tensile Strain	GVA-10	1	0.0	11.314	Sagging	3.9661E-6	0.23986	**7.6890E-6**	-	11.318E+6	0 (Negligible)
	Min Radius of Curvature (Hogging)	GVA-10	2	11.314	15.315	Hogging	3.9661E-6	0.19686	0.0	**43.020E+6**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	GVA-10	1	0.0	11.314	Sagging	3.9661E-6	0.23986	7.6890E-6	-	**11.318E+6**	0 (Negligible)
GE-1	Max Slope	GE-1	1	1.9781	6.6148	Sagging	**64.358E-6**	0.38294	137.22E-6	-	262770.	0 (Negligible)
	Max Settlement	GE-1	2	6.6148	7.9120	Hogging	64.358E-6	**0.46604**	11.909E-6	963580.	-	0 (Negligible)
	Max Tensile Strain	GE-1	1	1.9781	6.6148	Sagging	64.358E-6	0.38294	**137.22E-6**	-	262770.	0 (Negligible)
	Min Radius of Curvature (Hogging)	GE-1	2	6.6148	7.9120	Hogging	64.358E-6	0.46604	11.909E-6	**963580.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	GE-1	1	1.9781	6.6148	Sagging	64.358E-6	0.38294	137.22E-6	-	**262770.**	0 (Negligible)
GE-2	Max Slope	GE-2	1	0.0	13.801	Sagging	**150.87E-6**	0.46607	0.0026258	-	36090.	0 (Negligible)
	Max Settlement	GE-2	1	0.0	13.801	Sagging	150.87E-6	**0.46607**	0.0026258	-	36090.	0 (Negligible)
	Max Tensile Strain	GE-2	1	0.0	13.801	Sagging	150.87E-6	0.46607	**0.0026258**	-	36090.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	GE-2	1	0.0	13.801	Sagging	150.87E-6	0.46607	0.0026258	-	**36090.**	0 (Negligible)
GE-3	Max Slope	GE-3	1	0.0	7.6490	Sagging	**1.1997E-6**	0.28962	25.856E-6	-	3.5037E+6	0 (Negligible)
	Max Settlement	GE-3	1	0.0	7.6490	Sagging	1.1997E-6	**0.28962**	25.856E-6	-	3.5037E+6	0 (Negligible)
	Max Tensile Strain	GE-3	1	0.0	7.6490	Sagging	1.1997E-6	0.28962	**25.856E-6**	-	3.5037E+6	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	GE-3	1	0.0	7.6490	Sagging	1.1997E-6	0.28962	25.856E-6	-	**3.5037E+6**	0 (Negligible)
GE-4	Max Slope	GE-4	1	0.0	11.265	Sagging	**41.104E-6**	0.28952	720.73E-6	-	154580.	0 (Negligible)
	Max Settlement	GE-4	1	0.0	11.265	Sagging	41.104E-6	**0.28952**	720.73E-6	-	154580.	0 (Negligible)
	Max Tensile Strain	GE-4	1	0.0	11.265	Sagging	41.104E-6	0.28952	**720.73E-6**	-	154580.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	GE-4	1	0.0	11.265	Sagging	41.104E-6	0.28952	720.73E-6	-	**154580.**	0 (Negligible)
DH-1	Max Slope	DH-1	1	0.0	22.338	Sagging	**235.18E-6**	0.88590	0.0035433	-	22321.	0 (Negligible)
	Max Settlement	DH-1	1	0.0	22.338	Sagging	235.18E-6	**0.88590**	0.0035433	-	22321.	0 (Negligible)
	Max Tensile Strain	DH-1	1	0.0	22.338	Sagging	235.18E-6	0.88590	**0.0035433**	-	22321.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Max Slope	Max Settlement	Max Tensile Strain	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
	Min Radius of Curvature (Sagging)	DH-1	1	0.0	22.338	Sagging	235.18E-6	0.88590	0.0035433	-	**22321.**	0 (Negligible)
DH-2	Max Slope	DH-2	1	0.0	14.974	Hogging	**60.689E-6**	0.89306	912.34E-6	142790.	-	0 (Negligible)
	Max Settlement	DH-2	1	0.0	14.974	Hogging	60.689E-6	**0.89306**	912.34E-6	142790.	-	0 (Negligible)
	Max Tensile Strain	DH-2	2	14.974	51.226	Sagging	60.689E-6	0.37560	**0.0015129**	-	249690.	0 (Negligible)
	Min Radius of Curvature (Hogging)	DH-2	1	0.0	14.974	Hogging	60.689E-6	0.89306	912.34E-6	**142790.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	DH-2	2	14.974	51.226	Sagging	60.689E-6	0.37560	0.0015129	-	**249690.**	0 (Negligible)
DH-3	Max Slope	DH-3	1	0.0	16.739	Sagging	**3.3382E-6**	0.22640	12.982E-6	-	10.086E+6	0 (Negligible)
	Max Settlement	DH-3	1	0.0	16.739	Sagging	3.3382E-6	**0.22640**	12.982E-6	-	10.086E+6	0 (Negligible)
	Max Tensile Strain	DH-3	1	0.0	16.739	Sagging	3.3382E-6	0.22640	**12.982E-6**	-	10.086E+6	0 (Negligible)
	Min Radius of Curvature (Hogging)	DH-3	2	16.739	22.497	Hogging	3.3382E-6	0.17527	1.0371E-6	**40.240E+6**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	DH-3	1	0.0	16.739	Sagging	3.3382E-6	0.22640	12.982E-6	-	**10.086E+6**	0 (Negligible)
DH-4	Max Slope	DH-4	1	0.0	9.4230	Hogging	**3.9565E-6**	0.19237	3.9697E-6	19.461E+6	-	0 (Negligible)
	Max Settlement	DH-4	1	0.0	9.4230	Hogging	3.9565E-6	**0.19237**	3.9697E-6	19.461E+6	-	0 (Negligible)
	Max Tensile Strain	DH-4	1	0.0	9.4230	Hogging	3.9565E-6	0.19237	**3.9697E-6**	19.461E+6	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	DH-4	1	0.0	9.4230	Hogging	3.9565E-6	0.19237	3.9697E-6	**19.461E+6**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
DH-5	Max Slope	DH-5	1	0.0	2.8530	Hogging	**4.4104E-6**	0.20492	0.0	41.857E+6	-	0 (Negligible)
	Max Settlement	DH-5	2	2.8530	12.481	Sagging	4.4104E-6	**0.24553**	7.1168E-6	-	7.7146E+6	0 (Negligible)
	Max Tensile Strain	DH-5	2	2.8530	12.481	Sagging	4.4104E-6	0.24553	**7.1168E-6**	-	7.7146E+6	0 (Negligible)
	Min Radius of Curvature (Hogging)	DH-5	1	0.0	2.8530	Hogging	4.4104E-6	0.20492	0.0	**41.857E+6**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	DH-5	2	2.8530	12.481	Sagging	4.4104E-6	0.24553	7.1168E-6	-	**7.7146E+6**	0 (Negligible)
DH-6	Max Slope	DH-6	1	0.0	27.993	Sagging	**6.1573E-6**	0.28751	251.31E-6	-	1.6460E+6	0 (Negligible)
	Max Settlement	DH-6	1	0.0	27.993	Sagging	6.1573E-6	**0.28751**	251.31E-6	-	1.6460E+6	0 (Negligible)
	Max Tensile Strain	DH-6	1	0.0	27.993	Sagging	6.1573E-6	0.28751	**251.31E-6**	-	1.6460E+6	0 (Negligible)
	Min Radius of Curvature (Hogging)	DH-6	2	27.993	32.706	Hogging	6.1573E-6	0.23441	13.125E-6	**2.5316E+6**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	DH-6	1	0.0	27.993	Sagging	6.1573E-6	0.28751	251.31E-6	-	**1.6460E+6**	0 (Negligible)
DH-7	Max Slope	DH-7	1	0.0	12.506	Sagging	**27.414E-6**	0.29634	377.69E-6	-	157750.	0 (Negligible)
	Max Settlement	DH-7	1	0.0	12.506	Sagging	27.414E-6	**0.29634**	377.69E-6	-	157750.	0 (Negligible)
	Max Tensile Strain	DH-7	1	0.0	12.506	Sagging	27.414E-6	0.29634	**377.69E-6**	-	157750.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	DH-7	1	0.0	12.506	Sagging	27.414E-6	0.29634	377.69E-6	-	**157750.**	0 (Negligible)
DH-8	Max Slope	DH-8	1	0.0	8.7220	Sagging	**0.0**	0.28655	12.267E-6	-	7.9026E+6	0 (Negligible)
	Max Settlement	DH-8	1	0.0	8.7220	Sagging	0.0	**0.28655**	12.267E-6	-	7.9026E+6	0 (Negligible)
	Max Tensile Strain	DH-8	1	0.0	8.7220	Sagging	0.0	0.28655	**12.267E-6**	-	7.9026E+6	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	DH-8	1	0.0	8.7220	Sagging	0.0	0.28655	12.267E-6	-	**7.9026E+6**	0 (Negligible)

Utility Strain Calculation Options

Neglect beneficial contribution of axial strains : No

Specific Building Damage Results - Horizontal Displacements

Structure: GVA-1 | Sub-structure: GVA-1

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	9.25200	89.52300	100.50000	0.0	0.0	0.0	0.0 d
0.48595	9.22654	89.03772	100.50000	0.0	0.0	0.0	0.0 d
0.97189	9.20108	88.55244	100.50000	0.0	0.0	0.0	0.0 d
1.4578	9.17562	88.06716	100.50000	0.0	0.0	0.0	0.0 d
1.9438	9.15016	87.58188	100.50000	0.0	0.0	0.0	0.0 d
2.4297	9.12470	87.09660	100.50000	0.0	0.0	0.0	0.0 d
2.9157	9.09924	86.61132	100.50000	0.0	0.0	0.0	0.0 d
3.4016	9.07378	86.12604	100.50000	0.0	0.0	0.0	0.0 d
3.8876	9.04832	85.64076	100.50000	0.0	0.0	0.0	0.0 d
4.3735	9.02286	85.15548	100.50000	0.0	0.0	0.0	0.0 d
4.8595	8.99740	84.67020	100.50000	0.0	0.0	0.0	0.0 d
5.3454	8.97194	84.18492	100.50000	0.0	0.0	0.0	0.0 d
5.8314	8.94648	83.69964	100.50000	0.0	0.0	0.0	0.0 d
6.3173	8.92102	83.21436	100.50000	0.0	0.0	0.0	0.0 d
6.8033	8.89556	82.72908	100.50000	0.0	0.0	0.0	0.0 d
7.2892	8.87010	82.24380	100.50000	0.0	0.0	0.0	0.0 d
7.7752	8.84464	81.75852	100.50000	0.0	0.0	0.0	0.0 d
8.2611	8.81918	81.27324	100.50000	0.0	0.0	0.0	0.0 d
8.7471	8.79372	80.78796	100.50000	0.0	0.0	0.0	0.0 d
9.2330	8.76826	80.30268	100.50000	0.0	0.0	0.0	0.0 d
9.7189	8.74280	79.81740	100.50000	0.0	0.0	0.0	0.0 d
10.205	8.71734	79.33212	100.50000	0.0	0.0	0.0	0.0 d
10.691	8.69188	78.84684	100.50000	0.0	0.0	0.0	0.0 d
11.177	8.66642	78.36156	100.50000	0.0	0.0	0.0	0.0 d
11.663	8.64096	77.87628	100.50000	0.0	0.0	0.0	0.0 d
12.149	8.61550	77.39100	100.50000	0.0	0.0	0.0	0.0 d
12.635	8.59004	76.90572	100.50000	0.0	0.0	0.0	0.0 d
13.121	8.56458	76.42044	100.50000	0.0	0.0	0.0	0.0 d
13.607	8.53912	75.93516	100.50000	0.0	0.0	0.0	0.0 d
14.092	8.51366	75.44988	100.50000	0.0	0.0	0.0	0.0 d
14.578	8.48820	74.96460	100.50000	0.0	0.0	0.0	0.0 d
15.064	8.46274	74.47932	100.50000	0.0	0.0	0.0	0.0 d
15.550	8.43728	73.99404	100.50000	0.0	0.0	0.0	0.0 d
16.036	8.41182	73.50876	100.50000	0.0	0.0	0.0	0.0 d
16.522	8.38636	73.02348	100.50000	0.0	0.0	0.0	0.0 d
17.008	8.36090	72.53820	100.50000	0.0	0.0	0.0	0.0 d
17.494	8.33544	72.05292	100.50000	0.0	0.0	0.0	0.0 d
17.980	8.30998	71.56764	100.50000	0.0	0.0	0.0	0.0 d
18.466	8.28452	71.08236	100.50000	0.0	0.0	0.0	0.0 d
18.952	8.25906	70.59708	100.50000	0.0	0.0	0.0	0.0 d
19.438	8.23360	70.11180	100.50000	0.0	0.0	0.0	0.0 d
19.924	8.20814	69.62652	100.50000	0.0	0.0	0.0	0.0 d
20.410	8.18268	69.14124	100.50000	0.0	0.0	0.0	0.0 d
20.896	8.15722	68.65596	100.50000	0.0	0.0	0.0	0.0 d
21.382	8.13176	68.17068	100.50000	0.0	0.0	0.0	0.0 d
21.868	8.10630	67.68540	100.50000	0.0	0.0	0.0	0.0 d
22.354	8.08084	67.20012	100.50000	0.0	0.0	0.0	0.0 d
22.840	8.05538	66.71484	100.50000	0.0	0.0	0.0	0.0 d
23.325	8.02992	66.22956	100.50000	0.0	0.0	0.0	0.0 d
23.811	8.00446	65.74428	100.50000	0.0	0.0	0.0	0.0 d
24.297	7.97900	65.25900	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-2 | Sub-structure: GVA-2

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	7.97900	65.25900	100.50000	0.0	0.0	0.0	0.0 d
0.48050	7.95067	64.77933	100.50000	0.0	0.0	0.0	0.0 d
0.96101	7.92233	64.29967	100.50000	0.0	0.0	0.0	0.0 d
1.4415	7.89400	63.82000	100.50000	0.0	0.0	0.0	0.0 d
1.9220	7.86567	63.34033	100.50000	0.0	0.0	0.0	0.0 d
2.4025	7.83733	62.86067	100.50000	0.0	0.0	0.0	0.0 d
2.8830	7.80900	62.38100	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-3 | Sub-structure: GVA-3

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	7.80900	62.38100	100.50000	0.0	0.0	0.0	0.0 d
0.47715	8.28487	62.34613	100.50000	0.0	0.0	0.0	0.0 d
0.95430	8.76075	62.31125	100.50000	0.0	0.0	0.0	0.0 d
1.4315	9.23663	62.27638	100.50000	0.0	0.0	0.0	0.0 d
1.9086	9.71250	62.24150	100.50000	0.0	0.0	0.0	0.0 d
2.3858	10.18838	62.20662	100.50000	0.0	0.0	0.0	0.0 d
2.8629	10.66425	62.17175	100.50000	0.0	0.0	0.0	0.0 d
3.3401	11.14012	62.13687	100.50000	0.0	0.0	0.0	0.0 d
3.8172	11.61600	62.10200	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-4 | Sub-structure: GVA-4

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	11.61600	62.10200	100.50000	0.0	0.0	0.0	0.0 d
0.47359	11.65050	62.57433	100.50000	0.0	0.0	0.0	0.0 d
0.94718	11.68500	63.04667	100.50000	0.0	0.0	0.0	0.0 d
1.4208	11.71950	63.51900	100.50000	0.0	0.0	0.0	0.0 d
1.8944	11.75400	63.99133	100.50000	0.0	0.0	0.0	0.0 d
2.3680	11.78850	64.46367	100.50000	0.0	0.0	0.0	0.0 d
2.8415	11.82300	64.93600	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-5 | Sub-structure: GVA-5

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	11.82300	64.93600	100.50000	0.0	0.0	0.0	0.0 d
0.48843	12.31013	64.90031	100.50000	0.0	0.0	0.0	0.0 d
0.97686	12.79725	64.86463	100.50000	0.0	0.0	0.0	0.0 d
1.4653	13.28438	64.82894	100.50000	0.0	0.0	0.0	0.0 d

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
1.9537	13.77150	64.79325	100.50000	0.0	0.0	0.0	0.0 d
2.4422	14.25863	64.75756	100.50000	0.0	0.0	0.0	0.0 d
2.9306	14.74575	64.72187	100.50000	0.0	0.0	0.0	0.0 d
3.4190	15.23288	64.68619	100.50000	0.0	0.0	0.0	0.0 d
3.9074	15.72000	64.65050	100.50000	0.0	0.0	0.0	0.0 d
4.3959	16.20713	64.61481	100.50000	0.0	0.0	0.0	0.0 d
4.8843	16.69425	64.57913	100.50000	0.0	0.0	0.0	0.0 d
5.3727	17.18138	64.54344	100.50000	0.0	0.0	0.0	0.0 d
5.8612	17.66850	64.50775	100.50000	0.0	0.0	0.0	0.0 d
6.3496	18.15563	64.47206	100.50000	0.0	0.0	0.0	0.0 d
6.8380	18.64275	64.43637	100.50000	0.0	0.0	0.0	0.0 d
7.3265	19.12988	64.40069	100.50000	0.0	0.0	0.0	0.0 d
7.8149	19.61700	64.36500	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-6 | Sub-structure: GVA-6

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	19.61700	64.36500	100.50000	0.0	0.0	0.0	0.0 d
0.49248	19.58100	63.87383	100.50000	0.0	0.0	0.0	0.0 d
0.98497	19.54500	63.38267	100.50000	0.0	0.0	0.0	0.0 d
1.4775	19.50900	62.89150	100.50000	0.0	0.0	0.0	0.0 d
1.9699	19.47300	62.40033	100.50000	0.0	0.0	0.0	0.0 d
2.4624	19.43700	61.90917	100.50000	0.0	0.0	0.0	0.0 d
2.9549	19.40100	61.41800	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-7 | Sub-structure: GVA-7

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	19.40100	61.41800	100.50000	0.0	0.0	0.0	0.0 d
0.46449	19.86425	61.38412	100.50000	0.0	0.0	0.0	0.0 d
0.92897	20.32750	61.35025	100.50000	0.0	0.0	0.0	0.0 d
1.3935	20.79075	61.31638	100.50000	0.0	0.0	0.0	0.0 d
1.8579	21.25400	61.28250	100.50000	0.0	0.0	0.0	0.0 d
2.3224	21.71725	61.24862	100.50000	0.0	0.0	0.0	0.0 d
2.7869	22.18050	61.21475	100.50000	0.0	0.0	0.0	0.0 d
3.2514	22.64375	61.18088	100.50000	0.0	0.0	0.0	0.0 d
3.7159	23.10700	61.14700	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-8 | Sub-structure: GVA-8

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	23.10700	61.14700	100.50000	0.0	0.0	0.0	0.0 d
0.49250	23.13267	61.63883	100.50000	0.0	0.0	0.0	0.0 d
0.98501	23.15833	62.13067	100.50000	0.0	0.0	0.0	0.0 d
1.4775	23.18400	62.62250	100.50000	0.0	0.0	0.0	0.0 d
1.9700	23.20967	63.11433	100.50000	0.0	0.0	0.0	0.0 d
2.4625	23.23533	63.60617	100.50000	0.0	0.0	0.0	0.0 d
2.9550	23.26100	64.09800	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-9 | Sub-structure: GVA-9

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	23.26100	64.09800	100.50000	0.0	0.0	0.0	0.0 d
0.49313	23.28670	64.59046	100.50000	0.0	0.0	0.0	0.0 d
0.98626	23.31240	65.08292	100.50000	0.0	0.0	0.0	0.0 d
1.4794	23.33810	65.57538	100.50000	0.0	0.0	0.0	0.0 d
1.9725	23.36380	66.06784	100.50000	0.0	0.0	0.0	0.0 d
2.4657	23.38950	66.56030	100.50000	0.0	0.0	0.0	0.0 d
2.9588	23.41520	67.05276	100.50000	0.0	0.0	0.0	0.0 d
3.4519	23.44090	67.54522	100.50000	0.0	0.0	0.0	0.0 d
3.9450	23.46660	68.03768	100.50000	0.0	0.0	0.0	0.0 d
4.4382	23.49230	68.53014	100.50000	0.0	0.0	0.0	0.0 d
4.9313	23.51800	69.02260	100.50000	0.0	0.0	0.0	0.0 d
5.4244	23.54370	69.51506	100.50000	0.0	0.0	0.0	0.0 d
5.9176	23.56940	70.00752	100.50000	0.0	0.0	0.0	0.0 d
6.4107	23.59510	70.49998	100.50000	0.0	0.0	0.0	0.0 d
6.9038	23.62080	70.99244	100.50000	0.0	0.0	0.0	0.0 d
7.3970	23.64650	71.48490	100.50000	0.0	0.0	0.0	0.0 d
7.8901	23.67220	71.97736	100.50000	0.0	0.0	0.0	0.0 d
8.3832	23.69790	72.46982	100.50000	0.0	0.0	0.0	0.0 d
8.8763	23.72360	72.96228	100.50000	0.0	0.0	0.0	0.0 d
9.3695	23.74930	73.45474	100.50000	0.0	0.0	0.0	0.0 d
9.8626	23.77500	73.94720	100.50000	0.0	0.0	0.0	0.0 d
10.356	23.80070	74.43966	100.50000	0.0	0.0	0.0	0.0 d
10.849	23.82640	74.93212	100.50000	0.0	0.0	0.0	0.0 d
11.342	23.85210	75.42458	100.50000	0.0	0.0	0.0	0.0 d
11.835	23.87780	75.91704	100.50000	0.0	0.0	0.0	0.0 d
12.328	23.90350	76.40950	100.50000	0.0	0.0	0.0	0.0 d
12.821	23.92920	76.90196	100.50000	0.0	0.0	0.0	0.0 d
13.315	23.95490	77.39442	100.50000	0.0	0.0	0.0	0.0 d
13.808	23.98060	77.88688	100.50000	0.0	0.0	0.0	0.0 d
14.301	24.00630	78.37934	100.50000	0.0	0.0	0.0	0.0 d
14.794	24.03200	78.87180	100.50000	0.0	0.0	0.0	0.0 d
15.287	24.05770	79.36426	100.50000	0.0	0.0	0.0	0.0 d
15.780	24.08340	79.85672	100.50000	0.0	0.0	0.0	0.0 d
16.273	24.10910	80.34918	100.50000	0.0	0.0	0.0	0.0 d
16.766	24.13480	80.84164	100.50000	0.0	0.0	0.0	0.0 d
17.260	24.16050	81.33410	100.50000	0.0	0.0	0.0	0.0 d
17.753	24.18620	81.82656	100.50000	0.0	0.0	0.0	0.0 d
18.246	24.21190	82.31902	100.50000	0.0	0.0	0.0	0.0 d
18.739	24.23760	82.81148	100.50000	0.0	0.0	0.0	0.0 d
19.232	24.26330	83.30394	100.50000	0.0	0.0	0.0	0.0 d
19.725	24.28900	83.79640	100.50000	0.0	0.0	0.0	0.0 d
20.218	24.31470	84.28886	100.50000	0.0	0.0	0.0	0.0 d
20.711	24.34040	84.78132	100.50000	0.0	0.0	0.0	0.0 d
21.205	24.36610	85.27378	100.50000	0.0	0.0	0.0	0.0 d
21.698	24.39180	85.76624	100.50000	0.0	0.0	0.0	0.0 d
22.191	24.41750	86.25870	100.50000	0.0	0.0	0.0	0.0 d
22.684	24.44320	86.75116	100.50000	0.0	0.0	0.0	0.0 d
23.177	24.46890	87.24362	100.50000	0.0	0.0	0.0	0.0 d
23.670	24.49460	87.73608	100.50000	0.0	0.0	0.0	0.0 d
24.163	24.52030	88.22854	100.50000	0.0	0.0	0.0	0.0 d
24.657	24.54600	88.72100	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-10 | Sub-structure: GVA-10

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement	Horizontal displacement

							Displacements	
							Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]		[mm]	[mm]	
0.0	24.54600	88.72100	100.50000	0.0	0.0		0.0	0.0	d
0.47859	24.06806	88.74606	100.50000	0.0	0.0		0.0	0.0	d
0.95719	23.59013	88.77112	100.50000	0.0	0.0		0.0	0.0	d
1.4358	23.11219	88.79619	100.50000	0.0	0.0		0.0	0.0	d
1.9144	22.63425	88.82125	100.50000	0.0	0.0		0.0	0.0	d
2.3930	22.15631	88.84631	100.50000	0.0	0.0		0.0	0.0	d
2.8716	21.67837	88.87138	100.50000	0.0	0.0		0.0	0.0	d
3.3502	21.20044	88.89644	100.50000	0.0	0.0		0.0	0.0	d
3.8288	20.72250	88.92150	100.50000	0.0	0.0		0.0	0.0	d
4.3073	20.24456	88.94656	100.50000	0.0	0.0		0.0	0.0	d
4.7859	19.76662	88.97163	100.50000	0.0	0.0		0.0	0.0	d
5.2645	19.28869	88.99669	100.50000	0.0	0.0		0.0	0.0	d
5.7431	18.81075	89.02175	100.50000	0.0	0.0		0.0	0.0	d
6.2217	18.33281	89.04681	100.50000	0.0	0.0		0.0	0.0	d
6.7003	17.85488	89.07188	100.50000	0.0	0.0		0.0	0.0	d
7.1789	17.37694	89.09694	100.50000	0.0	0.0		0.0	0.0	d
7.6575	16.89900	89.12200	100.50000	0.0	0.0		0.0	0.0	d
8.1361	16.42106	89.14706	100.50000	0.0	0.0		0.0	0.0	d
8.6147	15.94313	89.17212	100.50000	0.0	0.0		0.0	0.0	d
9.0933	15.46519	89.19719	100.50000	0.0	0.0		0.0	0.0	d
9.5719	14.98725	89.22225	100.50000	0.0	0.0		0.0	0.0	d
10.050	14.50931	89.24731	100.50000	0.0	0.0		0.0	0.0	d
10.529	14.03138	89.27237	100.50000	0.0	0.0		0.0	0.0	d
11.008	13.55344	89.29744	100.50000	0.0	0.0		0.0	0.0	d
11.486	13.07550	89.32250	100.50000	0.0	0.0		0.0	0.0	d
11.965	12.59756	89.34756	100.50000	0.0	0.0		0.0	0.0	d
12.443	12.11963	89.37262	100.50000	0.0	0.0		0.0	0.0	d
12.922	11.64169	89.39769	100.50000	0.0	0.0		0.0	0.0	d
13.401	11.16375	89.42275	100.50000	0.0	0.0		0.0	0.0	d
13.879	10.68581	89.44781	100.50000	0.0	0.0		0.0	0.0	d
14.358	10.20788	89.47288	100.50000	0.0	0.0		0.0	0.0	d
14.836	9.72994	89.49794	100.50000	0.0	0.0		0.0	0.0	d
15.315	9.25200	89.52300	100.50000	0.0	0.0		0.0	0.0	d

d - Displacements include imported displacements.

Structure: GE-1 | Sub-structure: GE-1

Dist.	Coordinates						Displacements	
	x	y	z	x	y		Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]		[mm]	[mm]	
0.0	28.56700	64.11000	100.50000	0.0	0.0		0.0	0.0	d
0.49454	29.06094	64.13431	100.50000	0.0	0.0		0.0	0.0	d
0.98907	29.55487	64.15863	100.50000	0.0	0.0		0.0	0.0	d
1.4836	30.04881	64.18294	100.50000	0.0	0.0		0.0	0.0	d
1.9781	30.54275	64.20725	100.50000	0.0	0.0		0.0	0.0	d
2.4727	31.03669	64.23156	100.50000	0.0	0.0		0.0	0.0	d
2.9672	31.53063	64.25588	100.50000	0.0	0.0		0.0	0.0	d
3.4617	32.02456	64.28019	100.50000	0.0	0.0		0.0	0.0	d
3.9563	32.51850	64.30450	100.50000	0.0	0.0		0.0	0.0	d
4.4508	33.01244	64.32881	100.50000	0.0	0.0		0.0	0.0	d
4.9454	33.50637	64.35312	100.50000	0.0	0.0		0.0	0.0	d
5.4399	34.00031	64.37744	100.50000	0.0	0.0		0.0	0.0	d
5.9344	34.49425	64.40175	100.50000	0.0	0.0		0.0	0.0	d
6.4290	34.98819	64.42606	100.50000	0.0	0.0		0.0	0.0	d
6.9235	35.48212	64.45037	100.50000	0.0	0.0		0.0	0.0	d
7.4180	35.97606	64.47469	100.50000	0.0	0.0		0.0	0.0	d
7.9126	36.47000	64.49900	100.50000	0.0	0.0		0.0	0.0	d

d - Displacements include imported displacements.

Structure: GE-2 | Sub-structure: GE-2

Dist.	Coordinates						Displacements	
	x	y	z	x	y		Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]		[mm]	[mm]	
0.0	36.47000	64.49900	100.50000	0.0	0.0		0.0	0.0	d
0.49291	36.44014	64.99100	100.50000	0.0	0.0		0.0	0.0	d
0.98581	36.41029	65.48300	100.50000	0.0	0.0		0.0	0.0	d
1.4787	36.38043	65.97500	100.50000	0.0	0.0		0.0	0.0	d
1.9716	36.35057	66.46700	100.50000	0.0	0.0		0.0	0.0	d
2.4645	36.32071	66.95900	100.50000	0.0	0.0		0.0	0.0	d
2.9574	36.29086	67.45100	100.50000	0.0	0.0		0.0	0.0	d
3.4503	36.26100	67.94300	100.50000	0.0	0.0		0.0	0.0	d
3.9432	36.23114	68.43500	100.50000	0.0	0.0		0.0	0.0	d
4.4361	36.20129	68.92700	100.50000	0.0	0.0		0.0	0.0	d
4.9291	36.17143	69.41900	100.50000	0.0	0.0		0.0	0.0	d
5.4220	36.14157	69.91100	100.50000	0.0	0.0		0.0	0.0	d
5.9149	36.11171	70.40300	100.50000	0.0	0.0		0.0	0.0	d
6.4078	36.08186	70.89500	100.50000	0.0	0.0		0.0	0.0	d
6.9007	36.05200	71.38700	100.50000	0.0	0.0		0.0	0.0	d
7.3936	36.02214	71.87900	100.50000	0.0	0.0		0.0	0.0	d
7.8865	35.99229	72.37100	100.50000	0.0	0.0		0.0	0.0	d
8.3794	35.96243	72.86300	100.50000	0.0	0.0		0.0	0.0	d
8.8723	35.93257	73.35500	100.50000	0.0	0.0		0.0	0.0	d
9.3652	35.90271	73.84700	100.50000	0.0	0.0		0.0	0.0	d
9.8581	35.87286	74.33900	100.50000	0.0	0.0		0.0	0.0	d
10.351	35.84300	74.83100	100.50000	0.0	0.0		0.0	0.0	d
10.844	35.81314	75.32300	100.50000	0.0	0.0		0.0	0.0	d
11.337	35.78329	75.81500	100.50000	0.0	0.0		0.0	0.0	d
11.830	35.75343	76.30700	100.50000	0.0	0.0		0.0	0.0	d
12.323	35.72357	76.79900	100.50000	0.0	0.0		0.0	0.0	d
12.816	35.69371	77.29100	100.50000	0.0	0.0		0.0	0.0	d
13.308	35.66386	77.78300	100.50000	0.0	0.0		0.0	0.0	d
13.801	35.63400	78.27500	100.50000	0.0	0.0		0.0	0.0	d

d - Displacements include imported displacements.

Structure: GE-3 | Sub-structure: GE-3

Dist.	Coordinates						Displacements	
	x	y	z	x	y		Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]		[mm]	[mm]	
0.0	35.63400	78.27500	100.50000	0.0	0.0		0.0	0.0	d
0.47806	35.15681	78.24606	100.50000	0.0	0.0		0.0	0.0	d
0.95613	34.67963	78.21713	100.50000	0.0	0.0		0.0	0.0	d
1.4342	34.20244	78.18819	100.50000	0.0	0.0		0.0	0.0	d
1.9123	33.72525	78.15925	100.50000	0.0	0.0		0.0	0.0	d
2.3903	33.24806	78.13031	100.50000	0.0	0.0		0.0	0.0	d
2.8684	32.77087	78.10138	100.50000	0.0	0.0		0.0	0.0	d
3.3464	32.29369	78.07244	100.50000	0.0	0.0		0.0	0.0	d
3.8245	31.81650	78.04350	100.50000	0.0	0.0		0.0	0.0	d
4.3026	31.33931	78.01456	100.50000	0.0	0.0		0.0	0.0	d
4.7806	30.86212	77.98562	100.50000	0.0	0.0		0.0	0.0	d
5.2587	30.38494	77.95669	100.50000	0.0	0.0		0.0	0.0	d
5.7368	29.90775	77.92775	100.50000	0.0	0.0		0.0	0.0	d
6.2148	29.43056	77.89881	100.50000	0.0	0.0		0.0	0.0	d
6.6929	28.95338	77.86987	100.50000	0.0	0.0		0.0	0.0	d
7.1710	28.47619	77.84094	100.50000	0.0	0.0		0.0	0.0	d
7.6490	27.99900	77.81200	100.50000	0.0	0.0		0.0	0.0	d

d - Displacements include imported displacements.

Structure: GE-4 | Sub-structure: GE-4

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal	Horizontal

							displacement along the Line	displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]		[mm]	[mm]	
0.0	27.99900	77.81200	100.50000	0.0	0.0		0.0	0.0	d
0.48978	28.01929	77.32264	100.50000	0.0	0.0		0.0	0.0	d
0.97955	28.03957	76.83329	100.50000	0.0	0.0		0.0	0.0	d
1.4693	28.05986	76.34393	100.50000	0.0	0.0		0.0	0.0	d
1.9591	28.08014	75.85457	100.50000	0.0	0.0		0.0	0.0	d
2.4489	28.10043	75.36521	100.50000	0.0	0.0		0.0	0.0	d
2.9387	28.12071	74.87586	100.50000	0.0	0.0		0.0	0.0	d
3.4284	28.14100	74.38650	100.50000	0.0	0.0		0.0	0.0	d
3.9182	28.16129	73.89714	100.50000	0.0	0.0		0.0	0.0	d
4.4080	28.18157	73.40779	100.50000	0.0	0.0		0.0	0.0	d
4.8978	28.20186	72.91843	100.50000	0.0	0.0		0.0	0.0	d
5.3876	28.22214	72.42907	100.50000	0.0	0.0		0.0	0.0	d
5.8773	28.24243	71.93971	100.50000	0.0	0.0		0.0	0.0	d
6.3671	28.26271	71.45036	100.50000	0.0	0.0		0.0	0.0	d
6.8569	28.28300	70.96100	100.50000	0.0	0.0		0.0	0.0	d
7.3467	28.30329	70.47164	100.50000	0.0	0.0		0.0	0.0	d
7.8364	28.32357	69.98229	100.50000	0.0	0.0		0.0	0.0	d
8.3262	28.34386	69.49293	100.50000	0.0	0.0		0.0	0.0	d
8.8160	28.36414	69.00357	100.50000	0.0	0.0		0.0	0.0	d
9.3058	28.38443	68.51421	100.50000	0.0	0.0		0.0	0.0	d
9.7955	28.40471	68.02486	100.50000	0.0	0.0		0.0	0.0	d
10.285	28.42500	67.53550	100.50000	0.0	0.0		0.0	0.0	d
10.775	28.44529	67.04614	100.50000	0.0	0.0		0.0	0.0	d
11.265	28.46557	66.55679	100.50000	0.0	0.0		0.0	0.0	d
11.755	28.48586	66.06743	100.50000	0.0	0.0		0.0	0.0	d
12.244	28.50614	65.57807	100.50000	0.0	0.0		0.0	0.0	d
12.734	28.52643	65.08871	100.50000	0.0	0.0		0.0	0.0	d
13.224	28.54671	64.59936	100.50000	0.0	0.0		0.0	0.0	d
13.714	28.56700	64.11000	100.50000	0.0	0.0		0.0	0.0	d

d - Displacements include imported displacements.

Structure: DH-1 | Sub-structure: DH-1

Dist.	Coordinates						Displacements		
	x	y	z	x	y		Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]		[mm]	[mm]	
0.0	44.60300	87.23400	100.50000	0.0	0.0		0.0	0.0	d
0.48563	44.63204	86.74924	100.50000	0.0	0.0		0.0	0.0	d
0.97126	44.66109	86.26448	100.50000	0.0	0.0		0.0	0.0	d
1.4569	44.69013	85.77972	100.50000	0.0	0.0		0.0	0.0	d
1.9425	44.71917	85.29496	100.50000	0.0	0.0		0.0	0.0	d
2.4282	44.74822	84.81020	100.50000	0.0	0.0		0.0	0.0	d
2.9138	44.77726	84.32543	100.50000	0.0	0.0		0.0	0.0	d
3.3994	44.80630	83.84067	100.50000	0.0	0.0		0.0	0.0	d
3.8850	44.83535	83.35591	100.50000	0.0	0.0		0.0	0.0	d
4.3707	44.86439	82.87115	100.50000	0.0	0.0		0.0	0.0	d
4.8563	44.89343	82.38639	100.50000	0.0	0.0		0.0	0.0	d
5.3419	44.92248	81.90163	100.50000	0.0	0.0		0.0	0.0	d
5.8276	44.95152	81.41687	100.50000	0.0	0.0		0.0	0.0	d
6.3132	44.98057	80.93211	100.50000	0.0	0.0		0.0	0.0	d
6.7988	45.00961	80.44735	100.50000	0.0	0.0		0.0	0.0	d
7.2845	45.03865	79.96259	100.50000	0.0	0.0		0.0	0.0	d
7.7701	45.06770	79.47783	100.50000	0.0	0.0		0.0	0.0	d
8.2557	45.09674	78.99307	100.50000	0.0	0.0		0.0	0.0	d
8.7413	45.12578	78.50830	100.50000	0.0	0.0		0.0	0.0	d
9.2270	45.15483	78.02354	100.50000	0.0	0.0		0.0	0.0	d
9.7126	45.18387	77.53878	100.50000	0.0	0.0		0.0	0.0	d
10.198	45.21291	77.05402	100.50000	0.0	0.0		0.0	0.0	d
10.684	45.24196	76.56926	100.50000	0.0	0.0		0.0	0.0	d
11.169	45.27100	76.08450	100.50000	0.0	0.0		0.0	0.0	d
11.655	45.30004	75.59974	100.50000	0.0	0.0		0.0	0.0	d
12.141	45.32909	75.11498	100.50000	0.0	0.0		0.0	0.0	d
12.626	45.35813	74.63022	100.50000	0.0	0.0		0.0	0.0	d
13.112	45.38717	74.14546	100.50000	0.0	0.0		0.0	0.0	d
13.598	45.41622	73.66070	100.50000	0.0	0.0		0.0	0.0	d
14.083	45.44526	73.17593	100.50000	0.0	0.0		0.0	0.0	d
14.569	45.47430	72.69117	100.50000	0.0	0.0		0.0	0.0	d
15.055	45.50335	72.20641	100.50000	0.0	0.0		0.0	0.0	d
15.540	45.53239	71.72165	100.50000	0.0	0.0		0.0	0.0	d
16.026	45.56143	71.23689	100.50000	0.0	0.0		0.0	0.0	d
16.511	45.59048	70.75213	100.50000	0.0	0.0		0.0	0.0	d
16.997	45.61952	70.26737	100.50000	0.0	0.0		0.0	0.0	d
17.483	45.64857	69.78261	100.50000	0.0	0.0		0.0	0.0	d
17.968	45.67761	69.29785	100.50000	0.0	0.0		0.0	0.0	d
18.454	45.70665	68.81309	100.50000	0.0	0.0		0.0	0.0	d
18.940	45.73570	68.32833	100.50000	0.0	0.0		0.0	0.0	d
19.425	45.76474	67.84357	100.50000	0.0	0.0		0.0	0.0	d
19.911	45.79378	67.35880	100.50000	0.0	0.0		0.0	0.0	d
20.396	45.82283	66.87404	100.50000	0.0	0.0		0.0	0.0	d
20.882	45.85187	66.38928	100.50000	0.0	0.0		0.0	0.0	d
21.368	45.88091	65.90452	100.50000	0.0	0.0		0.0	0.0	d
21.853	45.90996	65.41976	100.50000	0.0	0.0		0.0	0.0	d
22.339	45.93900	64.93500	100.50000	0.0	0.0		0.0	0.0	d

d - Displacements include imported displacements.

Structure: DH-2 | Sub-structure: DH-2

Dist.	Coordinates						Displacements		
	x	y	z	x	y		Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]		[mm]	[mm]	
0.0	45.93900	64.93500	100.50000	0.0	0.0		0.0	0.0	d
0.49257	46.43032	64.97005	100.50000	0.0	0.0		0.0	0.0	d
0.98513	46.92163	65.00510	100.50000	0.0	0.0		0.0	0.0	d
1.4777	47.41295	65.04014	100.50000	0.0	0.0		0.0	0.0	d
1.9703	47.90427	65.07519	100.50000	0.0	0.0		0.0	0.0	d
2.4628	48.39559	65.11024	100.50000	0.0	0.0		0.0	0.0	d
2.9554	48.88690	65.14529	100.50000	0.0	0.0		0.0	0.0	d
3.4480	49.37822	65.18034	100.50000	0.0	0.0		0.0	0.0	d
3.9405	49.86954	65.21538	100.50000	0.0	0.0		0.0	0.0	d
4.4331	50.36086	65.25043	100.50000	0.0	0.0		0.0	0.0	d
4.9257	50.85217	65.28548	100.50000	0.0	0.0		0.0	0.0	d
5.4182	51.34349	65.32053	100.50000	0.0	0.0		0.0	0.0	d
5.9108	51.83481	65.35558	100.50000	0.0	0.0		0.0	0.0	d
6.4034	52.32612	65.39063	100.50000	0.0	0.0		0.0	0.0	d
6.8959	52.81744	65.42567	100.50000	0.0	0.0		0.0	0.0	d
7.3885	53.30876	65.46072	100.50000	0.0	0.0		0.0	0.0	d
7.8811	53.80008	65.49577	100.50000	0.0	0.0		0.0	0.0	d
8.3736	54.29139	65.53082	100.50000	0.0	0.0		0.0	0.0	d
8.8662	54.78271	65.56587	100.50000	0.0	0.0		0.0	0.0	d
9.3588	55.27403	65.60091	100.50000	0.0	0.0		0.0	0.0	d
9.8513	55.76535	65.63596	100.50000	0.0	0.0		0.0	0.0	d
10.344	56.25666	65.67101	100.50000	0.0	0.0		0.0	0.0	d
10.836	56.74798	65.70606	100.50000	0.0	0.0		0.0	0.0	d
11.329	57.23930	65.74111	100.50000	0.0	0.0		0.0	0.0	d
11.822	57.73062	65.77615	100.50000	0.0	0.0		0.0	0.0	d
12.314	58.22193	65.81120	100.50000	0.0	0.0		0.0	0.0	d
12.807	58.71325	65.84625	100.50000	0.0	0.0		0.0	0.0	d
13.299	59.20457	65.88130	100.50000	0.0	0.0		0.0	0.0	d
13.792	59.69588	65.91635	100.50000	0.0	0.0		0.0	0.0	d
14.284	60.18720	65.95139	100.50000	0.0	0.0		0.0	0.0	d
14.777	60.67852	65.98644	100.50000	0.0	0.0		0.0	0.0	d
15.270	61.16984	66.02149	100.50000	0.0	0.0		0.0	0.0	d
15.762	61.66115	66.05654	100.50000	0.0	0.0		0.0	0.0	d
16.255	62.15247	66.09159	100.50000	0.0	0.0		0.0	0.0	d
16.747	62.64379	66.12663	100.50000	0.0	0.0		0.0	0.0	d
17.240	63.13511	66.16168	100.50000	0.0	0.0		0.0	0.0	d
17.732	63.62642	66.19673	100.50000	0.0	0.0		0.0	0.0	d
18.225	64.11774	66.23178	100.50000	0.0	0.0		0.0	0.0	d

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line [mm]	Horizontal displacement perpendicular to Line [mm]
18.718	64.60906	66.26683	100.50000	0.0	0.0	0.0	0.0 d
19.210	65.10038	66.30187	100.50000	0.0	0.0	0.0	0.0 d
19.703	65.59169	66.33692	100.50000	0.0	0.0	0.0	0.0 d
20.195	66.08301	66.37197	100.50000	0.0	0.0	0.0	0.0 d
20.688	66.57433	66.40702	100.50000	0.0	0.0	0.0	0.0 d
21.180	67.06564	66.44207	100.50000	0.0	0.0	0.0	0.0 d
21.673	67.55696	66.47712	100.50000	0.0	0.0	0.0	0.0 d
22.165	68.04828	66.51216	100.50000	0.0	0.0	0.0	0.0 d
22.658	68.53960	66.54721	100.50000	0.0	0.0	0.0	0.0 d
23.151	69.03091	66.58226	100.50000	0.0	0.0	0.0	0.0 d
23.643	69.52223	66.61731	100.50000	0.0	0.0	0.0	0.0 d
24.136	70.01355	66.65236	100.50000	0.0	0.0	0.0	0.0 d
24.628	70.50487	66.68740	100.50000	0.0	0.0	0.0	0.0 d
25.121	70.99618	66.72245	100.50000	0.0	0.0	0.0	0.0 d
25.613	71.48750	66.75750	100.50000	0.0	0.0	0.0	0.0 d
26.106	71.97882	66.79255	100.50000	0.0	0.0	0.0	0.0 d
26.599	72.47013	66.82760	100.50000	0.0	0.0	0.0	0.0 d
27.091	72.96145	66.86264	100.50000	0.0	0.0	0.0	0.0 d
27.584	73.45277	66.89769	100.50000	0.0	0.0	0.0	0.0 d
28.076	73.94409	66.93274	100.50000	0.0	0.0	0.0	0.0 d
28.569	74.43540	66.96779	100.50000	0.0	0.0	0.0	0.0 d
29.061	74.92672	67.00284	100.50000	0.0	0.0	0.0	0.0 d
29.554	75.41804	67.03788	100.50000	0.0	0.0	0.0	0.0 d
30.047	75.90936	67.07293	100.50000	0.0	0.0	0.0	0.0 d
30.539	76.40067	67.10798	100.50000	0.0	0.0	0.0	0.0 d
31.032	76.89199	67.14303	100.50000	0.0	0.0	0.0	0.0 d
31.524	77.38331	67.17808	100.50000	0.0	0.0	0.0	0.0 d
32.017	77.87463	67.21313	100.50000	0.0	0.0	0.0	0.0 d
32.509	78.36594	67.24817	100.50000	0.0	0.0	0.0	0.0 d
33.002	78.85726	67.28322	100.50000	0.0	0.0	0.0	0.0 d
33.494	79.34858	67.31827	100.50000	0.0	0.0	0.0	0.0 d
33.987	79.83989	67.35332	100.50000	0.0	0.0	0.0	0.0 d
34.480	80.33121	67.38837	100.50000	0.0	0.0	0.0	0.0 d
34.972	80.82253	67.42341	100.50000	0.0	0.0	0.0	0.0 d
35.465	81.31385	67.45846	100.50000	0.0	0.0	0.0	0.0 d
35.957	81.80516	67.49351	100.50000	0.0	0.0	0.0	0.0 d
36.450	82.29648	67.52856	100.50000	0.0	0.0	0.0	0.0 d
36.942	82.78780	67.56361	100.50000	0.0	0.0	0.0	0.0 d
37.435	83.27912	67.59865	100.50000	0.0	0.0	0.0	0.0 d
37.928	83.77043	67.63370	100.50000	0.0	0.0	0.0	0.0 d
38.420	84.26175	67.66875	100.50000	0.0	0.0	0.0	0.0 d
38.913	84.75307	67.70380	100.50000	0.0	0.0	0.0	0.0 d
39.405	85.24438	67.73885	100.50000	0.0	0.0	0.0	0.0 d
39.898	85.73570	67.77389	100.50000	0.0	0.0	0.0	0.0 d
40.390	86.22702	67.80894	100.50000	0.0	0.0	0.0	0.0 d
40.883	86.71834	67.84399	100.50000	0.0	0.0	0.0	0.0 d
41.376	87.20965	67.87904	100.50000	0.0	0.0	0.0	0.0 d
41.868	87.70097	67.91409	100.50000	0.0	0.0	0.0	0.0 d
42.361	88.19229	67.94913	100.50000	0.0	0.0	0.0	0.0 d
42.853	88.68361	67.98418	100.50000	0.0	0.0	0.0	0.0 d
43.346	89.17492	68.01923	100.50000	0.0	0.0	0.0	0.0 d
43.838	89.66624	68.05428	100.50000	0.0	0.0	0.0	0.0 d
44.331	90.15756	68.08933	100.50000	0.0	0.0	0.0	0.0 d
44.823	90.64888	68.12438	100.50000	0.0	0.0	0.0	0.0 d
45.316	91.14019	68.15942	100.50000	0.0	0.0	0.0	0.0 d
45.809	91.63151	68.19447	100.50000	0.0	0.0	0.0	0.0 d
46.301	92.12283	68.22952	100.50000	0.0	0.0	0.0	0.0 d
46.794	92.61414	68.26457	100.50000	0.0	0.0	0.0	0.0 d
47.286	93.10546	68.29962	100.50000	0.0	0.0	0.0	0.0 d
47.779	93.59678	68.33466	100.50000	0.0	0.0	0.0	0.0 d
48.271	94.08810	68.36971	100.50000	0.0	0.0	0.0	0.0 d
48.764	94.57941	68.40476	100.50000	0.0	0.0	0.0	0.0 d
49.257	95.07073	68.43981	100.50000	0.0	0.0	0.0	0.0 d
49.749	95.56205	68.47486	100.50000	0.0	0.0	0.0	0.0 d
50.242	96.05337	68.50990	100.50000	0.0	0.0	0.0	0.0 d
50.734	96.54468	68.54495	100.50000	0.0	0.0	0.0	0.0 d
51.227	97.03600	68.58000	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: DH-3 | Sub-structure: DH-3

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line [mm]	Horizontal displacement perpendicular to Line [mm]
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	97.03600	68.58000	100.50000	0.0	0.0	0.0	0.0 d
0.48909	96.99859	69.06765	100.50000	0.0	0.0	0.0	0.0 d
0.97817	96.96117	69.55530	100.50000	0.0	0.0	0.0	0.0 d
1.4673	96.92376	70.04296	100.50000	0.0	0.0	0.0	0.0 d
1.9563	96.88635	70.53061	100.50000	0.0	0.0	0.0	0.0 d
2.4454	96.84893	71.01826	100.50000	0.0	0.0	0.0	0.0 d
2.9345	96.81152	71.50591	100.50000	0.0	0.0	0.0	0.0 d
3.4236	96.77411	71.99357	100.50000	0.0	0.0	0.0	0.0 d
3.9127	96.73670	72.48122	100.50000	0.0	0.0	0.0	0.0 d
4.4018	96.69928	72.96887	100.50000	0.0	0.0	0.0	0.0 d
4.8909	96.66187	73.45652	100.50000	0.0	0.0	0.0	0.0 d
5.3799	96.62446	73.94417	100.50000	0.0	0.0	0.0	0.0 d
5.8690	96.58704	74.43183	100.50000	0.0	0.0	0.0	0.0 d
6.3581	96.54963	74.91948	100.50000	0.0	0.0	0.0	0.0 d
6.8472	96.51222	75.40713	100.50000	0.0	0.0	0.0	0.0 d
7.3363	96.47480	75.89478	100.50000	0.0	0.0	0.0	0.0 d
7.8254	96.43739	76.38243	100.50000	0.0	0.0	0.0	0.0 d
8.3144	96.39998	76.87009	100.50000	0.0	0.0	0.0	0.0 d
8.8035	96.36257	77.35774	100.50000	0.0	0.0	0.0	0.0 d
9.2926	96.32515	77.84539	100.50000	0.0	0.0	0.0	0.0 d
9.7817	96.28774	78.33304	100.50000	0.0	0.0	0.0	0.0 d
10.271	96.25033	78.82070	100.50000	0.0	0.0	0.0	0.0 d
10.760	96.21291	79.30835	100.50000	0.0	0.0	0.0	0.0 d
11.249	96.17550	79.79600	100.50000	0.0	0.0	0.0	0.0 d
11.738	96.13809	80.28365	100.50000	0.0	0.0	0.0	0.0 d
12.227	96.10067	80.77130	100.50000	0.0	0.0	0.0	0.0 d
12.716	96.06326	81.25896	100.50000	0.0	0.0	0.0	0.0 d
13.205	96.02585	81.74661	100.50000	0.0	0.0	0.0	0.0 d
13.694	95.98843	82.23426	100.50000	0.0	0.0	0.0	0.0 d
14.183	95.95102	82.72191	100.50000	0.0	0.0	0.0	0.0 d
14.673	95.91361	83.20957	100.50000	0.0	0.0	0.0	0.0 d
15.162	95.87620	83.69722	100.50000	0.0	0.0	0.0	0.0 d
15.651	95.83878	84.18487	100.50000	0.0	0.0	0.0	0.0 d
16.140	95.80137	84.67252	100.50000	0.0	0.0	0.0	0.0 d
16.629	95.76396	85.16017	100.50000	0.0	0.0	0.0	0.0 d
17.118	95.72654	85.64783	100.50000	0.0	0.0	0.0	0.0 d
17.607	95.68913	86.13548	100.50000	0.0	0.0	0.0	0.0 d
18.096	95.65172	86.62313	100.50000	0.0	0.0	0.0	0.0 d
18.585	95.61430	87.11078	100.50000	0.0	0.0	0.0	0.0 d
19.074	95.57689	87.59843	100.50000	0.0	0.0	0.0	0.0 d
19.563	95.53948	88.08609	100.50000	0.0	0.0	0.0	0.0 d
20.052	95.50207	88.57374	100.50000	0.0	0.0	0.0	0.0 d
20.542	95.46465	89.06139	100.50000	0.0	0.0	0.0	0.0 d
21.031	95.42724	89.54904	100.50000	0.0	0.0	0.0	0.0 d
21.520	95.38983	90.03670	100.50000	0.0	0.0	0.0	0.0 d
22.009	95.35241	90.52435	100.50000	0.0	0.0	0.0	0.0 d
22.498	95.31500	91.01200	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: DH-4 | Sub-structure: DH-4

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line [mm]	Horizontal displacement perpendicular to Line [mm]
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	95.31500	91.01200	100.50000	0.0	0.0	0.0	0.0 d
0.47118	94.84520	90.97595	100.50000	0.0	0.0	0.0	0.0 d
0.94236	94.37540	90.93990	100.50000	0.0	0.0	0.0	0.0 d
1.4135	93.90560	90.90385	100.50000	0.0	0.0	0.0	0.0 d

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the	Horizontal displacement perpendicular
1.8847	93.43580	90.86780	100.50000	0.0	0.0	0.0	0.0 d
2.3559	92.96600	90.83175	100.50000	0.0	0.0	0.0	0.0 d
2.8271	92.49620	90.79570	100.50000	0.0	0.0	0.0	0.0 d
3.2983	92.02640	90.75965	100.50000	0.0	0.0	0.0	0.0 d
3.7694	91.55660	90.72360	100.50000	0.0	0.0	0.0	0.0 d
4.2406	91.08680	90.68755	100.50000	0.0	0.0	0.0	0.0 d
4.7118	90.61700	90.65150	100.50000	0.0	0.0	0.0	0.0 d
5.1830	90.14720	90.61545	100.50000	0.0	0.0	0.0	0.0 d
5.6542	89.67740	90.57940	100.50000	0.0	0.0	0.0	0.0 d
6.1254	89.20760	90.54335	100.50000	0.0	0.0	0.0	0.0 d
6.5965	88.73780	90.50730	100.50000	0.0	0.0	0.0	0.0 d
7.0677	88.26800	90.47125	100.50000	0.0	0.0	0.0	0.0 d
7.5389	87.79820	90.43520	100.50000	0.0	0.0	0.0	0.0 d
8.0101	87.32840	90.39915	100.50000	0.0	0.0	0.0	0.0 d
8.4813	86.85860	90.36310	100.50000	0.0	0.0	0.0	0.0 d
8.9524	86.38880	90.32705	100.50000	0.0	0.0	0.0	0.0 d
9.4236	85.91900	90.29100	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: DH-5 | Sub-structure: DH-5

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	85.91900	90.29100	100.50000	0.0	0.0	0.0	0.0 d
0.48006	85.95573	89.81235	100.50000	0.0	0.0	0.0	0.0 d
0.96012	85.99246	89.33369	100.50000	0.0	0.0	0.0	0.0 d
1.4402	86.02919	88.85504	100.50000	0.0	0.0	0.0	0.0 d
1.9202	86.06592	88.37638	100.50000	0.0	0.0	0.0	0.0 d
2.4003	86.10265	87.89773	100.50000	0.0	0.0	0.0	0.0 d
2.8804	86.13938	87.41908	100.50000	0.0	0.0	0.0	0.0 d
3.3604	86.17612	86.94042	100.50000	0.0	0.0	0.0	0.0 d
3.8405	86.21285	86.46177	100.50000	0.0	0.0	0.0	0.0 d
4.3205	86.24958	85.98312	100.50000	0.0	0.0	0.0	0.0 d
4.8006	86.28631	85.50446	100.50000	0.0	0.0	0.0	0.0 d
5.2807	86.32304	85.02581	100.50000	0.0	0.0	0.0	0.0 d
5.7607	86.35977	84.54715	100.50000	0.0	0.0	0.0	0.0 d
6.2408	86.39650	84.06850	100.50000	0.0	0.0	0.0	0.0 d
6.7209	86.43323	83.58985	100.50000	0.0	0.0	0.0	0.0 d
7.2009	86.46996	83.11119	100.50000	0.0	0.0	0.0	0.0 d
7.6810	86.50669	82.63254	100.50000	0.0	0.0	0.0	0.0 d
8.1610	86.54342	82.15388	100.50000	0.0	0.0	0.0	0.0 d
8.6411	86.58015	81.67523	100.50000	0.0	0.0	0.0	0.0 d
9.1212	86.61688	81.19658	100.50000	0.0	0.0	0.0	0.0 d
9.6012	86.65362	80.71792	100.50000	0.0	0.0	0.0	0.0 d
10.081	86.69035	80.23927	100.50000	0.0	0.0	0.0	0.0 d
10.561	86.72708	79.76062	100.50000	0.0	0.0	0.0	0.0 d
11.041	86.76381	79.28196	100.50000	0.0	0.0	0.0	0.0 d
11.521	86.80054	78.80331	100.50000	0.0	0.0	0.0	0.0 d
12.002	86.83727	78.32465	100.50000	0.0	0.0	0.0	0.0 d
12.482	86.87400	77.84600	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: DH-6 | Sub-structure: DH-6

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	86.87400	77.84600	100.50000	0.0	0.0	0.0	0.0 d
0.49556	86.37989	77.80809	100.50000	0.0	0.0	0.0	0.0 d
0.99112	85.88579	77.77018	100.50000	0.0	0.0	0.0	0.0 d
1.4867	85.39168	77.73227	100.50000	0.0	0.0	0.0	0.0 d
1.9822	84.89758	77.69436	100.50000	0.0	0.0	0.0	0.0 d
2.4778	84.40347	77.65645	100.50000	0.0	0.0	0.0	0.0 d
2.9733	83.90936	77.61855	100.50000	0.0	0.0	0.0	0.0 d
3.4689	83.41526	77.58064	100.50000	0.0	0.0	0.0	0.0 d
3.9645	82.92115	77.54273	100.50000	0.0	0.0	0.0	0.0 d
4.4600	82.42705	77.50482	100.50000	0.0	0.0	0.0	0.0 d
4.9556	81.93294	77.46691	100.50000	0.0	0.0	0.0	0.0 d
5.4511	81.43883	77.42900	100.50000	0.0	0.0	0.0	0.0 d
5.9467	80.94473	77.39109	100.50000	0.0	0.0	0.0	0.0 d
6.4423	80.45062	77.35318	100.50000	0.0	0.0	0.0	0.0 d
6.9378	79.95652	77.31527	100.50000	0.0	0.0	0.0	0.0 d
7.4334	79.46241	77.27736	100.50000	0.0	0.0	0.0	0.0 d
7.9289	78.96830	77.23945	100.50000	0.0	0.0	0.0	0.0 d
8.4245	78.47420	77.20155	100.50000	0.0	0.0	0.0	0.0 d
8.9200	77.98009	77.16364	100.50000	0.0	0.0	0.0	0.0 d
9.4156	77.48598	77.12573	100.50000	0.0	0.0	0.0	0.0 d
9.9112	76.99188	77.08782	100.50000	0.0	0.0	0.0	0.0 d
10.407	76.49777	77.04991	100.50000	0.0	0.0	0.0	0.0 d
10.902	76.00367	77.01200	100.50000	0.0	0.0	0.0	0.0 d
11.398	75.50956	76.97409	100.50000	0.0	0.0	0.0	0.0 d
11.893	75.01545	76.93618	100.50000	0.0	0.0	0.0	0.0 d
12.389	74.52135	76.89827	100.50000	0.0	0.0	0.0	0.0 d
12.885	74.02724	76.86036	100.50000	0.0	0.0	0.0	0.0 d
13.380	73.53314	76.82245	100.50000	0.0	0.0	0.0	0.0 d
13.876	73.03903	76.78455	100.50000	0.0	0.0	0.0	0.0 d
14.371	72.54492	76.74664	100.50000	0.0	0.0	0.0	0.0 d
14.867	72.05082	76.70873	100.50000	0.0	0.0	0.0	0.0 d
15.362	71.55671	76.67082	100.50000	0.0	0.0	0.0	0.0 d
15.858	71.06261	76.63291	100.50000	0.0	0.0	0.0	0.0 d
16.353	70.56850	76.59500	100.50000	0.0	0.0	0.0	0.0 d
16.849	70.07439	76.55709	100.50000	0.0	0.0	0.0	0.0 d
17.345	69.58029	76.51918	100.50000	0.0	0.0	0.0	0.0 d
17.840	69.08618	76.48127	100.50000	0.0	0.0	0.0	0.0 d
18.336	68.59208	76.44336	100.50000	0.0	0.0	0.0	0.0 d
18.831	68.09797	76.40545	100.50000	0.0	0.0	0.0	0.0 d
19.327	67.60386	76.36755	100.50000	0.0	0.0	0.0	0.0 d
19.822	67.10976	76.32964	100.50000	0.0	0.0	0.0	0.0 d
20.318	66.61565	76.29173	100.50000	0.0	0.0	0.0	0.0 d
20.813	66.12155	76.25382	100.50000	0.0	0.0	0.0	0.0 d
21.309	65.62744	76.21591	100.50000	0.0	0.0	0.0	0.0 d
21.805	65.13333	76.17800	100.50000	0.0	0.0	0.0	0.0 d
22.300	64.63923	76.14009	100.50000	0.0	0.0	0.0	0.0 d
22.796	64.14512	76.10218	100.50000	0.0	0.0	0.0	0.0 d
23.291	63.65102	76.06427	100.50000	0.0	0.0	0.0	0.0 d
23.787	63.15691	76.02636	100.50000	0.0	0.0	0.0	0.0 d
24.282	62.66280	75.98845	100.50000	0.0	0.0	0.0	0.0 d
24.778	62.16870	75.95055	100.50000	0.0	0.0	0.0	0.0 d
25.273	61.67459	75.91264	100.50000	0.0	0.0	0.0	0.0 d
25.769	61.18048	75.87473	100.50000	0.0	0.0	0.0	0.0 d
26.265	60.68638	75.83682	100.50000	0.0	0.0	0.0	0.0 d
26.760	60.19227	75.79891	100.50000	0.0	0.0	0.0	0.0 d
27.256	59.69817	75.76100	100.50000	0.0	0.0	0.0	0.0 d
27.751	59.20406	75.72309	100.50000	0.0	0.0	0.0	0.0 d
28.247	58.70995	75.68518	100.50000	0.0	0.0	0.0	0.0 d
28.742	58.21585	75.64727	100.50000	0.0	0.0	0.0	0.0 d
29.238	57.72174	75.60936	100.50000	0.0	0.0	0.0	0.0 d
29.733	57.22764	75.57145	100.50000	0.0	0.0	0.0	0.0 d
30.229	56.73353	75.53355	100.50000	0.0	0.0	0.0	0.0 d
30.725	56.23942	75.49564	100.50000	0.0	0.0	0.0	0.0 d
31.220	55.74532	75.45773	100.50000	0.0	0.0	0.0	0.0 d
31.716	55.25121	75.41982	100.50000	0.0	0.0	0.0	0.0 d
32.211	54.75711	75.38191	100.50000	0.0	0.0	0.0	0.0 d
32.707	54.26300	75.34400	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: DH-7 | Sub-structure: DH-7

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal	Horizontal

						displacement along the Line	displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	54.26300	75.34400	100.50000	0.0	0.0	0.0	0.0	d
0.48103	54.22619	75.82362	100.50000	0.0	0.0	0.0	0.0	d
0.96205	54.18938	76.30323	100.50000	0.0	0.0	0.0	0.0	d
1.4431	54.15258	76.78285	100.50000	0.0	0.0	0.0	0.0	d
1.9241	54.11577	77.26246	100.50000	0.0	0.0	0.0	0.0	d
2.4051	54.07896	77.74208	100.50000	0.0	0.0	0.0	0.0	d
2.8862	54.04215	78.22169	100.50000	0.0	0.0	0.0	0.0	d
3.3672	54.00535	78.70131	100.50000	0.0	0.0	0.0	0.0	d
3.8482	53.96854	79.18092	100.50000	0.0	0.0	0.0	0.0	d
4.3292	53.93173	79.66054	100.50000	0.0	0.0	0.0	0.0	d
4.8103	53.89492	80.14015	100.50000	0.0	0.0	0.0	0.0	d
5.2913	53.85812	80.61977	100.50000	0.0	0.0	0.0	0.0	d
5.7723	53.82131	81.09938	100.50000	0.0	0.0	0.0	0.0	d
6.2533	53.78450	81.57900	100.50000	0.0	0.0	0.0	0.0	d
6.7344	53.74769	82.05862	100.50000	0.0	0.0	0.0	0.0	d
7.2154	53.71088	82.53823	100.50000	0.0	0.0	0.0	0.0	d
7.6964	53.67408	83.01785	100.50000	0.0	0.0	0.0	0.0	d
8.1774	53.63727	83.49746	100.50000	0.0	0.0	0.0	0.0	d
8.6585	53.60046	83.97708	100.50000	0.0	0.0	0.0	0.0	d
9.1395	53.56365	84.45669	100.50000	0.0	0.0	0.0	0.0	d
9.6205	53.52685	84.93631	100.50000	0.0	0.0	0.0	0.0	d
10.102	53.49004	85.41592	100.50000	0.0	0.0	0.0	0.0	d
10.583	53.45323	85.89554	100.50000	0.0	0.0	0.0	0.0	d
11.064	53.41642	86.37515	100.50000	0.0	0.0	0.0	0.0	d
11.545	53.37962	86.85477	100.50000	0.0	0.0	0.0	0.0	d
12.026	53.34281	87.33438	100.50000	0.0	0.0	0.0	0.0	d
12.507	53.30600	87.81400	100.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: DH-8 | Sub-structure: DH-8

Dist.	Coordinates			Displacements				
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	53.30600	87.81400	100.50000	0.0	0.0	0.0	0.0	d
0.48457	52.82250	87.78178	100.50000	0.0	0.0	0.0	0.0	d
0.96915	52.33900	87.74956	100.50000	0.0	0.0	0.0	0.0	d
1.4537	51.85550	87.71733	100.50000	0.0	0.0	0.0	0.0	d
1.9383	51.37200	87.68511	100.50000	0.0	0.0	0.0	0.0	d
2.4229	50.88850	87.65289	100.50000	0.0	0.0	0.0	0.0	d
2.9074	50.40500	87.62067	100.50000	0.0	0.0	0.0	0.0	d
3.3920	49.92150	87.58844	100.50000	0.0	0.0	0.0	0.0	d
3.8766	49.43800	87.55622	100.50000	0.0	0.0	0.0	0.0	d
4.3612	48.95450	87.52400	100.50000	0.0	0.0	0.0	0.0	d
4.8457	48.47100	87.49178	100.50000	0.0	0.0	0.0	0.0	d
5.3303	47.98750	87.45956	100.50000	0.0	0.0	0.0	0.0	d
5.8149	47.50400	87.42733	100.50000	0.0	0.0	0.0	0.0	d
6.2994	47.02050	87.39511	100.50000	0.0	0.0	0.0	0.0	d
6.7840	46.53700	87.36289	100.50000	0.0	0.0	0.0	0.0	d
7.2686	46.05350	87.33067	100.50000	0.0	0.0	0.0	0.0	d
7.7532	45.57000	87.29844	100.50000	0.0	0.0	0.0	0.0	d
8.2377	45.08650	87.26622	100.50000	0.0	0.0	0.0	0.0	d
8.7223	44.60300	87.23400	100.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Specific Building Damage Results - Vertical Displacements

Structure: GVA-1 | Sub-structure: GVA-1

Dist.	Coordinates			Displacements	
	x	y	z	z	
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1					
0.0	9.25200	89.52300	100.50000	0.031887	d
0.48595	9.22654	89.03772	100.50000	0.031630	d
0.97189	9.20108	88.55244	100.50000	0.031349	d
1.4578	9.17562	88.06716	100.50000	0.031043	d
1.9438	9.15016	87.58188	100.50000	0.030712	d
2.4297	9.12470	87.09660	100.50000	0.030355	d
2.9157	9.09924	86.61132	100.50000	0.029970	d
3.4016	9.07378	86.12604	100.50000	0.029558	d
3.8876	9.04832	85.64076	100.50000	0.029117	d
4.3735	9.02286	85.15548	100.50000	0.028646	d
4.8595	8.99740	84.67020	100.50000	0.028144	d
5.3454	8.97194	84.18492	100.50000	0.027612	d
5.8314	8.94648	83.69964	100.50000	0.027047	d
6.3173	8.92102	83.21436	100.50000	0.026450	d
6.8033	8.89556	82.72908	100.50000	0.025818	d
7.2892	8.87010	82.24380	100.50000	0.025152	d
7.7752	8.84464	81.75852	100.50000	0.024451	d
8.2611	8.81918	81.27324	100.50000	0.023713	d
8.7471	8.79372	80.78796	100.50000	0.022939	d
9.2330	8.76826	80.30268	100.50000	0.022127	d
9.7189	8.74280	79.81740	100.50000	0.021276	d
10.205	8.71734	79.33212	100.50000	0.020387	d
10.691	8.69188	78.84684	100.50000	0.019458	d
11.177	8.66642	78.36156	100.50000	0.018489	d
11.663	8.64096	77.87628	100.50000	0.017480	d
12.149	8.61550	77.39100	100.50000	0.016429	d
12.635	8.59004	76.90572	100.50000	0.015337	d
13.121	8.56458	76.42044	100.50000	0.014203	d
13.607	8.53912	75.93516	100.50000	0.013026	d
14.092	8.51366	75.44988	100.50000	0.011808	d
14.578	8.48820	74.96460	100.50000	0.010546	d
15.064	8.46274	74.47932	100.50000	0.0092423	d
15.550	8.43728	73.99404	100.50000	0.0078958	d
16.036	8.41182	73.50876	100.50000	0.0065069	d
16.522	8.38636	73.02348	100.50000	0.0050758	d
17.008	8.36090	72.53820	100.50000	0.0036028	d
17.494	8.33544	72.05292	100.50000	0.0020884	d
17.980	8.30998	71.56764	100.50000	533.21E-6	d
18.466	8.28452	71.08236	100.50000	-0.0010622	d
18.952	8.25906	70.59708	100.50000	-0.0026968	d
19.438	8.23360	70.11180	100.50000	-0.0043699	d
19.924	8.20814	69.62652	100.50000	-0.0060803	d
20.410	8.18268	69.14124	100.50000	-0.0078267	d
20.896	8.15722	68.65596	100.50000	-0.0096077	d
21.382	8.13176	68.17068	100.50000	-0.011422	d
21.868	8.10630	67.68540	100.50000	-0.013268	d
22.354	8.08084	67.20012	100.50000	-0.015143	d
22.840	8.05538	66.71484	100.50000	-0.017046	d
23.325	8.02992	66.22956	100.50000	-0.018974	d
23.811	8.00446	65.74428	100.50000	-0.020925	d
24.297	7.97900	65.25900	100.50000	-0.022898	d

d - Displacements include imported displacements.

Structure: GVA-2 | Sub-structure: GVA-2

Dist.	Coordinates			Displacements	
	x	y	z	z	
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1					
0.0	7.97900	65.25900	100.50000	-0.022898	d
0.48050	7.95067	64.77933	100.50000	-0.024837	d
0.96101	7.92233	64.29967	100.50000	-0.026789	d
1.4415	7.89400	63.82000	100.50000	-0.028752	d
1.9220	7.86567	63.34033	100.50000	-0.030722	d

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
2.4025	7.83733	62.86067	100.50000	-0.032695	d
2.8830	7.80900	62.38100	100.50000	-0.034670	d

d - Displacements include imported displacements.

Structure: GVA-3 | Sub-structure: GVA-3

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	7.80900	62.38100	100.50000	-0.034670	d
0.47715	8.28487	62.34613	100.50000	-0.039893	d
0.95430	8.76075	62.31125	100.50000	-0.045461	d
1.4315	9.23663	62.27638	100.50000	-0.051394	d
1.9086	9.71250	62.24150	100.50000	-0.057715	d
2.3858	10.18838	62.20662	100.50000	-0.064448	d
2.8629	10.66425	62.17175	100.50000	-0.071616	d
3.3401	11.14012	62.13687	100.50000	-0.079248	d
3.8172	11.61600	62.10200	100.50000	-0.087371	d

d - Displacements include imported displacements.

Structure: GVA-4 | Sub-structure: GVA-4

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	11.61600	62.10200	100.50000	-0.087371	d
0.47359	11.65050	62.57433	100.50000	-0.083943	d
0.94718	11.68500	63.04667	100.50000	-0.080518	d
1.4208	11.71950	63.51900	100.50000	-0.077101	d
1.8944	11.75400	63.99133	100.50000	-0.073699	d
2.3680	11.78850	64.46367	100.50000	-0.070316	d
2.8415	11.82300	64.93600	100.50000	-0.066957	d

d - Displacements include imported displacements.

Structure: GVA-5 | Sub-structure: GVA-5

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	11.82300	64.93600	100.50000	-0.066957	d
0.48843	12.31013	64.90031	100.50000	-0.074207	d
0.97686	12.79725	64.86463	100.50000	-0.081912	d
1.4653	13.28438	64.82894	100.50000	-0.090098	d
1.9537	13.77150	64.79325	100.50000	-0.098792	d
2.4422	14.25863	64.75756	100.50000	-0.10802	d
2.9306	14.74575	64.72187	100.50000	-0.11782	d
3.4190	15.23288	64.68619	100.50000	-0.12822	d
3.9074	15.72000	64.65050	100.50000	-0.13926	d
4.3959	16.20713	64.61481	100.50000	-0.15096	d
4.8843	16.69425	64.57913	100.50000	-0.16337	d
5.3727	17.18138	64.54344	100.50000	-0.17652	d
5.8612	17.66850	64.50775	100.50000	-0.19046	d
6.3496	18.15563	64.47206	100.50000	-0.20522	d
6.8380	18.64275	64.43637	100.50000	-0.22086	d
7.3265	19.12988	64.40069	100.50000	-0.23741	d
7.8149	19.61700	64.36500	100.50000	-0.25494	d

d - Displacements include imported displacements.

Structure: GVA-6 | Sub-structure: GVA-6

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	19.61700	64.36500	100.50000	-0.25494	d
0.49248	19.58100	63.87383	100.50000	-0.26641	d
0.98497	19.54500	63.38267	100.50000	-0.27807	d
1.4775	19.50900	62.89150	100.50000	-0.28991	d
1.9699	19.47300	62.40033	100.50000	-0.30191	d
2.4624	19.43700	61.90917	100.50000	-0.31405	d
2.9549	19.40100	61.41800	100.50000	-0.32630	d

d - Displacements include imported displacements.

Structure: GVA-7 | Sub-structure: GVA-7

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	19.40100	61.41800	100.50000	-0.32630	d
0.46449	19.86425	61.38412	100.50000	-0.34928	d
0.92897	20.32750	61.35025	100.50000	-0.37363	d
1.3935	20.79075	61.31638	100.50000	-0.39944	d
1.8579	21.25400	61.28250	100.50000	-0.42679	d
2.3224	21.71725	61.24862	100.50000	-0.45576	d
2.7869	22.18050	61.21475	100.50000	-0.48645	d
3.2514	22.64375	61.18088	100.50000	-0.51896	d
3.7159	23.10700	61.14700	100.50000	-0.55338	d

d - Displacements include imported displacements.

Structure: GVA-8 | Sub-structure: GVA-8

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	23.10700	61.14700	100.50000	-0.55338	d
0.49250	23.13267	61.63883	100.50000	-0.53030	d
0.98501	23.15833	62.13067	100.50000	-0.50764	d
1.4775	23.18400	62.62250	100.50000	-0.48546	d
1.9700	23.20967	63.11433	100.50000	-0.46378	d
2.4625	23.23533	63.60617	100.50000	-0.44263	d
2.9550	23.26100	64.09800	100.50000	-0.42203	d

d - Displacements include imported displacements.

Structure: GVA-9 | Sub-structure: GVA-9

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	23.26100	64.09800	100.50000	-0.42203	d
0.49313	23.28670	64.59046	100.50000	-0.40197	d
0.98626	23.31240	65.08292	100.50000	-0.38249	d
1.4794	23.33810	65.57538	100.50000	-0.36360	d
1.9725	23.36380	66.06784	100.50000	-0.34530	d
2.4657	23.38950	66.56030	100.50000	-0.32761	d
2.9588	23.41520	67.05276	100.50000	-0.31051	d
3.4519	23.44090	67.54522	100.50000	-0.29402	d
3.9450	23.46660	68.03768	100.50000	-0.27811	d
4.4382	23.49230	68.53014	100.50000	-0.26280	d
4.9313	23.51800	69.02260	100.50000	-0.24806	d

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
5.4244	23.54370	69.51506	100.50000	-0.23390 d
5.9176	23.56940	70.00752	100.50000	-0.22029 d
6.4107	23.59510	70.49998	100.50000	-0.20724 d
6.9038	23.62080	70.99244	100.50000	-0.19472 d
7.3970	23.64650	71.48490	100.50000	-0.18273 d
7.8901	23.67220	71.97736	100.50000	-0.17125 d
8.3832	23.69790	72.46982	100.50000	-0.16026 d
8.8763	23.72360	72.96228	100.50000	-0.14976 d
9.3695	23.74930	73.45474	100.50000	-0.13973 d
9.8626	23.77500	73.94720	100.50000	-0.13014 d
10.356	23.80070	74.43966	100.50000	-0.12100 d
10.849	23.82640	74.93212	100.50000	-0.11227 d
11.342	23.85210	75.42458	100.50000	-0.10396 d
11.835	23.87780	75.91704	100.50000	-0.096039 d
12.328	23.90350	76.40950	100.50000	-0.088497 d
12.821	23.92920	76.90196	100.50000	-0.081320 d
13.315	23.95490	77.39442	100.50000	-0.074494 d
13.808	23.98060	77.88688	100.50000	-0.068004 d
14.301	24.00630	78.37934	100.50000	-0.061839 d
14.794	24.03200	78.87180	100.50000	-0.055983 d
15.287	24.05770	79.36426	100.50000	-0.050426 d
15.780	24.08340	79.85672	100.50000	-0.045154 d
16.273	24.10910	80.34918	100.50000	-0.040154 d
16.766	24.13480	80.84164	100.50000	-0.035417 d
17.260	24.16050	81.33410	100.50000	-0.030930 d
17.753	24.18620	81.82656	100.50000	-0.026681 d
18.246	24.21190	82.31902	100.50000	-0.022662 d
18.739	24.23760	82.81148	100.50000	-0.018861 d
19.232	24.26330	83.30394	100.50000	-0.015268 d
19.725	24.28900	83.79640	100.50000	-0.011875 d
20.218	24.31470	84.28886	100.50000	-0.0086710 d
20.711	24.34040	84.78132	100.50000	-0.0056485 d
21.205	24.36610	85.27378	100.50000	-0.0027986 d
21.698	24.39180	85.76624	100.50000	-113.34E-6 d
22.191	24.41750	86.25870	100.50000	0.0024152 d
22.684	24.44320	86.75116	100.50000	0.0047944 d
23.177	24.46890	87.24362	100.50000	0.0070314 d
23.670	24.49460	87.73608	100.50000	0.0091332 d
24.163	24.52030	88.22854	100.50000	0.011106 d
24.657	24.54600	88.72100	100.50000	0.012957 d

d - Displacements include imported displacements.

Structure: GVA-10 | Sub-structure: GVA-10

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1				
0.0	24.54600	88.72100	100.50000	0.012957 d
0.47859	24.06806	88.74606	100.50000	0.013953 d
0.95719	23.59013	88.77112	100.50000	0.014924 d
1.4358	23.11219	88.79619	100.50000	0.015868 d
1.9144	22.63425	88.82125	100.50000	0.016785 d
2.3930	22.15631	88.84631	100.50000	0.017676 d
2.8716	21.67837	88.87138	100.50000	0.018540 d
3.3502	21.20044	88.89644	100.50000	0.019376 d
3.8288	20.72250	88.92150	100.50000	0.020185 d
4.3073	20.24456	88.94656	100.50000	0.020967 d
4.7859	19.76662	88.97163	100.50000	0.021722 d
5.2645	19.28869	88.99669	100.50000	0.022449 d
5.7431	18.81075	89.02175	100.50000	0.023149 d
6.2217	18.33281	89.04681	100.50000	0.023822 d
6.7003	17.85488	89.07188	100.50000	0.024468 d
7.1789	17.37694	89.09694	100.50000	0.025088 d
7.6575	16.89900	89.12200	100.50000	0.025681 d
8.1361	16.42106	89.14706	100.50000	0.026248 d
8.6147	15.94313	89.17212	100.50000	0.026790 d
9.0933	15.46519	89.19719	100.50000	0.027305 d
9.5719	14.98725	89.22225	100.50000	0.027796 d
10.050	14.50931	89.24731	100.50000	0.028262 d
10.529	14.03138	89.27237	100.50000	0.028704 d
11.008	13.55344	89.29744	100.50000	0.029122 d
11.486	13.07550	89.32250	100.50000	0.029517 d
11.965	12.59756	89.34756	100.50000	0.029888 d
12.443	12.11963	89.37262	100.50000	0.030237 d
12.922	11.64169	89.39769	100.50000	0.030564 d
13.401	11.16375	89.42275	100.50000	0.030870 d
13.879	10.68581	89.44781	100.50000	0.031154 d
14.358	10.20788	89.47288	100.50000	0.031418 d
14.836	9.72994	89.49794	100.50000	0.031662 d
15.315	9.25200	89.52300	100.50000	0.031887 d

d - Displacements include imported displacements.

Structure: GE-1 | Sub-structure: GE-1

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1				
0.0	28.56700	64.11000	100.50000	-0.78045 d
0.49454	29.06094	64.13431	100.50000	-0.82023 d
0.98907	29.55487	64.15863	100.50000	-0.86121 d
1.4836	30.04881	64.18294	100.50000	-0.90335 d
1.9781	30.54275	64.20725	100.50000	-0.94660 d
2.4727	31.03669	64.23156	100.50000	-0.99087 d
2.9672	31.53063	64.25588	100.50000	-1.0361 d
3.4617	32.02456	64.28019	100.50000	-1.0822 d
3.9563	32.51850	64.30450	100.50000	-1.1290 d
4.4508	33.01244	64.32881	100.50000	-1.1764 d
4.9454	33.50637	64.35312	100.50000	-1.2244 d
5.4399	34.00031	64.37744	100.50000	-1.2727 d
5.9344	34.49425	64.40175	100.50000	-1.3212 d
6.4290	34.98819	64.42606	100.50000	-1.3697 d
6.9235	35.48212	64.45037	100.50000	-1.4181 d
7.4180	35.97606	64.47469	100.50000	-1.4662 d
7.9126	36.47000	64.49900	100.50000	-1.5138 d

d - Displacements include imported displacements.

Structure: GE-2 | Sub-structure: GE-2

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1				
0.0	36.47000	64.49900	100.50000	-1.5138 d
0.49291	36.44014	64.99100	100.50000	-1.4072 d
0.98581	36.41029	65.48300	100.50000	-1.3085 d
1.4787	36.38043	65.97500	100.50000	-1.2169 d
1.9716	36.35057	66.46700	100.50000	-1.1319 d
2.4645	36.32071	66.95900	100.50000	-1.0529 d
2.9574	36.29086	67.45100	100.50000	-0.97953 d
3.4503	36.26100	67.94300	100.50000	-0.91128 d
3.9432	36.23114	68.43500	100.50000	-0.84776 d
4.4361	36.20129	68.92700	100.50000	-0.78861 d
4.9291	36.17143	69.41900	100.50000	-0.73352 d
5.4220	36.14157	69.91100	100.50000	-0.68218 d
5.9149	36.11171	70.40300	100.50000	-0.63432 d
6.4078	36.08186	70.89500	100.50000	-0.58968 d
6.9007	36.05200	71.38700	100.50000	-0.54804 d
7.3936	36.02214	71.87900	100.50000	-0.50918 d
7.8865	35.99229	72.37100	100.50000	-0.47290 d
8.3794	35.96243	72.86300	100.50000	-0.43903 d
8.8723	35.93257	73.35500	100.50000	-0.40740 d
9.3652	35.90271	73.84700	100.50000	-0.37785 d

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
9.8581	35.87286	74.33900	100.50000	-0.35025	d
10.351	35.84300	74.83100	100.50000	-0.32445	d
10.844	35.81314	75.32300	100.50000	-0.30034	d
11.337	35.78329	75.81500	100.50000	-0.27781	d
11.830	35.75343	76.30700	100.50000	-0.25674	d
12.323	35.72357	76.79900	100.50000	-0.23705	d
12.816	35.69371	77.29100	100.50000	-0.21864	d
13.308	35.66386	77.78300	100.50000	-0.20142	d
13.801	35.63400	78.27500	100.50000	-0.18532	d

d - Displacements include imported displacements.

Structure: GE-3 | Sub-structure: GE-3

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	35.63400	78.27500	100.50000	-0.18532	d
0.47806	35.15681	78.24606	100.50000	-0.18092	d
0.95613	34.67963	78.21713	100.50000	-0.17643	d
1.4342	34.20244	78.18819	100.50000	-0.17187	d
1.9123	33.72525	78.15925	100.50000	-0.16724	d
2.3903	33.24806	78.13031	100.50000	-0.16256	d
2.8684	32.77087	78.10138	100.50000	-0.15784	d
3.3464	32.29369	78.07244	100.50000	-0.15307	d
3.8245	31.81650	78.04350	100.50000	-0.14828	d
4.3026	31.33931	78.01456	100.50000	-0.14347	d
4.7806	30.86212	77.98562	100.50000	-0.13865	d
5.2587	30.38494	77.95669	100.50000	-0.13382	d
5.7368	29.90775	77.92775	100.50000	-0.12900	d
6.2148	29.43056	77.89881	100.50000	-0.12419	d
6.6929	28.95338	77.86987	100.50000	-0.11941	d
7.1710	28.47619	77.84094	100.50000	-0.11465	d
7.6490	27.99900	77.81200	100.50000	-0.10992	d

d - Displacements include imported displacements.

Structure: GE-4 | Sub-structure: GE-4

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	27.99900	77.81200	100.50000	-0.10992	d
0.48978	28.01929	77.32264	100.50000	-0.11986	d
0.97955	28.03957	76.83329	100.50000	-0.13041	d
1.4693	28.05986	76.34393	100.50000	-0.14160	d
1.9591	28.08014	75.85457	100.50000	-0.15347	d
2.4489	28.10043	75.36521	100.50000	-0.16606	d
2.9387	28.12071	74.87586	100.50000	-0.17942	d
3.4284	28.14100	74.38650	100.50000	-0.19358	d
3.9182	28.16129	73.89714	100.50000	-0.20859	d
4.4080	28.18157	73.40779	100.50000	-0.22450	d
4.8978	28.20186	72.91843	100.50000	-0.24136	d
5.3876	28.22214	72.42907	100.50000	-0.25921	d
5.8773	28.24243	71.93971	100.50000	-0.27813	d
6.3671	28.26271	71.45036	100.50000	-0.29816	d
6.8569	28.28300	70.96100	100.50000	-0.31936	d
7.3467	28.30329	70.47164	100.50000	-0.34180	d
7.8364	28.32357	69.98229	100.50000	-0.36555	d
8.3262	28.34386	69.49293	100.50000	-0.39067	d
8.8160	28.36414	69.00357	100.50000	-0.41724	d
9.3058	28.38443	68.51421	100.50000	-0.44533	d
9.7955	28.40471	68.02486	100.50000	-0.47502	d
10.285	28.42500	67.53550	100.50000	-0.50639	d
10.775	28.44529	67.04614	100.50000	-0.53953	d
11.265	28.46557	66.55679	100.50000	-0.57452	d
11.755	28.48586	66.06743	100.50000	-0.61145	d
12.244	28.50614	65.57807	100.50000	-0.65042	d
12.734	28.52643	65.08871	100.50000	-0.69151	d
13.224	28.54671	64.59936	100.50000	-0.73482	d
13.714	28.56700	64.11000	100.50000	-0.78045	d

d - Displacements include imported displacements.

Structure: DH-1 | Sub-structure: DH-1

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	44.60300	87.23400	100.50000	-0.042364	d
0.48563	44.63204	86.74924	100.50000	-0.048601	d
0.97126	44.66109	86.26448	100.50000	-0.055287	d
1.4569	44.69013	85.77972	100.50000	-0.062451	d
1.9425	44.71917	85.29496	100.50000	-0.070129	d
2.4282	44.74822	84.81020	100.50000	-0.078354	d
2.9138	44.77726	84.32543	100.50000	-0.087165	d
3.3994	44.80630	83.84067	100.50000	-0.096604	d
3.8850	44.83535	83.35591	100.50000	-0.10671	d
4.3707	44.86439	82.87115	100.50000	-0.11754	d
4.8563	44.89343	82.38639	100.50000	-0.12914	d
5.3419	44.92248	81.90163	100.50000	-0.14157	d
5.8276	44.95152	81.41687	100.50000	-0.15487	d
6.3132	44.98057	80.93211	100.50000	-0.16913	d
6.7988	45.00961	80.44735	100.50000	-0.18440	d
7.2845	45.03865	79.96259	100.50000	-0.20075	d
7.7701	45.06770	79.47783	100.50000	-0.21828	d
8.2557	45.09674	78.99307	100.50000	-0.23705	d
8.7413	45.12578	78.50830	100.50000	-0.25717	d
9.2270	45.15483	78.02354	100.50000	-0.27874	d
9.7126	45.18387	77.53878	100.50000	-0.30185	d
10.198	45.21291	77.05402	100.50000	-0.32663	d
10.684	45.24196	76.56926	100.50000	-0.35320	d
11.169	45.27100	76.08450	100.50000	-0.38169	d
11.655	45.30004	75.59974	100.50000	-0.41226	d
12.141	45.32909	75.11498	100.50000	-0.44505	d
12.626	45.35813	74.63022	100.50000	-0.48024	d
13.112	45.38717	74.14546	100.50000	-0.51802	d
13.598	45.41622	73.66070	100.50000	-0.55858	d
14.083	45.44526	73.17593	100.50000	-0.60215	d
14.569	45.47430	72.69117	100.50000	-0.64896	d
15.055	45.50335	72.20641	100.50000	-0.69928	d
15.540	45.53239	71.72165	100.50000	-0.75337	d
16.026	45.56143	71.23689	100.50000	-0.81156	d
16.511	45.59048	70.75213	100.50000	-0.87417	d
16.997	45.61952	70.26737	100.50000	-0.94157	d
17.483	45.64857	69.78261	100.50000	-1.0142	d
17.968	45.67761	69.29785	100.50000	-1.0924	d
18.454	45.70665	68.81309	100.50000	-1.1767	d
18.940	45.73570	68.32833	100.50000	-1.2677	d
19.425	45.76474	67.84357	100.50000	-1.3660	d
19.911	45.79378	67.35880	100.50000	-1.4720	d
20.396	45.82283	66.87404	100.50000	-1.5867	d
20.882	45.85187	66.38928	100.50000	-1.7108	d
21.368	45.88091	65.90452	100.50000	-1.8451	d
21.853	45.90996	65.41976	100.50000	-1.9907	d
22.339	45.93900	64.93500	100.50000	-2.1486	d

d - Displacements include imported displacements.

Structure: DH-2 | Sub-structure: DH-2

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

Vertical Offset 1

	0.0	45.93900	64.93500	100.50000	-2.1486 d
0.49257	46.43032	64.97005	100.50000	-2.1557 d	
0.98513	46.92163	65.00510	100.50000	-2.1603 d	
1.4777	47.41295	65.04014	100.50000	-2.1624 d	
1.9703	47.90427	65.07519	100.50000	-2.1619 d	
2.4628	48.39559	65.11024	100.50000	-2.1590 d	
2.9554	48.88690	65.14529	100.50000	-2.1535 d	
3.4480	49.37822	65.18034	100.50000	-2.1456 d	
3.9405	49.86954	65.21538	100.50000	-2.1352 d	
4.4331	50.36086	65.25043	100.50000	-2.1225 d	
4.9257	50.85217	65.28548	100.50000	-2.1073 d	
5.4182	51.34349	65.32053	100.50000	-2.0898 d	
5.9108	51.83481	65.35558	100.50000	-2.0700 d	
6.4034	52.32612	65.39063	100.50000	-2.0480 d	
6.8959	52.81744	65.42567	100.50000	-2.0238 d	
7.3885	53.30876	65.46072	100.50000	-1.9975 d	
7.8811	53.80008	65.49577	100.50000	-1.9692 d	
8.3736	54.29139	65.53082	100.50000	-1.9389 d	
8.8662	54.78271	65.56587	100.50000	-1.9067 d	
9.3588	55.27403	65.60091	100.50000	-1.8727 d	
9.8513	55.76535	65.63596	100.50000	-1.8371 d	
10.344	56.25666	65.67101	100.50000	-1.7998 d	
10.836	56.74798	65.70606	100.50000	-1.7611 d	
11.329	57.23930	65.74111	100.50000	-1.7210 d	
11.822	57.73062	65.77615	100.50000	-1.6797 d	
12.314	58.22193	65.81120	100.50000	-1.6373 d	
12.807	58.71325	65.84625	100.50000	-1.5939 d	
13.299	59.20457	65.88130	100.50000	-1.5496 d	
13.792	59.69588	65.91635	100.50000	-1.5047 d	
14.284	60.18720	65.95139	100.50000	-1.4592 d	
14.777	60.67852	65.98644	100.50000	-1.4133 d	
15.270	61.16984	66.02149	100.50000	-1.3671 d	
15.762	61.66115	66.05654	100.50000	-1.3207 d	
16.255	62.15247	66.09159	100.50000	-1.2744 d	
16.747	62.64379	66.12663	100.50000	-1.2282 d	
17.240	63.13511	66.16168	100.50000	-1.1823 d	
17.732	63.62642	66.19673	100.50000	-1.1367 d	
18.225	64.11774	66.23178	100.50000	-1.0917 d	
18.718	64.60906	66.26683	100.50000	-1.0472 d	
19.210	65.10038	66.30187	100.50000	-1.0035 d	
19.703	65.59169	66.33692	100.50000	-0.96052 d	
20.195	66.08301	66.37197	100.50000	-0.91844 d	
20.688	66.57433	66.40702	100.50000	-0.87730 d	
21.180	67.06564	66.44207	100.50000	-0.83717 d	
21.673	67.55696	66.47712	100.50000	-0.79810 d	
22.165	68.04828	66.51216	100.50000	-0.76012 d	
22.658	68.53960	66.54721	100.50000	-0.72327 d	
23.151	69.03091	66.58226	100.50000	-0.68758 d	
23.643	69.52223	66.61731	100.50000	-0.65307 d	
24.136	70.01355	66.65236	100.50000	-0.61974 d	
24.628	70.50487	66.68740	100.50000	-0.58760 d	
25.121	70.99618	66.72245	100.50000	-0.55665 d	
25.613	71.48750	66.75750	100.50000	-0.52688 d	
26.106	71.97882	66.79255	100.50000	-0.49828 d	
26.599	72.47013	66.82760	100.50000	-0.47084 d	
27.091	72.96145	66.86264	100.50000	-0.44454 d	
27.584	73.45277	66.89769	100.50000	-0.41934 d	
28.076	73.94409	66.93274	100.50000	-0.39524 d	
28.569	74.43540	66.96779	100.50000	-0.37220 d	
29.061	74.92672	67.00284	100.50000	-0.35019 d	
29.554	75.41804	67.03788	100.50000	-0.32919 d	
30.047	75.90936	67.07293	100.50000	-0.30916 d	
30.539	76.40067	67.10798	100.50000	-0.29007 d	
31.032	76.89199	67.14303	100.50000	-0.27189 d	
31.524	77.38331	67.17808	100.50000	-0.25459 d	
32.017	77.87463	67.21313	100.50000	-0.23814 d	
32.509	78.36594	67.24817	100.50000	-0.22250 d	
33.002	78.85726	67.28322	100.50000	-0.20764 d	
33.494	79.34858	67.31827	100.50000	-0.19353 d	
33.987	79.83989	67.35332	100.50000	-0.18014 d	
34.480	80.33121	67.38837	100.50000	-0.16743 d	
34.972	80.82253	67.42341	100.50000	-0.15539 d	
35.465	81.31385	67.45846	100.50000	-0.14398 d	
35.957	81.80516	67.49351	100.50000	-0.13317 d	
36.450	82.29648	67.52856	100.50000	-0.12293 d	
36.942	82.78780	67.56361	100.50000	-0.11324 d	
37.435	83.27912	67.59865	100.50000	-0.10408 d	
37.928	83.77043	67.63370	100.50000	-0.095416 d	
38.420	84.26175	67.66875	100.50000	-0.087226 d	
38.913	84.75307	67.70380	100.50000	-0.079488 d	
39.405	85.24438	67.73885	100.50000	-0.072180 d	
39.898	85.73570	67.77389	100.50000	-0.065282 d	
40.390	86.22702	67.80894	100.50000	-0.058772 d	
40.883	86.71834	67.84399	100.50000	-0.052632 d	
41.376	87.20965	67.87904	100.50000	-0.046843 d	
41.868	87.70097	67.91409	100.50000	-0.041387 d	
42.361	88.19229	67.94913	100.50000	-0.036248 d	
42.853	88.68361	67.98418	100.50000	-0.031409 d	
43.346	89.17492	68.01923	100.50000	-0.026855 d	
43.838	89.66624	68.05428	100.50000	-0.022571 d	
44.331	90.15756	68.08933	100.50000	-0.018543 d	
44.823	90.64888	68.12438	100.50000	-0.014757 d	
45.316	91.14019	68.15942	100.50000	-0.011202 d	
45.809	91.63151	68.19447	100.50000	-0.0078649 d	
46.301	92.12283	68.22952	100.50000	-0.0047339 d	
46.794	92.61414	68.26457	100.50000	-0.0017982 d	
47.286	93.10546	68.29962	100.50000	952.46E-6 d	
47.779	93.59678	68.33466	100.50000	0.0035281 d	
48.271	94.08810	68.36971	100.50000	0.0059382 d	
48.764	94.57941	68.40476	100.50000	0.0081916 d	
49.257	95.07073	68.43981	100.50000	0.010297 d	
49.749	95.56205	68.47486	100.50000	0.012262 d	
50.242	96.05337	68.50990	100.50000	0.014094 d	
50.734	96.54468	68.54495	100.50000	0.015802 d	
51.227	97.03600	68.58000	100.50000	0.017391 d	

d - Displacements include imported displacements.

Structure: DH-3 | Sub-structure: DH-3

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

Vertical Offset 1

	0.0	97.03600	68.58000	100.50000	0.017391 d
0.48909	96.99859	69.06765	100.50000	0.018060 d	
0.97817	96.96117	69.55530	100.50000	0.018721 d	
1.4673	96.92376	70.04296	100.50000	0.019371 d	
1.9563	96.88635	70.53061	100.50000	0.020011 d	
2.4454	96.84893	71.01826	100.50000	0.020639 d	
2.9345	96.81152	71.50591	100.50000	0.021254 d	
3.4236	96.77411	71.99357	100.50000	0.021857 d	
3.9127	96.73670	72.48122	100.50000	0.022447 d	
4.4018	96.69928	72.96887	100.50000	0.023023 d	
4.8909	96.66187	73.45652	100.50000	0.023584 d	
5.3799	96.62446	73.94417	100.50000	0.024130 d	
5.8690	96.58704	74.43183	100.50000	0.024662 d	
6.3581	96.54963	74.91948	100.50000	0.025177 d	
6.8472	96.51222	75.40713	100.50000	0.025677 d	
7.3363	96.47480	75.89478	100.50000	0.026161 d	
7.8254	96.43739	76.38243	100.50000	0.026629 d	
8.3144	96.39998	76.87009	100.50000	0.027080 d	
8.8035	96.36257	77.35774	100.50000	0.027514 d	
9.2926	96.32515	77.84539	100.50000	0.027932 d	
9.7817	96.28774	78.33304	100.50000	0.028333 d	
10.271	96.25033	78.82070	100.50000	0.028717 d	
10.760	96.21291	79.30835	100.50000	0.029084 d	
11.249	96.17550	79.79600	100.50000	0.029435 d	

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
11.738	96.13809	80.28365	100.50000	0.029768	d
12.227	96.10067	80.77130	100.50000	0.030086	d
12.716	96.06326	81.25896	100.50000	0.030386	d
13.205	96.02585	81.74661	100.50000	0.030670	d
13.694	95.98843	82.23426	100.50000	0.030938	d
14.183	95.95102	82.72191	100.50000	0.031190	d
14.673	95.91361	83.20957	100.50000	0.031426	d
15.162	95.87620	83.69722	100.50000	0.031646	d
15.651	95.83878	84.18487	100.50000	0.031851	d
16.140	95.80137	84.67252	100.50000	0.032041	d
16.629	95.76396	85.16017	100.50000	0.032216	d
17.118	95.72654	85.64783	100.50000	0.032376	d
17.607	95.68913	86.13548	100.50000	0.032522	d
18.096	95.65172	86.62313	100.50000	0.032653	d
18.585	95.61430	87.11078	100.50000	0.032771	d
19.074	95.57689	87.59843	100.50000	0.032876	d
19.563	95.53948	88.08609	100.50000	0.032967	d
20.052	95.50207	88.57374	100.50000	0.033045	d
20.542	95.46465	89.06139	100.50000	0.033111	d
21.031	95.42724	89.54904	100.50000	0.033164	d
21.520	95.38983	90.03670	100.50000	0.033206	d
22.009	95.35241	90.52435	100.50000	0.033236	d
22.498	95.31500	91.01200	100.50000	0.033255	d

d - Displacements include imported displacements.

Structure: DH-4 | Sub-structure: DH-4

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	95.31500	91.01200	100.50000	0.033255	d
0.47118	94.84520	90.97595	100.50000	0.033244	d
0.94236	94.37540	90.93990	100.50000	0.033221	d
1.4135	93.90560	90.90385	100.50000	0.033186	d
1.8847	93.43580	90.86780	100.50000	0.033137	d
2.3559	92.96600	90.83175	100.50000	0.033075	d
2.8271	92.49620	90.79570	100.50000	0.032998	d
3.2983	92.02640	90.75965	100.50000	0.032907	d
3.7694	91.55660	90.72360	100.50000	0.032801	d
4.2406	91.08680	90.68755	100.50000	0.032680	d
4.7118	90.61700	90.65150	100.50000	0.032542	d
5.1830	90.14720	90.61545	100.50000	0.032388	d
5.6542	89.67740	90.57940	100.50000	0.032217	d
6.1254	89.20760	90.54335	100.50000	0.032028	d
6.5965	88.73780	90.50730	100.50000	0.031822	d
7.0677	88.26800	90.47125	100.50000	0.031597	d
7.5389	87.79820	90.43520	100.50000	0.031353	d
8.0101	87.32840	90.39915	100.50000	0.031089	d
8.4813	86.85860	90.36310	100.50000	0.030806	d
8.9524	86.38880	90.32705	100.50000	0.030502	d
9.4236	85.91900	90.29100	100.50000	0.030177	d

d - Displacements include imported displacements.

Structure: DH-5 | Sub-structure: DH-5

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	85.91900	90.29100	100.50000	0.030177	d
0.48006	85.95573	89.81235	100.50000	0.029754	d
0.96012	85.99246	89.33369	100.50000	0.029299	d
1.4402	86.02919	88.85504	100.50000	0.028811	d
1.9202	86.06592	88.37638	100.50000	0.028287	d
2.4003	86.10265	87.89773	100.50000	0.027728	d
2.8804	86.13938	87.41908	100.50000	0.027131	d
3.3604	86.17612	86.94042	100.50000	0.026496	d
3.8405	86.21285	86.46177	100.50000	0.025822	d
4.3205	86.24958	85.98312	100.50000	0.025106	d
4.8006	86.28631	85.50446	100.50000	0.024348	d
5.2807	86.32304	85.02581	100.50000	0.023547	d
5.7607	86.35977	84.54715	100.50000	0.022700	d
6.2408	86.39650	84.06850	100.50000	0.021808	d
6.7209	86.43323	83.58985	100.50000	0.020868	d
7.2009	86.46996	83.11119	100.50000	0.019879	d
7.6810	86.50669	82.63254	100.50000	0.018840	d
8.1610	86.54342	82.15388	100.50000	0.017750	d
8.6411	86.58015	81.67523	100.50000	0.016607	d
9.1212	86.61688	81.19658	100.50000	0.015411	d
9.6012	86.65362	80.71792	100.50000	0.014159	d
10.081	86.69035	80.23927	100.50000	0.012852	d
10.561	86.72708	79.76062	100.50000	0.011487	d
11.041	86.76381	79.28196	100.50000	0.010064	d
11.521	86.80054	78.80331	100.50000	0.0085813	d
12.002	86.83727	78.32465	100.50000	0.0070385	d
12.482	86.87400	77.84600	100.50000	0.0054345	d

d - Displacements include imported displacements.

Structure: DH-6 | Sub-structure: DH-6

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	86.87400	77.84600	100.50000	0.0054345	d
0.49556	86.37989	77.80809	100.50000	0.0033393	d
0.99112	85.88579	77.77018	100.50000	0.0011298	d
1.4867	85.39168	77.73227	100.50000	-0.0011985	d
1.9822	84.89758	77.69436	100.50000	-0.0036496	d
2.4778	84.40347	77.65645	100.50000	-0.0062280	d
2.9733	83.90936	77.61855	100.50000	-0.0089380	d
3.4689	83.41526	77.58064	100.50000	-0.011784	d
3.9645	82.92115	77.54273	100.50000	-0.014770	d
4.4600	82.42705	77.50482	100.50000	-0.017902	d
4.9556	81.93294	77.46691	100.50000	-0.021182	d
5.4511	81.43883	77.42900	100.50000	-0.024617	d
5.9467	80.94473	77.39109	100.50000	-0.028209	d
6.4423	80.45062	77.35318	100.50000	-0.031963	d
6.9378	79.95652	77.31527	100.50000	-0.035884	d
7.4334	79.46241	77.27736	100.50000	-0.039975	d
7.9289	78.96830	77.23945	100.50000	-0.044240	d
8.4245	78.47420	77.20155	100.50000	-0.048684	d
8.9200	77.98009	77.16364	100.50000	-0.053309	d
9.4156	77.48598	77.12573	100.50000	-0.058119	d
9.9112	76.99188	77.08782	100.50000	-0.063117	d
10.407	76.49777	77.04991	100.50000	-0.068307	d
10.902	76.00367	77.01200	100.50000	-0.073689	d
11.398	75.50956	76.97409	100.50000	-0.079267	d
11.893	75.01545	76.93618	100.50000	-0.085043	d
12.389	74.52135	76.89827	100.50000	-0.091017	d
12.885	74.02724	76.86036	100.50000	-0.097190	d
13.380	73.53314	76.82245	100.50000	-0.10356	d
13.876	73.03903	76.78455	100.50000	-0.11014	d
14.371	72.54492	76.74664	100.50000	-0.11691	d
14.867	72.05082	76.70873	100.50000	-0.12387	d
15.362	71.55671	76.67082	100.50000	-0.13104	d
15.858	71.06261	76.63291	100.50000	-0.13839	d
16.353	70.56850	76.59500	100.50000	-0.14594	d
16.849	70.07439	76.55709	100.50000	-0.15366	d
17.345	69.58029	76.51918	100.50000	-0.16157	d
17.840	69.08618	76.48127	100.50000	-0.16965	d
18.336	68.59208	76.44336	100.50000	-0.17790	d
18.831	68.09797	76.40545	100.50000	-0.18630	d

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
19.327	67.60386	76.36755	100.50000	-0.19486 d
19.822	67.10976	76.32964	100.50000	-0.20355 d
20.318	66.61565	76.29173	100.50000	-0.21238 d
20.813	66.12155	76.25382	100.50000	-0.22132 d
21.309	65.62744	76.21591	100.50000	-0.23037 d
21.805	65.13333	76.17800	100.50000	-0.23951 d
22.300	64.63923	76.14009	100.50000	-0.24873 d
22.796	64.14512	76.10218	100.50000	-0.25801 d
23.291	63.65102	76.06427	100.50000	-0.26734 d
23.787	63.15691	76.02636	100.50000	-0.27671 d
24.282	62.66280	75.98845	100.50000	-0.28609 d
24.778	62.16870	75.95055	100.50000	-0.29546 d
25.273	61.67459	75.91264	100.50000	-0.30481 d
25.769	61.18048	75.87473	100.50000	-0.31413 d
26.265	60.68638	75.83682	100.50000	-0.32338 d
26.760	60.19227	75.79891	100.50000	-0.33255 d
27.256	59.69817	75.76100	100.50000	-0.34162 d
27.751	59.20406	75.72309	100.50000	-0.35057 d
28.247	58.70995	75.68518	100.50000	-0.35938 d
28.742	58.21585	75.64727	100.50000	-0.36802 d
29.238	57.72174	75.60936	100.50000	-0.37649 d
29.733	57.22764	75.57145	100.50000	-0.38475 d
30.229	56.73353	75.53355	100.50000	-0.39278 d
30.725	56.23942	75.49564	100.50000	-0.40058 d
31.220	55.74532	75.45773	100.50000	-0.40811 d
31.716	55.25121	75.41982	100.50000	-0.41535 d
32.211	54.75711	75.38191	100.50000	-0.42230 d
32.707	54.26300	75.34400	100.50000	-0.42892 d

d - Displacements include imported displacements.

Structure: DH-7 | Sub-structure: DH-7

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	54.26300	75.34400	100.50000	-0.42892 d
0.48103	54.22619	75.82362	100.50000	-0.39799 d
0.96205	54.18938	76.30323	100.50000	-0.36910 d
1.4431	54.15258	76.78285	100.50000	-0.34211 d
1.9241	54.11577	77.26246	100.50000	-0.31690 d
2.4051	54.07896	77.74208	100.50000	-0.29333 d
2.8862	54.04215	78.22169	100.50000	-0.27130 d
3.3672	54.00535	78.70131	100.50000	-0.25072 d
3.8482	53.96854	79.18092	100.50000	-0.23147 d
4.3292	53.93173	79.66054	100.50000	-0.21348 d
4.8103	53.89492	80.14015	100.50000	-0.19665 d
5.2913	53.85812	80.61977	100.50000	-0.18092 d
5.7723	53.82131	81.09938	100.50000	-0.16620 d
6.2533	53.78450	81.57900	100.50000	-0.15244 d
6.7344	53.74769	82.05862	100.50000	-0.13957 d
7.2154	53.71088	82.53823	100.50000	-0.12754 d
7.6964	53.67408	83.01785	100.50000	-0.11628 d
8.1774	53.63727	83.49746	100.50000	-0.10576 d
8.6585	53.60046	83.97708	100.50000	-0.095916 d
9.1395	53.56365	84.45669	100.50000	-0.086711 d
9.6205	53.52685	84.93631	100.50000	-0.078104 d
10.102	53.49004	85.41592	100.50000	-0.070057 d
10.583	53.45323	85.89554	100.50000	-0.062534 d
11.064	53.41642	86.37515	100.50000	-0.055502 d
11.545	53.37962	86.85477	100.50000	-0.048931 d
12.026	53.34281	87.33438	100.50000	-0.042790 d
12.507	53.30600	87.81400	100.50000	-0.037052 d

d - Displacements include imported displacements.

Structure: DH-8 | Sub-structure: DH-8

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	53.30600	87.81400	100.50000	-0.037052 d
0.48457	52.82250	87.78178	100.50000	-0.037809 d
0.96915	52.33900	87.74956	100.50000	-0.038518 d
1.4537	51.85550	87.71733	100.50000	-0.039176 d
1.9383	51.37200	87.68511	100.50000	-0.039784 d
2.4229	50.88850	87.65289	100.50000	-0.040338 d
2.9074	50.40500	87.62067	100.50000	-0.040839 d
3.3920	49.92150	87.58844	100.50000	-0.041285 d
3.8766	49.43800	87.55622	100.50000	-0.041675 d
4.3612	48.95450	87.52400	100.50000	-0.042008 d
4.8457	48.47100	87.49178	100.50000	-0.042283 d
5.3303	47.98750	87.45956	100.50000	-0.042500 d
5.8149	47.50400	87.42733	100.50000	-0.042659 d
6.2994	47.02050	87.39511	100.50000	-0.042758 d
6.7840	46.53700	87.36289	100.50000	-0.042798 d
7.2686	46.05350	87.33067	100.50000	-0.042779 d
7.7532	45.57000	87.29844	100.50000	-0.042699 d
8.2377	45.08650	87.26622	100.50000	-0.042561 d
8.7223	44.60300	87.23400	100.50000	-0.042364 d

d - Displacements include imported displacements.

Specific Building Damage Results - All Segments

Structure: GVA-1 | Sub-structure: GVA-1

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

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

Structure: GVA-2 | Sub-structure: GVA-2

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

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

Structure: GVA-3 | Sub-structure: GVA-3

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

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

Structure: GVA-4 | Sub-structure: GVA-4

Vertical Offset	Segment	Start Length	Curvature	Deflection	Average	Max	Max Gradient	Max Gradient	Min	Damage

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

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

Structure: GVA-5 | Sub-structure: GVA-5

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	2.4422	5.3718	Sagging	216.59E-6	0.0	206.03E-6	0.0	35.875E-6	243460.	0 (Negligible)

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

Structure: GVA-6 | Sub-structure: GVA-6

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	2.9540	Sagging	23.924E-6	0.0	22.495E-6	0.0	24.879E-6	1.2152E+6	0 (Negligible)

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

Structure: GVA-7 | Sub-structure: GVA-7

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	3.7150	Sagging	350.64E-6	0.0	319.25E-6	0.0	74.110E-6	111010.	0 (Negligible)

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

Structure: GVA-8 | Sub-structure: GVA-8

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	2.9550	Sagging	75.781E-6	0.0	71.347E-6	0.0	-46.882E-6	437660.	0 (Negligible)

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

Structure: GVA-9 | Sub-structure: GVA-9

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	11.342	Sagging	317.27E-6	0.0	375.33E-6	0.0	-40.681E-6	405830.	0 (Negligible)

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

Structure: GVA-10 | Sub-structure: GVA-10

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

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

Structure: GE-1 | Sub-structure: GE-1

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	6.0345	Sagging	251.18E-6	0.0	308.60E-6	0.0	98.120E-6	201000.	0 (Negligible)
	2	6.0345	1.8775	Hogging	30.306E-6	0.0	30.148E-6	0.0	98.120E-6	468760.	0 (Negligible)

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

Structure: GE-2 | Sub-structure: GE-2

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	13.801	Sagging	0.0022466	0.0	0.0033736	0.0	-216.22E-6	30395.	0 (Negligible)

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

Structure: GE-3 | Sub-structure: GE-3

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	4.9430	Hogging	12.423E-6	0.0	11.909E-6	0.0	-10.094E-6	2.6721E+6	0 (Negligible)
	2	4.9430	2.7060	Sagging	3.2080E-6	0.0	3.0398E-6	0.0	-10.094E-6	6.2823E+6	0 (Negligible)

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

Structure: GE-4 | Sub-structure: GE-4

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

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	13.713	Sagging	929.64E-6	0.0	0.0013973	0.0	93.153E-6	102540.	0 (Negligible)

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

Structure: DH-1 | Sub-structure: DH-1

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	3.8850	18.453	Sagging	0.0034855	0.0	0.0043303	0.0	325.16E-6	18681.	0 (Negligible)

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

Structure: DH-2 | Sub-structure: DH-2

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	15.761	Hogging	0.0015056	0.0	0.0014351	0.0	-94.067E-6	96017.	0 (Negligible)
	2	15.761	21.674	Sagging	0.0011153	0.0	0.0015061	0.0	-94.067E-6	204190.	0 (Negligible)

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

Structure: DH-3 | Sub-structure: DH-3

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

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

Structure: DH-4 | Sub-structure: DH-4

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

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

Structure: DH-5 | Sub-structure: DH-5

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

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

Structure: DH-6 | Sub-structure: DH-6

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	13.380	10.803	Sagging	78.934E-6	0.0	72.277E-6	0.0	18.925E-6	1.2323E+6	0 (Negligible)
	2	24.183	8.5228	Hogging	75.695E-6	0.0	74.637E-6	0.0	18.925E-6	757010.	0 (Negligible)

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

Structure: DH-7 | Sub-structure: DH-7

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	8.1774	Sagging	554.59E-6	0.0	526.68E-6	0.0	-64.303E-6	111450.	0 (Negligible)

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

Structure: DH-8 | Sub-structure: DH-8

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

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

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

Structure: GVA-1 | Sub-structure: GVA-1

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

Structure: GVA-2 | Sub-structure: GVA-2

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

Structure: GVA-3 | Sub-structure: GVA-3

Vertical Offset from Line for Vertical Movement Calculations [m]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Slope [mm]	Max Settlement	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging) [m]	Min Radius of Curvature (Sagging) [m]	Damage Category
Structure: GVA-4 | Sub-structure: GVA-4										
Vertical Offset from Line for Vertical Movement Calculations [m]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Slope [mm]	Max Settlement	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging) [m]	Min Radius of Curvature (Sagging) [m]	Damage Category
Structure: GVA-5 | Sub-structure: GVA-5										
Vertical Offset from Line for Vertical Movement Calculations [m]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Slope [mm]	Max Settlement	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging) [m]	Min Radius of Curvature (Sagging) [m]	Damage Category
0.0	216.59E-6	0.0	35.875E-6	0.25491	206.03E-6	0.0	35.875E-6	-	243460.	0 (Negligible)
Structure: GVA-6 | Sub-structure: GVA-6										
Vertical Offset from Line for Vertical Movement Calculations [m]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Slope [mm]	Max Settlement	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging) [m]	Min Radius of Curvature (Sagging) [m]	Damage Category
0.0	23.924E-6	0.0	24.879E-6	0.32628	22.495E-6	0.0	24.879E-6	-	1.2152E+6	0 (Negligible)
Structure: GVA-7 | Sub-structure: GVA-7										
Vertical Offset from Line for Vertical Movement Calculations [m]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Slope [mm]	Max Settlement	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging) [m]	Min Radius of Curvature (Sagging) [m]	Damage Category
0.0	350.64E-6	0.0	74.110E-6	0.55332	319.25E-6	0.0	74.110E-6	-	111010.	0 (Negligible)
Structure: GVA-8 | Sub-structure: GVA-8										
Vertical Offset from Line for Vertical Movement Calculations [m]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Slope [mm]	Max Settlement	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging) [m]	Min Radius of Curvature (Sagging) [m]	Damage Category
0.0	75.781E-6	0.0	-46.882E-6	0.55338	71.347E-6	0.0	-46.882E-6	-	437660.	0 (Negligible)
Structure: GVA-9 | Sub-structure: GVA-9										
Vertical Offset from Line for Vertical Movement Calculations [m]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Slope [mm]	Max Settlement	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging) [m]	Min Radius of Curvature (Sagging) [m]	Damage Category
0.0	317.27E-6	0.0	-40.681E-6	0.42203	375.33E-6	0.0	-40.681E-6	-	405830.	0 (Negligible)
Structure: GVA-10 | Sub-structure: GVA-10										
Vertical Offset from Line for Vertical Movement Calculations [m]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Slope [mm]	Max Settlement	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging) [m]	Min Radius of Curvature (Sagging) [m]	Damage Category
Structure: GE-1 | Sub-structure: GE-1										
Vertical Offset from Line for Vertical Movement Calculations [m]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Slope [mm]	Max Settlement	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging) [m]	Min Radius of Curvature (Sagging) [m]	Damage Category
0.0	251.18E-6	0.0	98.120E-6	1.5137	308.60E-6	0.0	98.120E-6	468760.	201000.	0 (Negligible)
Structure: GE-2 | Sub-structure: GE-2										
Vertical Offset from Line for Vertical Movement Calculations [m]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Slope [mm]	Max Settlement	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging) [m]	Min Radius of Curvature (Sagging) [m]	Damage Category
0.0	0.0022466	0.0	-216.22E-6	1.5138	0.0033736	0.0	-216.22E-6	-	30395.	0 (Negligible)
Structure: GE-3 | Sub-structure: GE-3										
Vertical Offset from Line for Vertical Movement Calculations [m]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max Slope [mm]	Max Settlement	Max Tensile Strain [%]	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging) [m]	Min Radius of Curvature (Sagging) [m]	Damage Category
0.0	12.423E-6	0.0	-10.094E-6	0.18532	11.909E-6	0.0	-10.094E-6	2.6721E+6	6.2823E+6	0 (Negligible)
Structure: GE-4 | Sub-structure: GE-4										
Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category

[m]	[%]	[%]	[mm]	[%]			[m]	[m]	
0.0	929.64E-6	0.0	93.153E-6	0.78038	0.0013973	0.0	93.153E-6	-	102540. 0 (Negligible)

Structure: DH-1 | Sub-structure: DH-1

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0034855	0.0	325.16E-6	2.1483	0.0043303	0.0	325.16E-6	-	18681. 0 (Negligible)	

Structure: DH-2 | Sub-structure: DH-2

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0015056	0.0	-94.067E-6	2.1623	0.0015061	0.0	-94.067E-6	96017.	204190. 0 (Negligible)	

Structure: DH-3 | Sub-structure: DH-3

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

Structure: DH-4 | Sub-structure: DH-4

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

Structure: DH-5 | Sub-structure: DH-5

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

Structure: DH-6 | Sub-structure: DH-6

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	78.934E-6	0.0	18.925E-6	0.42891	74.637E-6	0.0	18.925E-6	757010.	1.2323E+6 0 (Negligible)	

Structure: DH-7 | Sub-structure: DH-7

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	554.59E-6	0.0	-64.303E-6	0.42892	526.68E-6	0.0	-64.303E-6	-	111450. 0 (Negligible)	

Structure: DH-8 | Sub-structure: DH-8

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

Specific Building Damage Results - Critical Segments within Each Structure

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start [m]	End [m]	Curvature	Max Slope	Max Settlement [mm]	Max Tensile Strain [%]	Min Radius of Curvature (Hogging) [m]	Min Radius of Curvature (Sagging) [m]	Damage Category
GVA-1	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
GVA-2	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
GVA-3	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
GVA-4	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
GVA-5	Max Slope	GVA-5	1	2.4422	7.8140	Sagging	**35.875E-6**	0.25491	206.03E-6	-	243460. 0 (Negligible)	
	Max Settlement	GVA-5	1	2.4422	7.8140	Sagging	35.875E-6	**0.25491**	206.03E-6	-	243460. 0 (Negligible)	
	Max Tensile Strain	GVA-5	1	2.4422	7.8140	Sagging	35.875E-6	0.25491	**206.03E-6**	-	243460. 0 (Negligible)	
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	- -	
	Min Radius of Curvature (Sagging)	GVA-5	1	2.4422	7.8140	Sagging	35.875E-6	0.25491	206.03E-6	-	**243460.** 0 (Negligible)	
GVA-6	Max Slope	GVA-6	1	0.0	2.9540	Sagging	**24.879E-6**	0.32628	22.495E-6	-	1.2152E+6 0 (Negligible)	
	Max Settlement	GVA-6	1	0.0	2.9540	Sagging	24.879E-6	**0.32628**	22.495E-6	-	1.2152E+6 0 (Negligible)	
	Max Tensile	GVA-6	1	0.0	2.9540	Sagging	24.879E-6	0.32628	**22.495E-6**	-	1.2152E+6 0 (Negligible)	

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Max Slope	Max Settlement	Max Tensile Strain	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
	Strain			- -	- -			- -	- -	- -		
	Min Radius of Curvature (Hogging)		-	-	- -		-	-	-	-	- -	
	Min Radius of Curvature (Sagging)	GVA-6	1	0.0	2.9540	Sagging	24.879E-6	0.32628	22.495E-6	-	**1.2152E+6**	0 (Negligible)
GVA-7	Max Slope	GVA-7	1	0.0	3.7150	Sagging	**74.110E-6**	0.55332	319.25E-6	-	111010.	0 (Negligible)
	Max Settlement	GVA-7	1	0.0	3.7150	Sagging	74.110E-6	**0.55332**	319.25E-6	-	111010.	0 (Negligible)
	Max Tensile Strain	GVA-7	1	0.0	3.7150	Sagging	74.110E-6	0.55332	**319.25E-6**	-	111010.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	- -		-	-	-	-	- -	
	Min Radius of Curvature (Sagging)	GVA-7	1	0.0	3.7150	Sagging	74.110E-6	0.55332	319.25E-6	-	**111010.**	0 (Negligible)
GVA-8	Max Slope	GVA-8	1	0.0	2.9550	Sagging	**46.882E-6**	0.55338	71.347E-6	-	437660.	0 (Negligible)
	Max Settlement	GVA-8	1	0.0	2.9550	Sagging	46.882E-6	**0.55338**	71.347E-6	-	437660.	0 (Negligible)
	Max Tensile Strain	GVA-8	1	0.0	2.9550	Sagging	46.882E-6	0.55338	**71.347E-6**	-	437660.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	- -		-	-	-	-	- -	
	Min Radius of Curvature (Sagging)	GVA-8	1	0.0	2.9550	Sagging	46.882E-6	0.55338	71.347E-6	-	**437660.**	0 (Negligible)
GVA-9	Max Slope	GVA-9	1	0.0	11.342	Sagging	**40.681E-6**	0.42203	375.33E-6	-	405830.	0 (Negligible)
	Max Settlement	GVA-9	1	0.0	11.342	Sagging	40.681E-6	**0.42203**	375.33E-6	-	405830.	0 (Negligible)
	Max Tensile Strain	GVA-9	1	0.0	11.342	Sagging	40.681E-6	0.42203	**375.33E-6**	-	405830.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	- -		-	-	-	-	- -	
	Min Radius of Curvature (Sagging)	GVA-9	1	0.0	11.342	Sagging	40.681E-6	0.42203	375.33E-6	-	**405830.**	0 (Negligible)
GVA-10	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
GE-1	Max Slope	GE-1	1	0.0	6.0345	Sagging	**98.120E-6**	1.3310	308.60E-6	-	201000.	0 (Negligible)
	Max Settlement	GE-1	2	6.0345	7.9120	Hogging	98.120E-6	**1.5137**	30.148E-6	468760.	-	0 (Negligible)
	Max Tensile Strain	GE-1	1	0.0	6.0345	Sagging	98.120E-6	1.3310	**308.60E-6**	-	201000.	0 (Negligible)
	Min Radius of Curvature (Hogging)	GE-1	2	6.0345	7.9120	Hogging	98.120E-6	1.5137	30.148E-6	**468760.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	GE-1	1	0.0	6.0345	Sagging	98.120E-6	1.3310	308.60E-6	-	**201000.**	0 (Negligible)
GE-2	Max Slope	GE-2	1	0.0	13.801	Sagging	**216.22E-6**	1.5138	0.0033736	-	30395.	0 (Negligible)
	Max Settlement	GE-2	1	0.0	13.801	Sagging	216.22E-6	**1.5138**	0.0033736	-	30395.	0 (Negligible)
	Max Tensile Strain	GE-2	1	0.0	13.801	Sagging	216.22E-6	1.5138	**0.0033736**	-	30395.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	- -		-	-	-	-	- -	
	Min Radius of Curvature (Sagging)	GE-2	1	0.0	13.801	Sagging	216.22E-6	1.5138	0.0033736	-	**30395.**	0 (Negligible)
GE-3	Max Slope	GE-3	1	0.0	4.9430	Hogging	**10.094E-6**	0.18532	11.909E-6	2.6721E+6	-	0 (Negligible)
	Max Settlement	GE-3	1	0.0	4.9430	Hogging	10.094E-6	**0.18532**	11.909E-6	2.6721E+6	-	0 (Negligible)
	Max Tensile Strain	GE-3	1	0.0	4.9430	Hogging	10.094E-6	0.18532	**11.909E-6**	2.6721E+6	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	GE-3	1	0.0	4.9430	Hogging	10.094E-6	0.18532	11.909E-6	**2.6721E+6**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	GE-3	2	4.9430	7.6490	Sagging	10.094E-6	0.13701	3.0398E-6	-	**6.2823E+6**	0 (Negligible)
GE-4	Max Slope	GE-4	1	0.0	13.713	Sagging	**93.153E-6**	0.78038	0.0013973	-	102540.	0 (Negligible)
	Max Settlement	GE-4	1	0.0	13.713	Sagging	93.153E-6	**0.78038**	0.0013973	-	102540.	0 (Negligible)
	Max Tensile Strain	GE-4	1	0.0	13.713	Sagging	93.153E-6	0.78038	**0.0013973**	-	102540.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	- -		-	-	-	-	- -	
	Min Radius of Curvature (Sagging)	GE-4	1	0.0	13.713	Sagging	93.153E-6	0.78038	0.0013973	-	**102540.**	0 (Negligible)
DH-1	Max Slope	DH-1	1	3.8850	22.338	Sagging	**325.16E-6**	2.1483	0.0043303	-	18681.	0 (Negligible)
	Max Settlement	DH-1	1	3.8850	22.338	Sagging	325.16E-6	**2.1483**	0.0043303	-	18681.	0 (Negligible)
	Max Tensile Strain	DH-1	1	3.8850	22.338	Sagging	325.16E-6	2.1483	**0.0043303**	-	18681.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	- -		-	-	-	-	- -	
	Min Radius of Curvature (Sagging)	DH-1	1	3.8850	22.338	Sagging	325.16E-6	2.1483	0.0043303	-	**18681.**	0 (Negligible)
DH-2	Max Slope	DH-2	1	0.0	15.761	Hogging	**94.067E-6**	2.1623	0.0014351	96017.	-	0 (Negligible)
	Max Settlement	DH-2	1	0.0	15.761	Hogging	94.067E-6	**2.1623**	0.0014351	96017.	-	0 (Negligible)
	Max Tensile Strain	DH-2	2	15.761	37.435	Sagging	94.067E-6	1.3208	**0.0015061**	-	204190.	0 (Negligible)
	Min Radius of Curvature (Hogging)	DH-2	1	0.0	15.761	Hogging	94.067E-6	2.1623	0.0014351	**96017.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	DH-2	2	15.761	37.435	Sagging	94.067E-6	1.3208	0.0015061	-	**204190.**	0 (Negligible)
DH-3	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
DH-4	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
DH-5	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
DH-6	Max Slope	DH-6	1	13.380	24.183	Sagging	**18.925E-6**	0.28421	72.277E-6	-	1.2323E+6	0 (Negligible)
	Max Settlement	DH-6	2	24.183	32.706	Hogging	18.925E-6	**0.42891**	74.637E-6	757010.	-	0 (Negligible)
	Max Tensile Strain	DH-6	2	24.183	32.706	Hogging	18.925E-6	0.42891	**74.637E-6**	757010.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	DH-6	2	24.183	32.706	Hogging	18.925E-6	0.42891	74.637E-6	**757010.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	DH-6	1	13.380	24.183	Sagging	18.925E-6	0.28421	72.277E-6	-	**1.2323E+6**	0 (Negligible)
DH-7	Max Slope	DH-7	1	0.0	8.1774	Sagging	**64.303E-6**	0.42892	526.68E-6	-	111450.	0 (Negligible)
	Max Settlement	DH-7	1	0.0	8.1774	Sagging	64.303E-6	**0.42892**	526.68E-6	-	111450.	0 (Negligible)
	Max Tensile Strain	DH-7	1	0.0	8.1774	Sagging	64.303E-6	0.42892	**526.68E-6**	-	111450.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	- -		-	-	-	-	- -	
	Min Radius of Curvature (Sagging)	DH-7	1	0.0	8.1774	Sagging	64.303E-6	0.42892	526.68E-6	-	**111450.**	0 (Negligible)

Structure Name	Parameter	Critical Sub-Structure	Critical Start Segment	End	Curvature	Max Slope	Max Settlement	Max Tensile Strain	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
DH-8	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										
	All settlements are less than the Settlement Trough Limit Sensitivity.										

Utility Strain Calculation Options

Neglect beneficial contribution of axial strains : No

Specific Building Damage Results - Horizontal Displacements

Structure: GVA-1 | Sub-structure: GVA-1

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	9.25200	89.52300	100.50000	0.0	0.0	0.0	0.0
0.48595	9.22654	89.03772	100.50000	0.0	0.0	0.0	0.0
0.97189	9.20108	88.55244	100.50000	0.0	0.0	0.0	0.0
1.4578	9.17562	88.06716	100.50000	0.0	0.0	0.0	0.0
1.9438	9.15016	87.58188	100.50000	0.0	0.0	0.0	0.0
2.4297	9.12470	87.09660	100.50000	0.0	0.0	0.0	0.0
2.9157	9.09924	86.61132	100.50000	0.0	0.0	0.0	0.0
3.4016	9.07378	86.12604	100.50000	0.0	0.0	0.0	0.0
3.8876	9.04832	85.64076	100.50000	0.0	0.0	0.0	0.0
4.3735	9.02286	85.15548	100.50000	0.0	0.0	0.0	0.0
4.8595	8.99740	84.67020	100.50000	0.0	0.0	0.0	0.0
5.3454	8.97194	84.18492	100.50000	0.0	0.0	0.0	0.0
5.8314	8.94648	83.69964	100.50000	0.0	0.0	0.0	0.0
6.3173	8.92102	83.21436	100.50000	0.0	0.0	0.0	0.0
6.8033	8.89556	82.72908	100.50000	0.0	0.0	0.0	0.0
7.2892	8.87010	82.24380	100.50000	0.0	0.0	0.0	0.0
7.7752	8.84464	81.75852	100.50000	0.0	0.0	0.0	0.0
8.2611	8.81918	81.27324	100.50000	0.0	0.0	0.0	0.0
8.7471	8.79372	80.78796	100.50000	0.0	0.0	0.0	0.0
9.2330	8.76826	80.30268	100.50000	0.0	0.0	0.0	0.0
9.7189	8.74280	79.81740	100.50000	0.0	0.0	0.0	0.0
10.205	8.71734	79.33212	100.50000	0.0	0.0	0.0	0.0
10.691	8.69188	78.84684	100.50000	0.0	0.0	0.0	0.0
11.177	8.66642	78.36156	100.50000	0.0	0.0	0.0	0.0
11.663	8.64096	77.87628	100.50000	0.0	0.0	0.0	0.0
12.149	8.61550	77.39100	100.50000	0.0	0.0	0.0	0.0
12.635	8.59004	76.90572	100.50000	0.0	0.0	0.0	0.0
13.121	8.56458	76.42044	100.50000	0.0	0.0	0.0	0.0
13.607	8.53912	75.93516	100.50000	0.0	0.0	0.0	0.0
14.092	8.51366	75.44988	100.50000	0.0	0.0	0.0	0.0
14.578	8.48820	74.96460	100.50000	0.0	0.0	0.0	0.0
15.064	8.46274	74.47932	100.50000	0.0	0.0	0.0	0.0
15.550	8.43728	73.99404	100.50000	0.0	0.0	0.0	0.0
16.036	8.41182	73.50876	100.50000	0.0	0.0	0.0	0.0
16.522	8.38636	73.02348	100.50000	0.0	0.0	0.0	0.0
17.008	8.36090	72.53820	100.50000	0.0	0.0	0.0	0.0
17.494	8.33544	72.05292	100.50000	0.0	0.0	0.0	0.0
17.980	8.30998	71.56764	100.50000	0.0	0.0	0.0	0.0
18.466	8.28452	71.08236	100.50000	0.0	0.0	0.0	0.0
18.952	8.25906	70.59708	100.50000	0.0	0.0	0.0	0.0
19.438	8.23360	70.11180	100.50000	0.0	0.0	0.0	0.0
19.924	8.20814	69.62652	100.50000	0.0	0.0	0.0	0.0
20.410	8.18268	69.14124	100.50000	0.0	0.0	0.0	0.0
20.896	8.15722	68.65596	100.50000	0.0	0.0	0.0	0.0
21.382	8.13176	68.17068	100.50000	0.0	0.0	0.0	0.0
21.868	8.10630	67.68540	100.50000	0.0	0.0	0.0	0.0
22.354	8.08084	67.20012	100.50000	0.0	0.0	0.0	0.0
22.840	8.05538	66.71484	100.50000	0.0	0.0	0.0	0.0
23.325	8.02992	66.22956	100.50000	0.0	0.0	0.0	0.0
23.811	8.00446	65.74428	100.50000	0.0	0.0	0.0	0.0
24.297	7.97900	65.25900	100.50000	0.0	0.0	0.0	0.0

Structure: GVA-2 | Sub-structure: GVA-2

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	7.97900	65.25900	100.50000	0.0	0.0	0.0	0.0
0.48050	7.95067	64.77933	100.50000	0.0	0.0	0.0	0.0
0.96101	7.92233	64.29967	100.50000	0.0	0.0	0.0	0.0
1.4415	7.89400	63.82000	100.50000	0.0	0.0	0.0	0.0
1.9220	7.86567	63.34033	100.50000	0.0	0.0	0.0	0.0
2.4025	7.83733	62.86067	100.50000	0.0	0.0	0.0	0.0
2.8830	7.80900	62.38100	100.50000	0.0	0.0	0.0	0.0

Structure: GVA-3 | Sub-structure: GVA-3

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	7.80900	62.38100	100.50000	0.0	0.0	0.0	0.0
0.47715	8.28487	62.34613	100.50000	0.0	0.0	0.0	0.0
0.95430	8.76075	62.31125	100.50000	0.0	0.0	0.0	0.0
1.4315	9.23663	62.27638	100.50000	0.0	0.0	0.0	0.0
1.9086	9.71250	62.24150	100.50000	0.0	0.0	0.0	0.0
2.3858	10.18838	62.20662	100.50000	0.0	0.0	0.0	0.0
2.8629	10.66425	62.17175	100.50000	0.0	0.0	0.0	0.0
3.3401	11.14012	62.13687	100.50000	0.0	0.0	0.0	0.0
3.8172	11.61600	62.10200	100.50000	0.0	0.0	0.0	0.0

Structure: GVA-4 | Sub-structure: GVA-4

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	11.61600	62.10200	100.50000	0.0	0.0	0.0	0.0
0.47359	11.65050	62.57433	100.50000	0.0	0.0	0.0	0.0
0.94718	11.68500	63.04667	100.50000	0.0	0.0	0.0	0.0
1.4208	11.71950	63.51900	100.50000	0.0	0.0	0.0	0.0
1.8944	11.75400	63.99133	100.50000	0.0	0.0	0.0	0.0
2.3680	11.78850	64.46367	100.50000	0.0	0.0	0.0	0.0
2.8415	11.82300	64.93600	100.50000	0.0	0.0	0.0	0.0

Structure: GVA-5 | Sub-structure: GVA-5

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	11.82300	64.93600	100.50000	0.0	0.0	0.0	0.0
0.48843	12.31013	64.90031	100.50000	0.0	0.0	0.0	0.0
0.97686	12.79725	64.86463	100.50000	0.0	0.0	0.0	0.0
1.4653	13.28438	64.82894	100.50000	0.0	0.0	0.0	0.0
1.9537	13.77150	64.79325	100.50000	0.0	0.0	0.0	0.0
2.4422	14.25863	64.75756	100.50000	0.0	0.0	0.0	0.0
2.9306	14.74575	64.72187	100.50000	0.0	0.0	0.0	0.0
3.4190	15.23288	64.68619	100.50000	0.0	0.0	0.0	0.0

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the	Horizontal displacement perpendicular
3.9074	15.72000	64.65050	100.50000	0.0	0.0	0.0	0.0
4.3959	16.20713	64.61481	100.50000	0.020812	-0.010191	0.021501	-0.0086432
4.8843	16.69425	64.57913	100.50000	0.13261	-0.066638	0.13712	-0.056771
5.3727	17.18138	64.54344	100.50000	0.24197	-0.12488	0.25044	-0.10687
5.8612	17.66850	64.50775	100.50000	0.34875	-0.18501	0.36134	-0.15904
6.3496	18.15563	64.47206	100.50000	0.45282	-0.24713	0.46967	-0.21338
6.8380	18.64275	64.43637	100.50000	0.55403	-0.31134	0.57530	-0.27003
7.3265	19.12988	64.40069	100.50000	0.65222	-0.37776	0.67807	-0.32909
7.8149	19.61700	64.36500	100.50000	0.74721	-0.44649	0.77783	-0.39070

Structure: GVA-6 | Sub-structure: GVA-6

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	19.61700	64.36500	100.50000	0.74721	-0.44649	0.39068	0.77784
0.49248	19.58100	63.87383	100.50000	0.82023	-0.46218	0.40099	0.85182
0.98497	19.54500	63.38267	100.50000	0.89368	-0.47369	0.40710	0.92592
1.4775	19.50900	62.89150	100.50000	0.96741	-0.48106	0.40905	0.99999
1.9699	19.47300	62.40033	100.50000	1.0412	-0.48433	0.40692	1.0739
2.4624	19.43700	61.90917	100.50000	1.1150	-0.48357	0.40078	1.1474
2.9549	19.40100	61.41800	100.50000	1.1885	-0.47889	0.39073	1.2203

Structure: GVA-7 | Sub-structure: GVA-7

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	19.40100	61.41800	100.50000	1.1885	-0.47889	1.2202	-0.39094
0.46449	19.86425	61.38412	100.50000	1.3011	-0.53927	1.3370	-0.44294
0.92897	20.32750	61.35025	100.50000	1.4589	-0.62254	1.5005	-0.51449
1.3935	20.79075	61.31638	100.50000	1.6127	-0.70922	1.6601	-0.58972
1.8579	21.25400	61.28250	100.50000	1.7622	-0.79957	1.8158	-0.66893
2.3224	21.71725	61.24862	100.50000	1.9072	-0.89389	1.9673	-0.75242
2.7869	22.18050	61.21475	100.50000	2.0474	-0.99250	2.1143	-0.84054
3.2514	22.64375	61.18088	100.50000	2.1825	-1.0957	2.2566	-0.93364
3.7159	23.10700	61.14700	100.50000	2.3123	-1.2040	2.3939	-1.0321

Structure: GVA-8 | Sub-structure: GVA-8

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	23.10700	61.14700	100.50000	2.3123	-1.2040	-1.0818	-2.3719
0.49250	23.13267	61.63883	100.50000	2.1678	-1.2192	-1.1046	-2.2284
0.98501	23.15833	62.13067	100.50000	2.0256	-1.2256	-1.1184	-2.0867
1.4775	23.18400	62.62250	100.50000	1.8857	-1.2231	-1.1232	-1.9469
1.9700	23.20967	63.11433	100.50000	1.7486	-1.2119	-1.1191	-1.8094
2.4625	23.23533	63.60617	100.50000	1.6144	-1.1920	-1.1062	-1.6743
2.9550	23.26100	64.09800	100.50000	1.4832	-1.1635	-1.0846	-1.5418

Structure: GVA-9 | Sub-structure: GVA-9

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	23.26100	64.09800	100.50000	1.4832	-1.1635	-1.0846	-1.5418
0.49313	23.28670	64.59046	100.50000	1.3550	-1.1265	-1.0543	-1.4119
0.98626	23.31240	65.08292	100.50000	1.2300	-1.0812	-1.0157	-1.2847
1.4794	23.33810	65.57538	100.50000	1.1083	-1.0279	-0.96871	-1.1604
1.9725	23.36380	66.06784	100.50000	0.98984	-0.96659	-0.91369	-1.0389
2.4657	23.38950	66.56030	100.50000	0.88411	-0.90734	-0.86003	-0.93020
2.9588	23.41520	67.05276	100.50000	0.80108	-0.86249	-0.81957	-0.84494
3.4519	23.44090	67.54522	100.50000	0.72046	-0.81244	-0.77379	-0.76183
3.9450	23.46660	68.03768	100.50000	0.64225	-0.75738	-0.72288	-0.68085
4.4382	23.49230	68.53014	100.50000	0.56639	-0.69746	-0.66700	-0.60197
4.9313	23.51800	69.02260	100.50000	0.49284	-0.63287	-0.60632	-0.52515
5.4244	23.54370	69.51506	100.50000	0.42155	-0.56376	-0.54103	-0.45036
5.9176	23.56940	70.00752	100.50000	0.35247	-0.49032	-0.47128	-0.37754
6.4107	23.59510	70.49998	100.50000	0.28554	-0.41269	-0.39725	-0.30666
6.9038	23.62080	70.99244	100.50000	0.22070	-0.33105	-0.31910	-0.23766
7.3970	23.64650	71.48490	100.50000	0.15790	-0.24555	-0.23699	-0.17048
7.8901	23.67220	71.97736	100.50000	0.097065	-0.15634	-0.15107	-0.10508
8.3832	23.69790	72.46982	100.50000	0.038140	-0.063566	-0.061492	-0.041401
8.8763	23.72360	72.96228	100.50000	0.0	0.0	0.0	0.0
9.3695	23.74930	73.45474	100.50000	0.0	0.0	0.0	0.0
9.8626	23.77500	73.94720	100.50000	0.0	0.0	0.0	0.0
10.356	23.80070	74.43966	100.50000	0.0	0.0	0.0	0.0
10.849	23.82640	74.93212	100.50000	0.0	0.0	0.0	0.0
11.342	23.85210	75.42458	100.50000	0.0	0.0	0.0	0.0
11.835	23.87780	75.91704	100.50000	0.0	0.0	0.0	0.0
12.328	23.90350	76.40950	100.50000	0.0	0.0	0.0	0.0
12.821	23.92920	76.90196	100.50000	0.0	0.0	0.0	0.0
13.315	23.95490	77.39442	100.50000	0.0	0.0	0.0	0.0
13.808	23.98060	77.88688	100.50000	0.0	0.0	0.0	0.0
14.301	24.00630	78.37934	100.50000	0.0	0.0	0.0	0.0
14.794	24.03200	78.87180	100.50000	0.0	0.0	0.0	0.0
15.287	24.05770	79.36426	100.50000	0.0	0.0	0.0	0.0
15.780	24.08340	79.85672	100.50000	0.0	0.0	0.0	0.0
16.273	24.10910	80.34918	100.50000	0.0	0.0	0.0	0.0
16.766	24.13480	80.84164	100.50000	0.0	0.0	0.0	0.0
17.260	24.16050	81.33410	100.50000	0.0	0.0	0.0	0.0
17.753	24.18620	81.82656	100.50000	0.0	0.0	0.0	0.0
18.246	24.21190	82.31902	100.50000	0.0	0.0	0.0	0.0
18.739	24.23760	82.81148	100.50000	0.0	0.0	0.0	0.0
19.232	24.26330	83.30394	100.50000	0.0	0.0	0.0	0.0
19.725	24.28900	83.79640	100.50000	0.0	0.0	0.0	0.0
20.218	24.31470	84.28886	100.50000	0.0	0.0	0.0	0.0
20.711	24.34040	84.78132	100.50000	0.0	0.0	0.0	0.0
21.205	24.36610	85.27378	100.50000	0.0	0.0	0.0	0.0
21.698	24.39180	85.76624	100.50000	0.0	0.0	0.0	0.0
22.191	24.41750	86.25870	100.50000	0.0	0.0	0.0	0.0
22.684	24.44320	86.75116	100.50000	0.0	0.0	0.0	0.0
23.177	24.46890	87.24362	100.50000	0.0	0.0	0.0	0.0
23.670	24.49460	87.73608	100.50000	0.0	0.0	0.0	0.0
24.163	24.52030	88.22854	100.50000	0.0	0.0	0.0	0.0
24.657	24.54600	88.72100	100.50000	0.0	0.0	0.0	0.0

Structure: GVA-10 | Sub-structure: GVA-10

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	24.54600	88.72100	100.50000	0.0	0.0	0.0	0.0
0.47859	24.06806	88.74606	100.50000	0.0	0.0	0.0	0.0
0.95719	23.59013	88.77112	100.50000	0.0	0.0	0.0	0.0
1.4358	23.11219	88.79619	100.50000	0.0	0.0	0.0	0.0
1.9144	22.63425	88.82125	100.50000	0.0	0.0	0.0	0.0
2.3930	22.15631	88.84631	100.50000	0.0	0.0	0.0	0.0

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the	Horizontal displacement perpendicular
2.8716	21.67837	88.87138	100.50000	0.0	0.0	0.0	0.0
3.3502	21.20044	88.89644	100.50000	0.0	0.0	0.0	0.0
3.8288	20.72250	88.92150	100.50000	0.0	0.0	0.0	0.0
4.3073	20.24456	88.94656	100.50000	0.0	0.0	0.0	0.0
4.7859	19.76662	88.97163	100.50000	0.0	0.0	0.0	0.0
5.2645	19.28869	88.99669	100.50000	0.0	0.0	0.0	0.0
5.7431	18.81075	89.02175	100.50000	0.0	0.0	0.0	0.0
6.2217	18.33281	89.04681	100.50000	0.0	0.0	0.0	0.0
6.7003	17.85488	89.07188	100.50000	0.0	0.0	0.0	0.0
7.1789	17.37694	89.09694	100.50000	0.0	0.0	0.0	0.0
7.6575	16.89900	89.12200	100.50000	0.0	0.0	0.0	0.0
8.1361	16.42106	89.14706	100.50000	0.0	0.0	0.0	0.0
8.6147	15.94313	89.17212	100.50000	0.0	0.0	0.0	0.0
9.0933	15.46519	89.19719	100.50000	0.0	0.0	0.0	0.0
9.5719	14.98725	89.22225	100.50000	0.0	0.0	0.0	0.0
10.050	14.50931	89.24731	100.50000	0.0	0.0	0.0	0.0
10.529	14.03138	89.27237	100.50000	0.0	0.0	0.0	0.0
11.008	13.55344	89.29744	100.50000	0.0	0.0	0.0	0.0
11.486	13.07550	89.32250	100.50000	0.0	0.0	0.0	0.0
11.965	12.59756	89.34756	100.50000	0.0	0.0	0.0	0.0
12.443	12.11963	89.37262	100.50000	0.0	0.0	0.0	0.0
12.922	11.64169	89.39769	100.50000	0.0	0.0	0.0	0.0
13.401	11.16375	89.42275	100.50000	0.0	0.0	0.0	0.0
13.879	10.68581	89.44781	100.50000	0.0	0.0	0.0	0.0
14.358	10.20788	89.47288	100.50000	0.0	0.0	0.0	0.0
14.836	9.72994	89.49794	100.50000	0.0	0.0	0.0	0.0
15.315	9.25200	89.52300	100.50000	0.0	0.0	0.0	0.0

Structure: GE-1 | Sub-structure: GE-1

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	28.56700	64.11000	100.50000	1.9265	-2.8596	1.7836	-2.9508
0.49454	29.06094	64.13431	100.50000	1.8957	-3.0521	1.7434	-3.1416
0.98907	29.55487	64.15863	100.50000	1.8524	-3.2503	1.6903	-3.3374
1.4836	30.04881	64.18294	100.50000	1.7964	-3.4537	1.6244	-3.5378
1.9781	30.54275	64.20725	100.50000	1.7277	-3.6618	1.5456	-3.7423
2.4727	31.03669	64.23156	100.50000	1.6466	-3.8738	1.4541	-3.9501
2.9672	31.53063	64.25588	100.50000	1.5531	-4.0889	1.3502	-4.1603
3.4617	32.02456	64.28019	100.50000	1.4479	-4.3061	1.2344	-4.3720
3.9563	32.51850	64.30450	100.50000	1.3314	-4.5240	1.1074	-4.5840
4.4508	33.01244	64.32881	100.50000	1.2045	-4.7414	0.96996	-4.7949
4.9454	33.50637	64.35312	100.50000	1.0681	-4.9567	0.82317	-5.0032
5.4399	34.00031	64.37744	100.50000	0.92344	-5.1683	0.66824	-5.2075
5.9344	34.49425	64.40175	100.50000	0.77172	-5.3744	0.50657	-5.4058
6.4290	34.98819	64.42606	100.50000	0.61443	-5.5732	0.33970	-5.5966
6.9235	35.48212	64.45037	100.50000	0.45315	-5.7627	0.16929	-5.7780
7.4180	35.97606	64.47469	100.50000	0.28952	-5.9412	-0.0029133	-5.9482
7.9126	36.47000	64.49900	100.50000	0.27903	-5.9515	-0.013895	-5.9580

Structure: GE-2 | Sub-structure: GE-2

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	36.47000	64.49900	100.50000	0.27903	-5.9515	-5.9574	0.081985
0.49291	36.44014	64.99100	100.50000	0.26535	-5.6596	-5.6653	0.077964
0.98581	36.41029	65.48300	100.50000	0.25179	-5.3705	-5.3759	0.073982
1.4787	36.38043	65.97500	100.50000	0.23836	-5.0840	-5.0891	0.070035
1.9716	36.35057	66.46700	100.50000	0.22504	-4.7998	-4.8046	0.066120
2.4645	36.32071	66.95900	100.50000	0.21181	-4.5178	-4.5223	0.062235
2.9574	36.29086	67.45100	100.50000	0.19868	-4.2377	-4.2420	0.058377
3.4503	36.26100	67.94300	100.50000	0.18564	-3.9594	-3.9634	0.054544
3.9432	36.23114	68.43500	100.50000	0.17266	-3.6827	-3.6864	0.050732
4.4361	36.20129	68.92700	100.50000	0.15975	-3.4074	-3.4108	0.046938
4.9291	36.17143	69.41900	100.50000	0.14690	-3.1332	-3.1363	0.043161
5.4220	36.14157	69.91100	100.50000	0.13409	-2.8599	-2.8628	0.039397
5.9149	36.11171	70.40300	100.50000	0.12131	-2.5875	-2.5901	0.035644
6.4078	36.08186	70.89500	100.50000	0.10856	-2.3156	-2.3179	0.031899
6.9007	36.05200	71.38700	100.50000	0.095835	-2.0441	-2.0461	0.028158
7.3936	36.02214	71.87900	100.50000	0.083342	-1.7726	-1.7794	0.024488
7.8865	35.99229	72.37100	100.50000	0.074686	-1.5930	-1.5946	0.021944
8.3794	35.96243	72.86300	100.50000	0.066031	-1.4084	-1.4098	0.019401
8.8723	35.93257	73.35500	100.50000	0.057375	-1.2238	-1.2250	0.016858
9.3652	35.90271	73.84700	100.50000	0.048719	-1.0391	-1.0402	0.014315
9.8581	35.87286	74.33900	100.50000	0.040063	-0.85451	-0.85537	0.011771
10.351	35.84300	74.83100	100.50000	0.031408	-0.66989	-0.67057	0.0092282
10.844	35.81314	75.32300	100.50000	0.022752	-0.48527	-0.48576	0.0066849
11.337	35.78329	75.81500	100.50000	0.014096	-0.30066	-0.30096	0.0041417
11.830	35.75343	76.30700	100.50000	0.0054403	-0.11604	-0.11615	0.0015985
12.323	35.72357	76.79900	100.50000	0.0	0.0	0.0	0.0
12.816	35.69371	77.29100	100.50000	0.0	0.0	0.0	0.0
13.308	35.66386	77.78300	100.50000	0.0	0.0	0.0	0.0
13.801	35.63400	78.27500	100.50000	0.0	0.0	0.0	0.0

Structure: GE-3 | Sub-structure: GE-3

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	35.63400	78.27500	100.50000	0.0	0.0	0.0	0.0
0.47806	35.15681	78.24606	100.50000	0.0	0.0	0.0	0.0
0.95613	34.67963	78.21713	100.50000	0.0	0.0	0.0	0.0
1.4342	34.20244	78.18819	100.50000	0.0	0.0	0.0	0.0
1.9123	33.72525	78.15925	100.50000	0.0	0.0	0.0	0.0
2.3903	33.24806	78.13031	100.50000	0.0	0.0	0.0	0.0
2.8684	32.77087	78.10138	100.50000	0.0	0.0	0.0	0.0
3.3464	32.29369	78.07244	100.50000	0.0	0.0	0.0	0.0
3.8245	31.81650	78.04350	100.50000	0.0	0.0	0.0	0.0
4.3026	31.33931	78.01456	100.50000	0.0	0.0	0.0	0.0
4.7806	30.86212	77.98562	100.50000	0.0	0.0	0.0	0.0
5.2587	30.38494	77.95669	100.50000	0.0	0.0	0.0	0.0
5.7368	29.90775	77.92775	100.50000	0.0	0.0	0.0	0.0
6.2148	29.43056	77.89881	100.50000	0.0	0.0	0.0	0.0
6.6929	28.95338	77.86987	100.50000	0.0	0.0	0.0	0.0
7.1710	28.47619	77.84094	100.50000	0.0	0.0	0.0	0.0
7.6490	27.99900	77.81200	100.50000	0.0	0.0	0.0	0.0

Structure: GE-4 | Sub-structure: GE-4

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	27.99900	77.81200	100.50000	0.0	0.0	0.0	0.0
0.48978	28.01929	77.32264	100.50000	0.0	0.0	0.0	0.0
0.97955	28.03957	76.83329	100.50000	0.0	0.0	0.0	0.0
1.4693	28.05986	76.34393	100.50000	0.0	0.0	0.0	0.0
1.9591	28.08014	75.85457	100.50000	0.0	0.0	0.0	0.0
2.4489	28.10043	75.36521	100.50000	0.0	0.0	0.0	0.0
2.9387	28.12071	74.87586	100.50000	0.016142	-0.050823	0.051448	0.014023
3.4284	28.14100	74.38650	100.50000	0.060523	-0.18619	0.18854	0.052759
3.9182	28.16129	73.89714	100.50000	0.10638	-0.31956	0.32369	0.093055

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the	Horizontal displacement perpendicular
4.4080	28.18157	73.40779	100.50000	0.15381	-0.45081	0.45679	0.13500
4.8978	28.20186	72.91843	100.50000	0.20289	-0.57980	0.58770	0.17870
5.3876	28.22214	72.42907	100.50000	0.25374	-0.70640	0.71630	0.22426
5.8773	28.24243	71.93971	100.50000	0.30645	-0.83045	0.84243	0.27179
6.3671	28.26271	71.45036	100.50000	0.36115	-0.95180	0.96594	0.32142
6.8569	28.28300	70.96100	100.50000	0.41797	-1.0703	1.0867	0.37328
7.3467	28.30329	70.47164	100.50000	0.47704	-1.1856	1.2044	0.42752
7.8364	28.32357	69.98229	100.50000	0.53851	-1.2978	1.3189	0.48430
8.3262	28.34386	69.49293	100.50000	0.62504	-1.4589	1.4835	0.56408
8.8160	28.36414	69.00357	100.50000	0.71721	-1.6194	1.6477	0.64952
9.3058	28.38443	68.51421	100.50000	0.81344	-1.7744	1.8066	0.73925
9.7955	28.40471	68.02486	100.50000	0.91408	-1.9238	1.9600	0.83361
10.285	28.42500	67.53550	100.50000	1.0195	-2.0671	2.1076	0.93298
10.775	28.44529	67.04614	100.50000	1.1300	-2.2040	2.2489	1.0377
11.265	28.46557	66.55679	100.50000	1.2461	-2.3339	2.3835	1.1483
11.755	28.48586	66.06743	100.50000	1.3682	-2.4564	2.5110	1.2652
12.244	28.50614	65.57807	100.50000	1.4967	-2.5709	2.6307	1.3889
12.734	28.52643	65.08871	100.50000	1.6322	-2.6768	2.7421	1.5200
13.224	28.54671	64.59936	100.50000	1.7753	-2.7733	2.8444	1.6589
13.714	28.56700	64.11000	100.50000	1.9265	-2.8596	2.9369	1.8064

Structure: DH-1 | Sub-structure: DH-1

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	44.60300	87.23400	100.50000	0.0	0.0	0.0	0.0
0.48563	44.63204	86.74924	100.50000	0.0	0.0	0.0	0.0
0.97126	44.66109	86.26448	100.50000	0.0	0.0	0.0	0.0
1.4569	44.69013	85.77972	100.50000	0.0	0.0	0.0	0.0
1.9425	44.71917	85.29496	100.50000	0.0	0.0	0.0	0.0
2.4282	44.74822	84.81020	100.50000	0.0	0.0	0.0	0.0
2.9138	44.77726	84.32543	100.50000	0.0	0.0	0.0	0.0
3.3994	44.80630	83.84067	100.50000	0.0	0.0	0.0	0.0
3.8850	44.83535	83.35591	100.50000	0.0	0.0	0.0	0.0
4.3707	44.86439	82.87115	100.50000	0.0	0.0	0.0	0.0
4.8563	44.89343	82.38639	100.50000	0.0	0.0	0.0	0.0
5.3419	44.92248	81.90163	100.50000	0.0	0.0	0.0	0.0
5.8276	44.95152	81.41687	100.50000	0.0	0.0	0.0	0.0
6.3132	44.98057	80.93211	100.50000	0.0	0.0	0.0	0.0
6.7988	45.00961	80.44735	100.50000	0.0	0.0	0.0	0.0
7.2845	45.03865	79.96259	100.50000	0.0	0.0	0.0	0.0
7.7701	45.06770	79.47783	100.50000	0.0	0.0	0.0	0.0
8.2557	45.09674	78.99307	100.50000	0.0	0.0	0.0	0.0
8.7413	45.12578	78.50830	100.50000	0.0	0.0	0.0	0.0
9.2270	45.15483	78.02354	100.50000	0.0	0.0	0.0	0.0
9.7126	45.18387	77.53878	100.50000	0.0	0.0	0.0	0.0
10.198	45.21291	77.05402	100.50000	115.62E-6	-0.0024660	0.0024685	-32.071E-6
10.684	45.24196	76.56926	100.50000	0.0086437	-0.18436	0.18455	-0.0023977
11.169	45.27100	76.08450	100.50000	0.017172	-0.36626	0.36663	-0.0047633
11.655	45.30004	75.59974	100.50000	0.025700	-0.54815	0.54871	-0.0071289
12.141	45.32909	75.11498	100.50000	0.034228	-0.73005	0.73079	-0.0094946
12.626	45.35813	74.63022	100.50000	0.042756	-0.91195	0.91287	-0.011860
13.112	45.38717	74.14546	100.50000	0.051284	-1.0938	1.0950	-0.014226
13.598	45.41622	73.66070	100.50000	0.059812	-1.2757	1.2770	-0.016591
14.083	45.44526	73.17593	100.50000	0.068340	-1.4576	1.4591	-0.018957
14.569	45.47430	72.69117	100.50000	0.076868	-1.6395	1.6412	-0.021323
15.055	45.50335	72.20641	100.50000	0.086132	-1.8371	1.8390	-0.023892
15.540	45.53239	71.72165	100.50000	0.098667	-2.1045	2.1066	-0.027370
16.026	45.56143	71.23689	100.50000	0.11121	-2.3721	2.3745	-0.030849
16.511	45.59048	70.75213	100.50000	0.12378	-2.6400	2.6427	-0.034335
16.997	45.61952	70.26737	100.50000	0.13637	-2.9086	2.9116	-0.037827
17.483	45.64857	69.78261	100.50000	0.14900	-3.1779	3.1812	-0.041330
17.968	45.67761	69.29785	100.50000	0.16167	-3.4483	3.4518	-0.044846
18.454	45.70665	68.81309	100.50000	0.17440	-3.7197	3.7235	-0.048377
18.940	45.73570	68.32833	100.50000	0.18719	-3.9926	3.9966	-0.051925
19.425	45.76474	67.84357	100.50000	0.20005	-4.2669	4.2713	-0.055493
19.911	45.79378	67.35880	100.50000	0.21300	-4.5430	4.5477	-0.059084
20.396	45.82283	66.87404	100.50000	0.22603	-4.8211	4.8260	-0.062700
20.882	45.85187	66.38928	100.50000	0.23917	-5.1012	5.1064	-0.066343
21.368	45.88091	65.90452	100.50000	0.25241	-5.3836	5.3891	-0.070016
21.853	45.90996	65.41976	100.50000	0.26577	-5.6686	5.6743	-0.073722
22.339	45.93900	64.93500	100.50000	0.27925	-5.9562	5.9622	-0.077462

Structure: DH-2 | Sub-structure: DH-2

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	45.93900	64.93500	100.50000	0.27925	-5.9562	-0.14526	-5.9610
0.49257	46.43032	64.97005	100.50000	0.27892	-5.9491	-0.14509	-5.9538
0.98513	46.92163	65.00510	100.50000	0.27858	-5.9419	-0.14492	-5.9467
1.4777	47.41295	65.04014	100.50000	0.27825	-5.9348	-0.14474	-5.9395
1.9703	47.90427	65.07519	100.50000	0.27791	-5.9276	-0.14457	-5.9324
2.4628	48.39559	65.11024	100.50000	0.27758	-5.9205	-0.14439	-5.9253
2.9554	48.88690	65.14529	100.50000	0.27724	-5.9134	-0.14422	-5.9181
3.4480	49.37822	65.18034	100.50000	0.27691	-5.9062	-0.14405	-5.9110
3.9405	49.86954	65.21538	100.50000	0.27658	-5.8991	-0.14387	-5.9038
4.4331	50.36086	65.25043	100.50000	0.27624	-5.8920	-0.14370	-5.8967
4.9257	50.85217	65.28548	100.50000	0.27591	-5.8849	-0.14352	-5.8896
5.4182	51.34349	65.32053	100.50000	0.27557	-5.8777	-0.14335	-5.8824
5.9108	51.83481	65.35558	100.50000	0.27524	-5.8706	-0.14318	-5.8753
6.4034	52.32612	65.39063	100.50000	0.27491	-5.8635	-0.14300	-5.8682
6.8959	52.81744	65.42567	100.50000	0.27457	-5.8564	-0.14283	-5.8611
7.3885	53.30876	65.46072	100.50000	0.27424	-5.8493	-0.14266	-5.8539
7.8811	53.80008	65.49577	100.50000	0.27391	-5.8421	-0.14248	-5.8468
8.3736	54.29139	65.53082	100.50000	0.27357	-5.8350	-0.14231	-5.8397
8.8662	54.78271	65.56587	100.50000	0.080389	-5.8181	-0.33380	-5.8091
9.3588	55.27403	65.60091	100.50000	-0.16851	-5.7873	-0.57987	-5.7607
9.8513	55.76535	65.63596	100.50000	-0.41244	-5.7443	-0.82012	-5.7004
10.344	56.25666	65.67101	100.50000	-0.62792	-5.6902	-1.0312	-5.6311
10.836	56.74798	65.70606	100.50000	-0.62217	-5.6381	-1.0218	-5.5795
11.329	57.23930	65.74111	100.50000	-0.61643	-5.5861	-1.0123	-5.5281
11.822	57.73062	65.77615	100.50000	-0.61070	-5.5342	-1.0029	-5.4767
12.314	58.22193	65.81120	100.50000	-0.60498	-5.4824	-0.99354	-5.4254
12.807	58.71325	65.84625	100.50000	-0.59927	-5.4306	-0.98417	-5.3742
13.299	59.20457	65.88130	100.50000	-0.59357	-5.3790	-0.97481	-5.3231
13.792	59.69588	65.91635	100.50000	-0.58788	-5.3274	-0.96546	-5.2721
14.284	60.18720	65.95139	100.50000	-0.58220	-5.2759	-0.95613	-5.2211
14.777	60.67852	65.98644	100.50000	-0.57653	-5.2245	-0.94681	-5.1702
15.270	61.16984	66.02149	100.50000	-0.57087	-5.1732	-0.93751	-5.1195
15.762	61.66115	66.05654	100.50000	-0.56521	-5.1219	-0.92823	-5.0687
16.255	62.15247	66.09159	100.50000	-0.55957	-5.0708	-0.91895	-5.0181
16.747	62.64379	66.12663	100.50000	-0.55393	-5.0197	-0.90969	-4.9675
17.240	63.13511	66.16168	100.50000	-0.54830	-4.9687	-0.90045	-4.9171
17.732	63.62642	66.19673	100.50000	-0.54268	-4.9177	-0.89122	-4.8666
18.225	64.11774	66.23178	100.50000	-0.53708	-4.8668	-0.88201	-4.8163
18.718	64.60906	66.26683	100.50000	-0.63976	-4.6894	-0.97181	-4.6320
19.210	65.10038	66.30187	100.50000	-0.73664	-4.5072	-1.0555	-4.4434
19.703	65.59169	66.33692	100.50000	-0.82694	-4.3216	-1.1323	-4.2518
20.195	66.08301	66.37197	100.50000	-0.91000	-4.1335	-1.2018	-4.0583
20.688	66.57433	66.40702	100.50000	-0.98526	-3.9441	-1.2634	-3.8640
21.180	67.06564	66.44207	100.50000	-1.0523	-3.7544	-1.3167	-3.6700
21.673	67.55696	66.47712	100.50000	-1.1106	-3.5650	-1.3615	-3.4770
22.165	68.04828	66.51216	100.50000	-1.1601	-3.3769	-1.3974	-3.2858
22.658	68.53960	66.54721	100.50000	-1.2004	-3.1907	-1.4244	-3.0972
23.151	69.03091	66.58226	100.50000	-1.2316	-3.0068	-1.4424	-2.9116
23.643	69.52223	66.61731	100.50000	-1.2536	-2.8259	-1.4515	-2.7295
24.136	70.01355	66.65236	100.50000	-1.2663	-2.6482	-1.4515	-2.5513
24.628	70.50487	66.68740	100.50000	-1.2700	-2.4740	-1.4428	-2.3774
25.121	70.99618	66.72245	100.50000	-1.2647	-2.3037	-1.4254	-2.2078
25.613	71.48750	66.75750	100.50000	-1.2506	-2.1373	-1.3995	-2.0429

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the	Horizontal displacement perpendicular
26.106	71.97882	66.79255	100.50000	-1.2278	-1.9750	-1.3653	-1.8827
26.599	72.47013	66.82760	100.50000	-1.1967	-1.8169	-1.3230	-1.7271
27.091	72.96145	66.86264	100.50000	-1.1574	-1.6629	-1.2728	-1.5764
27.584	73.45277	66.89769	100.50000	-1.1102	-1.5131	-1.2150	-1.4303
28.076	73.94409	66.93274	100.50000	-1.0553	-1.3675	-1.1499	-1.2889
28.569	74.43540	66.96779	100.50000	-0.99291	-1.2259	-1.0776	-1.1521
29.061	74.92672	67.00284	100.50000	-0.92335	-1.0882	-0.99844	-1.0198
29.554	75.41804	67.03788	100.50000	-0.86087	-0.97025	-0.92772	-0.90654
30.047	75.90936	67.07293	100.50000	-0.81038	-0.87493	-0.87058	-0.81505
30.539	76.40067	67.10798	100.50000	-0.75527	-0.78237	-0.80903	-0.72664
31.032	76.89199	67.14303	100.50000	-0.69573	-0.69249	-0.74324	-0.64123
31.524	77.38331	67.17808	100.50000	-0.63194	-0.60523	-0.67340	-0.55873
32.017	77.87463	67.21313	100.50000	-0.56407	-0.52050	-0.59968	-0.47905
32.509	78.36594	67.24817	100.50000	-0.49229	-0.43823	-0.52223	-0.40209
33.002	78.85726	67.28322	100.50000	-0.41678	-0.35833	-0.44122	-0.32776
33.494	79.34858	67.31827	100.50000	-0.33769	-0.28071	-0.35681	-0.25597
33.987	79.83989	67.35332	100.50000	-0.25517	-0.20531	-0.26913	-0.18663
34.480	80.33121	67.38837	100.50000	-0.16937	-0.13204	-0.17834	-0.11965
34.972	80.82253	67.42341	100.50000	-0.080442	-0.060815	-0.084565	-0.054937
35.465	81.31385	67.45846	100.50000	0.0	0.0	0.0	0.0
35.957	81.80516	67.49351	100.50000	0.0	0.0	0.0	0.0
36.450	82.29648	67.52856	100.50000	0.0	0.0	0.0	0.0
36.942	82.78780	67.56361	100.50000	0.0	0.0	0.0	0.0
37.435	83.27912	67.59865	100.50000	0.0	0.0	0.0	0.0
37.928	83.77043	67.63370	100.50000	0.0	0.0	0.0	0.0
38.420	84.26175	67.66875	100.50000	0.0	0.0	0.0	0.0
38.913	84.75307	67.70380	100.50000	0.0	0.0	0.0	0.0
39.405	85.24438	67.73885	100.50000	0.0	0.0	0.0	0.0
39.898	85.73570	67.77389	100.50000	0.0	0.0	0.0	0.0
40.390	86.22702	67.80894	100.50000	0.0	0.0	0.0	0.0
40.883	86.71834	67.84399	100.50000	0.0	0.0	0.0	0.0
41.376	87.20965	67.87904	100.50000	0.0	0.0	0.0	0.0
41.868	87.70097	67.91409	100.50000	0.0	0.0	0.0	0.0
42.361	88.19229	67.94913	100.50000	0.0	0.0	0.0	0.0
42.853	88.68361	67.98418	100.50000	0.0	0.0	0.0	0.0
43.346	89.17492	68.01923	100.50000	0.0	0.0	0.0	0.0
43.838	89.66624	68.05428	100.50000	0.0	0.0	0.0	0.0
44.331	90.15756	68.08933	100.50000	0.0	0.0	0.0	0.0
44.823	90.64888	68.12438	100.50000	0.0	0.0	0.0	0.0
45.316	91.14019	68.15942	100.50000	0.0	0.0	0.0	0.0
45.809	91.63151	68.19447	100.50000	0.0	0.0	0.0	0.0
46.301	92.12283	68.22952	100.50000	0.0	0.0	0.0	0.0
46.794	92.61414	68.26457	100.50000	0.0	0.0	0.0	0.0
47.286	93.10546	68.29962	100.50000	0.0	0.0	0.0	0.0
47.779	93.59678	68.33466	100.50000	0.0	0.0	0.0	0.0
48.271	94.08810	68.36971	100.50000	0.0	0.0	0.0	0.0
48.764	94.57941	68.40476	100.50000	0.0	0.0	0.0	0.0
49.257	95.07073	68.43981	100.50000	0.0	0.0	0.0	0.0
49.749	95.56205	68.47486	100.50000	0.0	0.0	0.0	0.0
50.242	96.05337	68.50990	100.50000	0.0	0.0	0.0	0.0
50.734	96.54468	68.54495	100.50000	0.0	0.0	0.0	0.0
51.227	97.03600	68.58000	100.50000	0.0	0.0	0.0	0.0

Structure: DH-3 | Sub-structure: DH-3

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	97.03600	68.58000	100.50000	0.0	0.0	0.0	0.0
0.48909	96.99859	69.06765	100.50000	0.0	0.0	0.0	0.0
0.97817	96.96117	69.55530	100.50000	0.0	0.0	0.0	0.0
1.4673	96.92376	70.04296	100.50000	0.0	0.0	0.0	0.0
1.9563	96.88635	70.53061	100.50000	0.0	0.0	0.0	0.0
2.4454	96.84893	71.01826	100.50000	0.0	0.0	0.0	0.0
2.9345	96.81152	71.50591	100.50000	0.0	0.0	0.0	0.0
3.4236	96.77411	71.99357	100.50000	0.0	0.0	0.0	0.0
3.9127	96.73670	72.48122	100.50000	0.0	0.0	0.0	0.0
4.4018	96.69928	72.96887	100.50000	0.0	0.0	0.0	0.0
4.8909	96.66187	73.45652	100.50000	0.0	0.0	0.0	0.0
5.3799	96.62446	73.94417	100.50000	0.0	0.0	0.0	0.0
5.8690	96.58704	74.43183	100.50000	0.0	0.0	0.0	0.0
6.3581	96.54963	74.91948	100.50000	0.0	0.0	0.0	0.0
6.8472	96.51222	75.40713	100.50000	0.0	0.0	0.0	0.0
7.3363	96.47480	75.89478	100.50000	0.0	0.0	0.0	0.0
7.8254	96.43739	76.38243	100.50000	0.0	0.0	0.0	0.0
8.3144	96.39998	76.87009	100.50000	0.0	0.0	0.0	0.0
8.8035	96.36257	77.35774	100.50000	0.0	0.0	0.0	0.0
9.2926	96.32515	77.84539	100.50000	0.0	0.0	0.0	0.0
9.7817	96.28774	78.33304	100.50000	0.0	0.0	0.0	0.0
10.271	96.25033	78.82070	100.50000	0.0	0.0	0.0	0.0
10.760	96.21291	79.30835	100.50000	0.0	0.0	0.0	0.0
11.249	96.17550	79.79600	100.50000	0.0	0.0	0.0	0.0
11.738	96.13809	80.28365	100.50000	0.0	0.0	0.0	0.0
12.227	96.10067	80.77130	100.50000	0.0	0.0	0.0	0.0
12.716	96.06326	81.25896	100.50000	0.0	0.0	0.0	0.0
13.205	96.02585	81.74661	100.50000	0.0	0.0	0.0	0.0
13.694	95.98843	82.23426	100.50000	0.0	0.0	0.0	0.0
14.183	95.95102	82.72191	100.50000	0.0	0.0	0.0	0.0
14.673	95.91361	83.20957	100.50000	0.0	0.0	0.0	0.0
15.162	95.87620	83.69722	100.50000	0.0	0.0	0.0	0.0
15.651	95.83878	84.18487	100.50000	0.0	0.0	0.0	0.0
16.140	95.80137	84.67252	100.50000	0.0	0.0	0.0	0.0
16.629	95.76396	85.16017	100.50000	0.0	0.0	0.0	0.0
17.118	95.72654	85.64783	100.50000	0.0	0.0	0.0	0.0
17.607	95.68913	86.13548	100.50000	0.0	0.0	0.0	0.0
18.096	95.65172	86.62313	100.50000	0.0	0.0	0.0	0.0
18.585	95.61430	87.11078	100.50000	0.0	0.0	0.0	0.0
19.074	95.57689	87.59843	100.50000	0.0	0.0	0.0	0.0
19.563	95.53948	88.08609	100.50000	0.0	0.0	0.0	0.0
20.052	95.50207	88.57374	100.50000	0.0	0.0	0.0	0.0
20.542	95.46465	89.06139	100.50000	0.0	0.0	0.0	0.0
21.031	95.42724	89.54904	100.50000	0.0	0.0	0.0	0.0
21.520	95.38983	90.03670	100.50000	0.0	0.0	0.0	0.0
22.009	95.35241	90.52435	100.50000	0.0	0.0	0.0	0.0
22.498	95.31500	91.01200	100.50000	0.0	0.0	0.0	0.0

Structure: DH-4 | Sub-structure: DH-4

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	95.31500	91.01200	100.50000	0.0	0.0	0.0	0.0
0.47118	94.84520	90.97595	100.50000	0.0	0.0	0.0	0.0
0.94236	94.37540	90.93990	100.50000	0.0	0.0	0.0	0.0
1.4135	93.90560	90.90385	100.50000	0.0	0.0	0.0	0.0
1.8847	93.43580	90.86780	100.50000	0.0	0.0	0.0	0.0
2.3559	92.96600	90.83175	100.50000	0.0	0.0	0.0	0.0
2.8271	92.49620	90.79570	100.50000	0.0	0.0	0.0	0.0
3.2983	92.02640	90.75965	100.50000	0.0	0.0	0.0	0.0
3.7694	91.55660	90.72360	100.50000	0.0	0.0	0.0	0.0
4.2406	91.08680	90.68755	100.50000	0.0	0.0	0.0	0.0
4.7118	90.61700	90.65150	100.50000	0.0	0.0	0.0	0.0
5.1830	90.14720	90.61545	100.50000	0.0	0.0	0.0	0.0
5.6542	89.67740	90.57940	100.50000	0.0	0.0	0.0	0.0
6.1254	89.20760	90.54335	100.50000	0.0	0.0	0.0	0.0
6.5965	88.73780	90.50730	100.50000	0.0	0.0	0.0	0.0
7.0677	88.26800	90.47125	100.50000	0.0	0.0	0.0	0.0
7.5389	87.79820	90.43520	100.50000	0.0	0.0	0.0	0.0
8.0101	87.32840	90.39915	100.50000	0.0	0.0	0.0	0.0
8.4813	86.85860	90.36310	100.50000	0.0	0.0	0.0	0.0
8.9524	86.38880	90.32705	100.50000	0.0	0.0	0.0	0.0
9.4236	85.91900	90.29100	100.50000	0.0	0.0	0.0	0.0

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the	Horizontal displacement perpendicular

Structure: DH-5 | Sub-structure: DH-5

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	85.91900	90.29100	100.50000	0.0	0.0	0.0	0.0
0.48006	85.95573	89.81235	100.50000	0.0	0.0	0.0	0.0
0.96012	85.99246	89.33369	100.50000	0.0	0.0	0.0	0.0
1.4402	86.02919	88.85504	100.50000	0.0	0.0	0.0	0.0
1.9202	86.06592	88.37638	100.50000	0.0	0.0	0.0	0.0
2.4003	86.10265	87.89773	100.50000	0.0	0.0	0.0	0.0
2.8804	86.13938	87.41908	100.50000	0.0	0.0	0.0	0.0
3.3604	86.17612	86.94042	100.50000	0.0	0.0	0.0	0.0
3.8405	86.21285	86.46177	100.50000	0.0	0.0	0.0	0.0
4.3205	86.24958	85.98312	100.50000	0.0	0.0	0.0	0.0
4.8006	86.28631	85.50446	100.50000	0.0	0.0	0.0	0.0
5.2807	86.32304	85.02581	100.50000	0.0	0.0	0.0	0.0
5.7607	86.35977	84.54715	100.50000	0.0	0.0	0.0	0.0
6.2408	86.39650	84.06850	100.50000	0.0	0.0	0.0	0.0
6.7209	86.43323	83.58985	100.50000	0.0	0.0	0.0	0.0
7.2009	86.46996	83.11119	100.50000	0.0	0.0	0.0	0.0
7.6810	86.50669	82.63254	100.50000	0.0	0.0	0.0	0.0
8.1610	86.54342	82.15388	100.50000	0.0	0.0	0.0	0.0
8.6411	86.58015	81.67523	100.50000	0.0	0.0	0.0	0.0
9.1212	86.61688	81.19658	100.50000	0.0	0.0	0.0	0.0
9.6012	86.65362	80.71792	100.50000	0.0	0.0	0.0	0.0
10.081	86.69035	80.23927	100.50000	0.0	0.0	0.0	0.0
10.561	86.72708	79.76062	100.50000	0.0	0.0	0.0	0.0
11.041	86.76381	79.28196	100.50000	0.0	0.0	0.0	0.0
11.521	86.80054	78.80331	100.50000	0.0	0.0	0.0	0.0
12.002	86.83727	78.32465	100.50000	0.0	0.0	0.0	0.0
12.482	86.87400	77.84600	100.50000	0.0	0.0	0.0	0.0

Structure: DH-6 | Sub-structure: DH-6

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	86.87400	77.84600	100.50000	0.0	0.0	0.0	0.0
0.49556	86.37989	77.80809	100.50000	0.0	0.0	0.0	0.0
0.99112	85.88579	77.77018	100.50000	0.0	0.0	0.0	0.0
1.4867	85.39168	77.73227	100.50000	0.0	0.0	0.0	0.0
1.9822	84.89758	77.69436	100.50000	0.0	0.0	0.0	0.0
2.4778	84.40347	77.65645	100.50000	0.0	0.0	0.0	0.0
2.9733	83.90936	77.61855	100.50000	0.0	0.0	0.0	0.0
3.4689	83.41526	77.58064	100.50000	0.0	0.0	0.0	0.0
3.9645	82.92115	77.54273	100.50000	0.0	0.0	0.0	0.0
4.4600	82.42705	77.50482	100.50000	0.0	0.0	0.0	0.0
4.9556	81.93294	77.46691	100.50000	0.0	0.0	0.0	0.0
5.4511	81.43883	77.42900	100.50000	0.0	0.0	0.0	0.0
5.9467	80.94473	77.39109	100.50000	0.0	0.0	0.0	0.0
6.4423	80.45062	77.35318	100.50000	0.0	0.0	0.0	0.0
6.9378	79.95652	77.31527	100.50000	0.0	0.0	0.0	0.0
7.4334	79.46241	77.27736	100.50000	0.0	0.0	0.0	0.0
7.9289	78.96830	77.23945	100.50000	0.0	0.0	0.0	0.0
8.4245	78.47420	77.20155	100.50000	0.0	0.0	0.0	0.0
8.9200	77.98009	77.16364	100.50000	0.0	0.0	0.0	0.0
9.4156	77.48598	77.12573	100.50000	0.0	0.0	0.0	0.0
9.9112	76.99188	77.08782	100.50000	0.0	0.0	0.0	0.0
10.407	76.49777	77.04991	100.50000	0.0	0.0	0.0	0.0
10.902	76.00367	77.01200	100.50000	0.0	0.0	0.0	0.0
11.398	75.50956	76.97409	100.50000	0.0	0.0	0.0	0.0
11.893	75.01545	76.93618	100.50000	0.0	0.0	0.0	0.0
12.389	74.52135	76.89827	100.50000	0.0	0.0	0.0	0.0
12.885	74.02724	76.86036	100.50000	0.0	0.0	0.0	0.0
13.380	73.53314	76.82245	100.50000	0.0	0.0	0.0	0.0
13.876	73.03903	76.78455	100.50000	0.0	0.0	0.0	0.0
14.371	72.54492	76.74664	100.50000	0.0	0.0	0.0	0.0
14.867	72.05082	76.70873	100.50000	0.0	0.0	0.0	0.0
15.362	71.55671	76.67082	100.50000	0.0	0.0	0.0	0.0
15.858	71.06261	76.63291	100.50000	0.0	0.0	0.0	0.0
16.353	70.56850	76.59500	100.50000	0.0	0.0	0.0	0.0
16.849	70.07439	76.55709	100.50000	0.0	0.0	0.0	0.0
17.345	69.58029	76.51918	100.50000	0.0	0.0	0.0	0.0
17.840	69.08618	76.48127	100.50000	0.0	0.0	0.0	0.0
18.336	68.59208	76.44336	100.50000	0.0	0.0	0.0	0.0
18.831	68.09797	76.40545	100.50000	0.0	0.0	0.0	0.0
19.327	67.60386	76.36755	100.50000	0.0	0.0	0.0	0.0
19.822	67.10976	76.32964	100.50000	0.0	0.0	0.0	0.0
20.318	66.61565	76.29173	100.50000	-631.08E-6	-0.0041307	945.22E-6	0.0040703
20.813	66.12155	76.25382	100.50000	-0.0063422	-0.046115	0.0098513	0.045495
21.309	65.62744	76.21591	100.50000	-0.010496	-0.085633	0.017016	0.084579
21.805	65.13333	76.17800	100.50000	-0.013490	-0.12224	0.022802	0.12085
22.300	64.63923	76.14009	100.50000	-0.017269	-0.15649	0.029189	0.15471
22.796	64.14512	76.10218	100.50000	-0.021048	-0.19074	0.035577	0.18857
23.291	63.65102	76.06427	100.50000	-0.024827	-0.22498	0.041965	0.22242
23.787	63.15691	76.02636	100.50000	-0.028606	-0.25923	0.048353	0.25628
24.282	62.66280	75.98845	100.50000	-0.032385	-0.29347	0.054740	0.29014
24.778	62.16870	75.95055	100.50000	-0.036164	-0.32772	0.061128	0.32399
25.273	61.67459	75.91264	100.50000	-0.039943	-0.36197	0.067516	0.35785
25.769	61.18048	75.87473	100.50000	-0.043722	-0.39621	0.073904	0.39171
26.265	60.68638	75.83682	100.50000	-0.047501	-0.43046	0.080291	0.42556
26.760	60.19227	75.79891	100.50000	-0.051280	-0.46470	0.086679	0.45942
27.256	59.69817	75.76100	100.50000	-0.055060	-0.49895	0.093067	0.49327
27.751	59.20406	75.72309	100.50000	-0.058839	-0.53319	0.099454	0.52713
28.247	58.70995	75.68518	100.50000	-0.062618	-0.56744	0.10584	0.56099
28.742	58.21585	75.64727	100.50000	-0.066397	-0.60169	0.11223	0.59484
29.238	57.72174	75.60936	100.50000	-0.070176	-0.63593	0.11862	0.62870
29.733	57.22764	75.57145	100.50000	-0.071518	-0.67020	0.12258	0.66277
30.229	56.73353	75.53355	100.50000	-0.058890	-0.70224	0.11244	0.69568
30.725	56.23942	75.49564	100.50000	-0.044447	-0.73017	0.10017	0.72463
31.220	55.74532	75.45773	100.50000	-0.028479	-0.75393	0.086069	0.74954
31.716	55.25121	75.41982	100.50000	-0.011282	-0.77349	0.070419	0.77036
32.211	54.75711	75.38191	100.50000	0.0068366	-0.78879	0.053524	0.78701
32.707	54.26300	75.34400	100.50000	0.025562	-0.79982	0.035698	0.79943

Structure: DH-7 | Sub-structure: DH-7

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	54.26300	75.34400	100.50000	0.025562	-0.79982	-0.79943	0.035715
0.48103	54.22619	75.82362	100.50000	0.020425	-0.61991	-0.61966	0.027070
0.96205	54.18938	76.30323	100.50000	0.014913	-0.43999	-0.43984	0.018798
1.4431	54.15258	76.78285	100.50000	0.0090496	-0.26004	-0.25997	0.010875
1.9241	54.11577	77.26246	100.50000	0.0028564	-0.080081	-0.080064	0.0032797
2.4051	54.07896	77.74208	100.50000	0.0	0.0	0.0	0.0
2.8862	54.04215	78.22169	100.50000	0.0	0.0	0.0	0.0
3.3672	54.00535	78.70131	100.50000	0.0	0.0	0.0	0.0
3.8482	53.96854	79.18092	100.50000	0.0	0.0	0.0	0.0
4.3292	53.93173	79.66054	100.50000	0.0	0.0	0.0	0.0
4.8103	53.89492	80.14015	100.50000	0.0	0.0	0.0	0.0
5.2913	53.85812	80.61977	100.50000	0.0	0.0	0.0	0.0
5.7723	53.82131	81.09938	100.50000	0.0	0.0	0.0	0.0
6.2533	53.78450	81.57900	100.50000	0.0	0.0	0.0	0.0
6.7344	53.74769	82.05862	100.50000	0.0	0.0	0.0	0.0
7.2154	53.71088	82.53823	100.50000	0.0	0.0	0.0	0.0

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the	Horizontal displacement perpendicular
7.6964	53.67408	83.01785	100.50000	0.0	0.0	0.0	0.0
8.1774	53.63727	83.49746	100.50000	0.0	0.0	0.0	0.0
8.6585	53.60046	83.97708	100.50000	0.0	0.0	0.0	0.0
9.1395	53.56365	84.45669	100.50000	0.0	0.0	0.0	0.0
9.6205	53.52685	84.93631	100.50000	0.0	0.0	0.0	0.0
10.102	53.49004	85.41592	100.50000	0.0	0.0	0.0	0.0
10.583	53.45323	85.89554	100.50000	0.0	0.0	0.0	0.0
11.064	53.41642	86.37515	100.50000	0.0	0.0	0.0	0.0
11.545	53.37962	86.85477	100.50000	0.0	0.0	0.0	0.0
12.026	53.34281	87.33438	100.50000	0.0	0.0	0.0	0.0
12.507	53.30600	87.81400	100.50000	0.0	0.0	0.0	0.0

Structure: DH-8 | Sub-structure: DH-8

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	53.30600	87.81400	100.50000	0.0	0.0	0.0	0.0
0.48457	52.82250	87.78178	100.50000	0.0	0.0	0.0	0.0
0.96915	52.33900	87.74956	100.50000	0.0	0.0	0.0	0.0
1.4537	51.85550	87.71733	100.50000	0.0	0.0	0.0	0.0
1.9383	51.37200	87.68511	100.50000	0.0	0.0	0.0	0.0
2.4229	50.88850	87.65289	100.50000	0.0	0.0	0.0	0.0
2.9074	50.40500	87.62067	100.50000	0.0	0.0	0.0	0.0
3.3920	49.92150	87.58844	100.50000	0.0	0.0	0.0	0.0
3.8766	49.43800	87.55622	100.50000	0.0	0.0	0.0	0.0
4.3612	48.95450	87.52400	100.50000	0.0	0.0	0.0	0.0
4.8457	48.47100	87.49178	100.50000	0.0	0.0	0.0	0.0
5.3303	47.98750	87.45956	100.50000	0.0	0.0	0.0	0.0
5.8149	47.50400	87.42733	100.50000	0.0	0.0	0.0	0.0
6.2994	47.02050	87.39511	100.50000	0.0	0.0	0.0	0.0
6.7840	46.53700	87.36289	100.50000	0.0	0.0	0.0	0.0
7.2686	46.05350	87.33067	100.50000	0.0	0.0	0.0	0.0
7.7532	45.57000	87.29844	100.50000	0.0	0.0	0.0	0.0
8.2377	45.08650	87.26622	100.50000	0.0	0.0	0.0	0.0
8.7223	44.60300	87.23400	100.50000	0.0	0.0	0.0	0.0

Specific Building Damage Results - Vertical Displacements

Structure: GVA-1 | Sub-structure: GVA-1

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	9.25200	89.52300	100.50000	0.0
0.48595	9.22654	89.03772	100.50000	0.0
0.97189	9.20108	88.55244	100.50000	0.0
1.4578	9.17562	88.06716	100.50000	0.0
1.9438	9.15016	87.58188	100.50000	0.0
2.4297	9.12470	87.09660	100.50000	0.0
2.9157	9.09924	86.61132	100.50000	0.0
3.4016	9.07378	86.12604	100.50000	0.0
3.8876	9.04832	85.64076	100.50000	0.0
4.3735	9.02286	85.15548	100.50000	0.0
4.8595	8.99740	84.67020	100.50000	0.0
5.3454	8.97194	84.18492	100.50000	0.0
5.8314	8.94648	83.69964	100.50000	0.0
6.3173	8.92102	83.21436	100.50000	0.0
6.8033	8.89556	82.72908	100.50000	0.0
7.2892	8.87010	82.24380	100.50000	0.0
7.7752	8.84464	81.75852	100.50000	0.0
8.2611	8.81918	81.27324	100.50000	0.0
8.7471	8.79372	80.78796	100.50000	0.0
9.2330	8.76826	80.30268	100.50000	0.0
9.7189	8.74280	79.81740	100.50000	0.0
10.205	8.71734	79.33212	100.50000	0.0
10.691	8.69188	78.84684	100.50000	0.0
11.177	8.66642	78.36156	100.50000	0.0
11.663	8.64096	77.87628	100.50000	0.0
12.149	8.61550	77.39100	100.50000	0.0
12.635	8.59004	76.90572	100.50000	0.0
13.121	8.56458	76.42044	100.50000	0.0
13.607	8.53912	75.93516	100.50000	0.0
14.092	8.51366	75.44988	100.50000	0.0
14.578	8.48820	74.96460	100.50000	0.0
15.064	8.46274	74.47932	100.50000	0.0
15.550	8.43728	73.99404	100.50000	0.0
16.036	8.41182	73.50876	100.50000	0.0
16.522	8.38636	73.02348	100.50000	0.0
17.008	8.36090	72.53820	100.50000	0.0
17.494	8.33544	72.05292	100.50000	0.0
17.980	8.30998	71.56764	100.50000	0.0
18.466	8.28452	71.08236	100.50000	0.0
18.952	8.25906	70.59708	100.50000	0.0
19.438	8.23360	70.11180	100.50000	0.0
19.924	8.20814	69.62652	100.50000	0.0
20.410	8.18268	69.14124	100.50000	0.0
20.896	8.15722	68.65596	100.50000	0.0
21.382	8.13176	68.17068	100.50000	0.0
21.868	8.10630	67.68540	100.50000	0.0
22.354	8.08084	67.20012	100.50000	0.0
22.840	8.05538	66.71484	100.50000	0.0
23.325	8.02992	66.22956	100.50000	0.0
23.811	8.00446	65.74428	100.50000	0.0
24.297	7.97900	65.25900	100.50000	0.0

Structure: GVA-2 | Sub-structure: GVA-2

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	7.97900	65.25900	100.50000	0.0
0.48050	7.95067	64.77933	100.50000	0.0
0.96101	7.92233	64.29967	100.50000	0.0
1.4415	7.89400	63.82000	100.50000	0.0
1.9220	7.86567	63.34033	100.50000	0.0
2.4025	7.83733	62.86067	100.50000	0.0
2.8830	7.80900	62.38100	100.50000	0.0

Structure: GVA-3 | Sub-structure: GVA-3

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	7.80900	62.38100	100.50000	0.0
0.47715	8.28487	62.34613	100.50000	0.0
0.95430	8.76075	62.31125	100.50000	0.0
1.4315	9.23663	62.27638	100.50000	0.0
1.9086	9.71250	62.24150	100.50000	0.0
2.3858	10.18838	62.20662	100.50000	0.0
2.8629	10.66425	62.17175	100.50000	0.0
3.3401	11.14012	62.13687	100.50000	0.0
3.8172	11.61600	62.10200	100.50000	0.0

Structure: GVA-4 | Sub-structure: GVA-4

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

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	11.61600	62.10200	100.50000	0.0
0.47359	11.65050	62.57433	100.50000	0.0
0.94718	11.68500	63.04667	100.50000	0.0
1.4208	11.71950	63.51900	100.50000	0.0
1.8944	11.75400	63.99133	100.50000	0.0
2.3680	11.78850	64.46367	100.50000	0.0
2.8415	11.82300	64.93600	100.50000	0.0

Structure: GVA-5 | Sub-structure: GVA-5

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	11.82300	64.93600	100.50000	0.0
0.48843	12.31013	64.90031	100.50000	0.0
0.97686	12.79725	64.86463	100.50000	0.0
1.4653	13.28438	64.82894	100.50000	0.0
1.9537	13.77150	64.79325	100.50000	0.0
2.4422	14.25863	64.75756	100.50000	0.0
2.9306	14.74575	64.72187	100.50000	0.029092
3.4190	15.23288	64.68619	100.50000	0.11849
3.9074	15.72000	64.65050	100.50000	0.20756
4.3959	16.20713	64.61481	100.50000	0.30755
4.8843	16.69425	64.57913	100.50000	0.42542
5.3727	17.18138	64.54344	100.50000	0.53683
5.8612	17.66850	64.50775	100.50000	0.64367
6.3496	18.15563	64.47206	100.50000	0.74769
6.8380	18.64275	64.43637	100.50000	0.85046
7.3265	19.12988	64.40069	100.50000	0.95341
7.8149	19.61700	64.36500	100.50000	1.0578

Structure: GVA-6 | Sub-structure: GVA-6

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	19.61700	64.36500	100.50000	1.0578
0.49248	19.58100	63.87383	100.50000	1.1163
0.98497	19.54500	63.38267	100.50000	1.1735
1.4775	19.50900	62.89150	100.50000	1.2293
1.9699	19.47300	62.40033	100.50000	1.2837
2.4624	19.43700	61.90917	100.50000	1.3364
2.9549	19.40100	61.41800	100.50000	1.3873

Structure: GVA-7 | Sub-structure: GVA-7

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	19.40100	61.41800	100.50000	1.3873
0.46449	19.86425	61.38412	100.50000	1.5113
0.92897	20.32750	61.35025	100.50000	1.6418
1.3935	20.79075	61.31638	100.50000	1.7792
1.8579	21.25400	61.28250	100.50000	1.9242
2.3224	21.71725	61.24862	100.50000	2.0767
2.7869	22.18050	61.21475	100.50000	2.2372
3.2514	22.64375	61.18088	100.50000	2.4054
3.7159	23.10700	61.14700	100.50000	2.5814

Structure: GVA-8 | Sub-structure: GVA-8

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	23.10700	61.14700	100.50000	2.5814
0.49250	23.13267	61.63883	100.50000	2.4823
0.98501	23.15833	62.13067	100.50000	2.3811
1.4775	23.18400	62.62250	100.50000	2.2785
1.9700	23.20967	63.11433	100.50000	2.1750
2.4625	23.23533	63.60617	100.50000	2.0712
2.9550	23.26100	64.09800	100.50000	1.9676

Structure: GVA-9 | Sub-structure: GVA-9

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	23.26100	64.09800	100.50000	1.9676
0.49313	23.28670	64.59046	100.50000	1.8646
0.98626	23.31240	65.08292	100.50000	1.7627
1.4794	23.33810	65.57538	100.50000	1.6622
1.9725	23.36380	66.06784	100.50000	1.5634
2.4657	23.38950	66.56030	100.50000	1.4664
2.9588	23.41520	67.05276	100.50000	1.3714
3.4519	23.44090	67.54522	100.50000	1.2781
3.9450	23.46660	68.03768	100.50000	1.1866
4.4382	23.49230	68.53014	100.50000	1.0966
4.9313	23.51800	69.02260	100.50000	1.0077
5.4244	23.54370	69.51506	100.50000	0.91934
5.9176	23.56940	70.00752	100.50000	0.83096
6.4107	23.59510	70.49998	100.50000	0.74178
6.9038	23.62080	70.99244	100.50000	0.65091
7.3970	23.64650	71.48490	100.50000	0.55729
7.8901	23.67220	71.97736	100.50000	0.45976
8.3832	23.69790	72.46982	100.50000	0.35697
8.8763	23.72360	72.96228	100.50000	0.25330
9.3695	23.74930	73.45474	100.50000	0.17318
9.8626	23.77500	73.94720	100.50000	0.092387
10.356	23.80070	74.43966	100.50000	0.010945
10.849	23.82640	74.93212	100.50000	0.0
11.342	23.85210	75.42458	100.50000	0.0
11.835	23.87780	75.91704	100.50000	0.0
12.328	23.90350	76.40950	100.50000	0.0
12.821	23.92920	76.90196	100.50000	0.0
13.315	23.95490	77.39442	100.50000	0.0
13.808	23.98060	77.88688	100.50000	0.0
14.301	24.00630	78.37934	100.50000	0.0
14.794	24.03200	78.87180	100.50000	0.0
15.287	24.05770	79.36426	100.50000	0.0
15.780	24.08340	79.85672	100.50000	0.0
16.273	24.10910	80.34918	100.50000	0.0
16.766	24.13480	80.84164	100.50000	0.0
17.260	24.16050	81.33410	100.50000	0.0
17.753	24.18620	81.82656	100.50000	0.0
18.246	24.21190	82.31902	100.50000	0.0
18.739	24.23760	82.81148	100.50000	0.0
19.232	24.26330	83.30394	100.50000	0.0
19.725	24.28900	83.79640	100.50000	0.0
20.218	24.31470	84.28886	100.50000	0.0

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]
20.711	24.34040	84.78132	100.50000	0.0
21.205	24.36610	85.27378	100.50000	0.0
21.698	24.39180	85.76624	100.50000	0.0
22.191	24.41750	86.25870	100.50000	0.0
22.684	24.44320	86.75116	100.50000	0.0
23.177	24.46890	87.24362	100.50000	0.0
23.670	24.49460	87.73608	100.50000	0.0
24.163	24.52030	88.22854	100.50000	0.0
24.657	24.54600	88.72100	100.50000	0.0

Structure: GVA-10 | Sub-structure: GVA-10

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	24.54600	88.72100	100.50000	0.0
0.47859	24.06806	88.74606	100.50000	0.0
0.95719	23.59013	88.77112	100.50000	0.0
1.4358	23.11219	88.79619	100.50000	0.0
1.9144	22.63425	88.82125	100.50000	0.0
2.3930	22.15631	88.84631	100.50000	0.0
2.8716	21.67837	88.87138	100.50000	0.0
3.3502	21.20044	88.89644	100.50000	0.0
3.8288	20.72250	88.92150	100.50000	0.0
4.3073	20.24456	88.94656	100.50000	0.0
4.7859	19.76662	88.97163	100.50000	0.0
5.2645	19.28869	88.99669	100.50000	0.0
5.7431	18.81075	89.02175	100.50000	0.0
6.2217	18.33281	89.04681	100.50000	0.0
6.7003	17.85488	89.07188	100.50000	0.0
7.1789	17.37694	89.09694	100.50000	0.0
7.6575	16.89900	89.12200	100.50000	0.0
8.1361	16.42106	89.14706	100.50000	0.0
8.6147	15.94313	89.17212	100.50000	0.0
9.0933	15.46519	89.19719	100.50000	0.0
9.5719	14.98725	89.22225	100.50000	0.0
10.050	14.50931	89.24731	100.50000	0.0
10.529	14.03138	89.27237	100.50000	0.0
11.008	13.55344	89.29744	100.50000	0.0
11.486	13.07550	89.32250	100.50000	0.0
11.965	12.59756	89.34756	100.50000	0.0
12.443	12.11963	89.37262	100.50000	0.0
12.922	11.64169	89.39769	100.50000	0.0
13.401	11.16375	89.42275	100.50000	0.0
13.879	10.68581	89.44781	100.50000	0.0
14.358	10.20788	89.47288	100.50000	0.0
14.836	9.72994	89.49794	100.50000	0.0
15.315	9.25200	89.52300	100.50000	0.0

Structure: GE-1 | Sub-structure: GE-1

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	28.56700	64.11000	100.50000	3.6013
0.49454	29.06094	64.13431	100.50000	3.7441
0.98907	29.55487	64.15863	100.50000	3.8824
1.4836	30.04881	64.18294	100.50000	4.0151
1.9781	30.54275	64.20725	100.50000	4.1413
2.4727	31.03669	64.23156	100.50000	4.2600
2.9672	31.53063	64.25588	100.50000	4.3704
3.4617	32.02456	64.28019	100.50000	4.4716
3.9563	32.51850	64.30450	100.50000	4.5628
4.4508	33.01244	64.32881	100.50000	4.6433
4.9454	33.50637	64.35312	100.50000	4.7126
5.4399	34.00031	64.37744	100.50000	4.7700
5.9344	34.49425	64.40175	100.50000	4.8152
6.4290	34.98819	64.42606	100.50000	4.8477
6.9235	35.48212	64.45037	100.50000	4.8674
7.4180	35.97606	64.47469	100.50000	4.8741
7.9126	36.47000	64.49900	100.50000	4.8734

Structure: GE-2 | Sub-structure: GE-2

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	36.47000	64.49900	100.50000	4.8734
0.49291	36.44014	64.99100	100.50000	4.5801
0.98581	36.41029	65.48300	100.50000	4.2927
1.4787	36.38043	65.97500	100.50000	4.0126
1.9716	36.35057	66.46700	100.50000	3.7411
2.4645	36.32071	66.95900	100.50000	3.4792
2.9574	36.29086	67.45100	100.50000	3.2278
3.4503	36.26100	67.94300	100.50000	2.9877
3.9432	36.23114	68.43500	100.50000	2.7592
4.4361	36.20129	68.92700	100.50000	2.5427
4.9291	36.17143	69.41900	100.50000	2.3383
5.4220	36.14157	69.91100	100.50000	2.1460
5.9149	36.11171	70.40300	100.50000	1.9655
6.4078	36.08186	70.89500	100.50000	1.7963
6.9007	36.05200	71.38700	100.50000	1.6379
7.3936	36.02214	71.87900	100.50000	1.4893
7.8865	35.99229	72.37100	100.50000	1.3496
8.3794	35.96243	72.86300	100.50000	1.2177
8.8723	35.93257	73.35500	100.50000	1.0920
9.3652	35.90271	73.84700	100.50000	0.97110
9.8581	35.87286	74.33900	100.50000	0.85316
10.351	35.84300	74.83100	100.50000	0.73624
10.844	35.81314	75.32300	100.50000	0.61821
11.337	35.78329	75.81500	100.50000	0.49675
11.830	35.75343	76.30700	100.50000	0.36934
12.323	35.72357	76.79900	100.50000	0.24338
12.816	35.69371	77.29100	100.50000	0.14481
13.308	35.66386	77.78300	100.50000	0.046239
13.801	35.63400	78.27500	100.50000	0.0

Structure: GE-3 | Sub-structure: GE-3

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	35.63400	78.27500	100.50000	0.0
0.47806	35.15681	78.24606	100.50000	0.0
0.95613	34.67963	78.21713	100.50000	0.0
1.4342	34.20244	78.18819	100.50000	0.0
1.9123	33.72525	78.15925	100.50000	0.0
2.3903	33.24806	78.13031	100.50000	0.0
2.8684	32.77087	78.10138	100.50000	0.0
3.3464	32.29369	78.07244	100.50000	0.0
3.8245	31.81650	78.04350	100.50000	0.0
4.3026	31.33931	78.01456	100.50000	0.0
4.7806	30.86212	77.98562	100.50000	0.0
5.2587	30.38494	77.95669	100.50000	0.0
5.7368	29.90775	77.92775	100.50000	0.0
6.2148	29.43056	77.89881	100.50000	0.0
6.6929	28.95338	77.86987	100.50000	0.0
7.1710	28.47619	77.84094	100.50000	0.0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
7.6490	27.99900	77.81200	100.50000	0.0

Structure: GE-4 | Sub-structure: GE-4

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	27.99900	77.81200	100.50000	0.0
0.48978	28.01929	77.32264	100.50000	0.0
0.97955	28.03957	76.83329	100.50000	0.0
1.4693	28.05986	76.34393	100.50000	0.035527
1.9591	28.08014	75.85457	100.50000	0.12071
2.4489	28.10043	75.36521	100.50000	0.22169
2.9387	28.12071	74.87586	100.50000	0.33240
3.4284	28.14100	74.38650	100.50000	0.45427
3.9182	28.16129	73.89714	100.50000	0.56981
4.4080	28.18157	73.40779	100.50000	0.68119
4.8978	28.20186	72.91843	100.50000	0.79035
5.3876	28.22214	72.42907	100.50000	0.89911
5.8773	28.24243	71.93971	100.50000	1.0091
6.3671	28.26271	71.45036	100.50000	1.1217
6.8569	28.28300	70.96100	100.50000	1.2382
7.3467	28.30329	70.47164	100.50000	1.3597
7.8364	28.32357	69.98229	100.50000	1.4873
8.3262	28.34386	69.49293	100.50000	1.6215
8.8160	28.36414	69.00357	100.50000	1.7631
9.3058	28.38443	68.51421	100.50000	1.9124
9.7955	28.40471	68.02486	100.50000	2.0698
10.285	28.42500	67.53550	100.50000	2.2353
10.775	28.44529	67.04614	100.50000	2.4090
11.265	28.46557	66.55679	100.50000	2.5906
11.755	28.48586	66.06743	100.50000	2.7798
12.244	28.50614	65.57807	100.50000	2.9762
12.734	28.52643	65.08871	100.50000	3.1790
13.224	28.54671	64.59936	100.50000	3.3877
13.714	28.56700	64.11000	100.50000	3.6013

Structure: DH-1 | Sub-structure: DH-1

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	44.60300	87.23400	100.50000	0.0
0.48563	44.63204	86.74924	100.50000	0.0
0.97126	44.66109	86.26448	100.50000	0.0
1.4569	44.69013	85.77972	100.50000	0.0
1.9425	44.71917	85.29496	100.50000	0.0
2.4282	44.74822	84.81020	100.50000	0.0
2.9138	44.77726	84.32543	100.50000	0.0
3.3994	44.80630	83.84067	100.50000	0.0
3.8850	44.83535	83.35591	100.50000	0.0
4.3707	44.86439	82.87115	100.50000	0.0
4.8563	44.89343	82.38639	100.50000	0.0
5.3419	44.92248	81.90163	100.50000	0.0
5.8276	44.95152	81.41687	100.50000	0.0
6.3132	44.98057	80.93211	100.50000	0.0
6.7988	45.00961	80.44735	100.50000	0.0
7.2845	45.03865	79.96259	100.50000	0.0
7.7701	45.06770	79.47783	100.50000	0.0
8.2557	45.09674	78.99307	100.50000	0.0
8.7413	45.12578	78.50830	100.50000	0.0
9.2270	45.15483	78.02354	100.50000	0.087081
9.7126	45.18387	77.53878	100.50000	0.18420
10.198	45.21291	77.05402	100.50000	0.28685
10.684	45.24196	76.56926	100.50000	0.41735
11.169	45.27100	76.08450	100.50000	0.54046
11.655	45.30004	75.59974	100.50000	0.65868
12.141	45.32909	75.11498	100.50000	0.77435
12.626	45.35813	74.63022	100.50000	0.88964
13.112	45.38717	74.14546	100.50000	1.0065
13.598	45.41622	73.66070	100.50000	1.1269
14.083	45.44526	73.17593	100.50000	1.2522
14.569	45.47430	72.69117	100.50000	1.3841
15.055	45.50335	72.20641	100.50000	1.5237
15.540	45.53239	71.72165	100.50000	1.6722
16.026	45.56143	71.23689	100.50000	1.8306
16.511	45.59048	70.75213	100.50000	1.9994
16.997	45.61952	70.26737	100.50000	2.1794
17.483	45.64857	69.78261	100.50000	2.3709
17.968	45.67761	69.29785	100.50000	2.5741
18.454	45.70665	68.81309	100.50000	2.7891
18.940	45.73570	68.32833	100.50000	3.0157
19.425	45.76474	67.84357	100.50000	3.2536
19.911	45.79378	67.35880	100.50000	3.5023
20.396	45.82283	66.87404	100.50000	3.7612
20.882	45.85187	66.38928	100.50000	4.0293
21.368	45.88091	65.90452	100.50000	4.3057
21.853	45.90996	65.41976	100.50000	4.5891
22.339	45.93900	64.93500	100.50000	4.8782

Structure: DH-2 | Sub-structure: DH-2

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	45.93900	64.93500	100.50000	4.8782
0.49257	46.43032	64.97005	100.50000	4.8710
0.98513	46.92163	65.00510	100.50000	4.8638
1.4777	47.41295	65.04014	100.50000	4.8566
1.9703	47.90427	65.07519	100.50000	4.8494
2.4628	48.39559	65.11024	100.50000	4.8422
2.9554	48.88690	65.14529	100.50000	4.8350
3.4480	49.37822	65.18034	100.50000	4.8279
3.9405	49.86954	65.21538	100.50000	4.8207
4.4331	50.36086	65.25043	100.50000	4.8135
4.9257	50.85217	65.28548	100.50000	4.8063
5.4182	51.34349	65.32053	100.50000	4.7991
5.9108	51.83481	65.35558	100.50000	4.7920
6.4034	52.32612	65.39063	100.50000	4.7848
6.8959	52.81744	65.42567	100.50000	4.7776
7.3885	53.30876	65.46072	100.50000	4.7705
7.8811	53.80008	65.49577	100.50000	4.7633
8.3736	54.29139	65.53082	100.50000	4.7562
8.8662	54.78271	65.56587	100.50000	4.7453
9.3588	55.27403	65.60091	100.50000	4.7221
9.8513	55.76535	65.63596	100.50000	4.6866
10.344	56.25666	65.67101	100.50000	4.6390
10.836	56.74798	65.70606	100.50000	4.5866
11.329	57.23930	65.74111	100.50000	4.5343
11.822	57.73062	65.77615	100.50000	4.4823
12.314	58.22193	65.81120	100.50000	4.4305
12.807	58.71325	65.84625	100.50000	4.3788
13.299	59.20457	65.88130	100.50000	4.3274
13.792	59.69588	65.91635	100.50000	4.2763
14.284	60.18720	65.95139	100.50000	4.2253
14.777	60.67852	65.98644	100.50000	4.1747
15.270	61.16984	66.02149	100.50000	4.1242
15.762	61.66115	66.05654	100.50000	4.0741
16.255	62.15247	66.09159	100.50000	4.0242
16.747	62.64379	66.12663	100.50000	3.9746
17.240	63.13511	66.16168	100.50000	3.9253

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
17.732	63.62642	66.19673	100.50000	3.8762
18.225	64.11774	66.23178	100.50000	3.8275
18.718	64.60906	66.26683	100.50000	3.7742
19.210	65.10038	66.30187	100.50000	3.7117
19.703	65.59169	66.33692	100.50000	3.6407
20.195	66.08301	66.37197	100.50000	3.5616
20.688	66.57433	66.40702	100.50000	3.4750
21.180	67.06564	66.44207	100.50000	3.3816
21.673	67.55696	66.47712	100.50000	3.2822
22.165	68.04828	66.51216	100.50000	3.1774
22.658	68.53960	66.54721	100.50000	3.0681
23.151	69.03091	66.58226	100.50000	2.9549
23.643	69.52223	66.61731	100.50000	2.8388
24.136	70.01355	66.65236	100.50000	2.7203
24.628	70.50487	66.68740	100.50000	2.6004
25.121	70.99618	66.72245	100.50000	2.4797
25.613	71.48750	66.75750	100.50000	2.3589
26.106	71.97882	66.79255	100.50000	2.2387
26.599	72.47013	66.82760	100.50000	2.1196
27.091	72.96145	66.86264	100.50000	2.0020
27.584	73.45277	66.89769	100.50000	1.8866
28.076	73.94409	66.93274	100.50000	1.7736
28.569	74.43540	66.96779	100.50000	1.6632
29.061	74.92672	67.00284	100.50000	1.5556
29.554	75.41804	67.03788	100.50000	1.4510
30.047	75.90936	67.07293	100.50000	1.3492
30.539	76.40067	67.10798	100.50000	1.2500
31.032	76.89199	67.14303	100.50000	1.1531
31.524	77.38331	67.17808	100.50000	1.0582
32.017	77.87463	67.21313	100.50000	0.96467
32.509	78.36594	67.24817	100.50000	0.87178
33.002	78.85726	67.28322	100.50000	0.77870
33.494	79.34858	67.31827	100.50000	0.68446
33.987	79.83989	67.35332	100.50000	0.58792
34.480	80.33121	67.38837	100.50000	0.48778
34.972	80.82253	67.42341	100.50000	0.38261
35.465	81.31385	67.45846	100.50000	0.26985
35.957	81.80516	67.49351	100.50000	0.18711
36.450	82.29648	67.52856	100.50000	0.10379
36.942	82.78780	67.56361	100.50000	0.019911
37.435	83.27912	67.59865	100.50000	0.0
37.928	83.77043	67.63370	100.50000	0.0
38.420	84.26175	67.66875	100.50000	0.0
38.913	84.75307	67.70380	100.50000	0.0
39.405	85.24438	67.73885	100.50000	0.0
39.898	85.73570	67.77389	100.50000	0.0
40.390	86.22702	67.80894	100.50000	0.0
40.883	86.71834	67.84399	100.50000	0.0
41.376	87.20965	67.87904	100.50000	0.0
41.868	87.70097	67.91409	100.50000	0.0
42.361	88.19229	67.94913	100.50000	0.0
42.853	88.68361	67.98418	100.50000	0.0
43.346	89.17492	68.01923	100.50000	0.0
43.838	89.66624	68.05428	100.50000	0.0
44.331	90.15756	68.08933	100.50000	0.0
44.823	90.64888	68.12438	100.50000	0.0
45.316	91.14019	68.15942	100.50000	0.0
45.809	91.63151	68.19447	100.50000	0.0
46.301	92.12283	68.22952	100.50000	0.0
46.794	92.61414	68.26457	100.50000	0.0
47.286	93.10546	68.29962	100.50000	0.0
47.779	93.59678	68.33466	100.50000	0.0
48.271	94.08810	68.36971	100.50000	0.0
48.764	94.57941	68.40476	100.50000	0.0
49.257	95.07073	68.43981	100.50000	0.0
49.749	95.56205	68.47486	100.50000	0.0
50.242	96.05337	68.50990	100.50000	0.0
50.734	96.54468	68.54495	100.50000	0.0
51.227	97.03600	68.58000	100.50000	0.0

Structure: DH-3 | Sub-structure: DH-3

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	97.03600	68.58000	100.50000	0.0
0.48909	96.99859	69.06765	100.50000	0.0
0.97817	96.96117	69.55530	100.50000	0.0
1.4673	96.92376	70.04296	100.50000	0.0
1.9563	96.88635	70.53061	100.50000	0.0
2.4454	96.84893	71.01826	100.50000	0.0
2.9345	96.81152	71.50591	100.50000	0.0
3.4236	96.77411	71.99357	100.50000	0.0
3.9127	96.73670	72.48122	100.50000	0.0
4.4018	96.69928	72.96887	100.50000	0.0
4.8909	96.66187	73.45652	100.50000	0.0
5.3799	96.62446	73.94417	100.50000	0.0
5.8690	96.58704	74.43183	100.50000	0.0
6.3581	96.54963	74.91948	100.50000	0.0
6.8472	96.51222	75.40713	100.50000	0.0
7.3363	96.47480	75.89478	100.50000	0.0
7.8254	96.43739	76.38243	100.50000	0.0
8.3144	96.39998	76.87009	100.50000	0.0
8.8035	96.36257	77.35774	100.50000	0.0
9.2926	96.32515	77.84539	100.50000	0.0
9.7817	96.28774	78.33304	100.50000	0.0
10.271	96.25033	78.82070	100.50000	0.0
10.760	96.21291	79.30835	100.50000	0.0
11.249	96.17550	79.79600	100.50000	0.0
11.738	96.13809	80.28365	100.50000	0.0
12.227	96.10067	80.77130	100.50000	0.0
12.716	96.06326	81.25896	100.50000	0.0
13.205	96.02585	81.74661	100.50000	0.0
13.694	95.98843	82.23426	100.50000	0.0
14.183	95.95102	82.72191	100.50000	0.0
14.673	95.91361	83.20957	100.50000	0.0
15.162	95.87620	83.69722	100.50000	0.0
15.651	95.83878	84.18487	100.50000	0.0
16.140	95.80137	84.67252	100.50000	0.0
16.629	95.76396	85.16017	100.50000	0.0
17.118	95.72654	85.64783	100.50000	0.0
17.607	95.68913	86.13548	100.50000	0.0
18.096	95.65172	86.62313	100.50000	0.0
18.585	95.61430	87.11078	100.50000	0.0
19.074	95.57689	87.59843	100.50000	0.0
19.563	95.53948	88.08609	100.50000	0.0
20.052	95.50207	88.57374	100.50000	0.0
20.542	95.46465	89.06139	100.50000	0.0
21.031	95.42724	89.54904	100.50000	0.0
21.520	95.38983	90.03670	100.50000	0.0
22.009	95.35241	90.52435	100.50000	0.0
22.498	95.31500	91.01200	100.50000	0.0

Structure: DH-4 | Sub-structure: DH-4

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	95.31500	91.01200	100.50000	0.0
0.47118	94.84520	90.97595	100.50000	0.0
0.94236	94.37540	90.93990	100.50000	0.0
1.4135	93.90560	90.90385	100.50000	0.0
1.8847	93.43580	90.86780	100.50000	0.0
2.3559	92.96600	90.83175	100.50000	0.0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
2.8271	92.49620	90.79570	100.50000	0.0
3.2983	92.02640	90.75965	100.50000	0.0
3.7694	91.55660	90.72360	100.50000	0.0
4.2406	91.08680	90.68755	100.50000	0.0
4.7118	90.61700	90.65150	100.50000	0.0
5.1830	90.14720	90.61545	100.50000	0.0
5.6542	89.67740	90.57940	100.50000	0.0
6.1254	89.20760	90.54335	100.50000	0.0
6.5965	88.73780	90.50730	100.50000	0.0
7.0677	88.26800	90.47125	100.50000	0.0
7.5389	87.79820	90.43520	100.50000	0.0
8.0101	87.32840	90.39915	100.50000	0.0
8.4813	86.85860	90.36310	100.50000	0.0
8.9524	86.38880	90.32705	100.50000	0.0
9.4236	85.91900	90.29100	100.50000	0.0

Structure: DH-5 | Sub-structure: DH-5

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	85.91900	90.29100	100.50000	0.0
0.48006	85.95573	89.81235	100.50000	0.0
0.96012	85.99246	89.33369	100.50000	0.0
1.4402	86.02919	88.85504	100.50000	0.0
1.9202	86.06592	88.37638	100.50000	0.0
2.4003	86.10265	87.89773	100.50000	0.0
2.8804	86.13938	87.41908	100.50000	0.0
3.3604	86.17612	86.94042	100.50000	0.0
3.8405	86.21285	86.46177	100.50000	0.0
4.3205	86.24958	85.98312	100.50000	0.0
4.8006	86.28631	85.50446	100.50000	0.0
5.2807	86.32304	85.02581	100.50000	0.0
5.7607	86.35977	84.54715	100.50000	0.0
6.2408	86.39650	84.06850	100.50000	0.0
6.7209	86.43323	83.58985	100.50000	0.0
7.2009	86.46996	83.11119	100.50000	0.0
7.6810	86.50669	82.63254	100.50000	0.0
8.1610	86.54342	82.15388	100.50000	0.0
8.6411	86.58015	81.67523	100.50000	0.0
9.1212	86.61688	81.19658	100.50000	0.0
9.6012	86.65362	80.71792	100.50000	0.0
10.081	86.69035	80.23927	100.50000	0.0
10.561	86.72708	79.76062	100.50000	0.0
11.041	86.76381	79.28196	100.50000	0.0
11.521	86.80054	78.80331	100.50000	0.0
12.002	86.83727	78.32465	100.50000	0.0
12.482	86.87400	77.84600	100.50000	0.0

Structure: DH-6 | Sub-structure: DH-6

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	86.87400	77.84600	100.50000	0.0
0.49556	86.37989	77.80809	100.50000	0.0
0.99112	85.88579	77.77018	100.50000	0.0
1.4867	85.39168	77.73227	100.50000	0.0
1.9822	84.89758	77.69436	100.50000	0.0
2.4778	84.40347	77.65645	100.50000	0.0
2.9733	83.90936	77.61855	100.50000	0.0
3.4689	83.41526	77.58064	100.50000	0.0
3.9645	82.92115	77.54273	100.50000	0.0
4.4600	82.42705	77.50482	100.50000	0.0
4.9556	81.93294	77.46691	100.50000	0.0
5.4511	81.43883	77.42900	100.50000	0.0
5.9467	80.94473	77.39109	100.50000	0.0
6.4423	80.45062	77.35318	100.50000	0.0
6.9378	79.95652	77.31527	100.50000	0.0
7.4334	79.46241	77.27736	100.50000	0.0
7.9289	78.96830	77.23945	100.50000	0.0
8.4245	78.47420	77.20155	100.50000	0.0
8.9200	77.98009	77.16364	100.50000	0.0
9.4156	77.48598	77.12573	100.50000	0.0
9.9112	76.99188	77.08782	100.50000	0.0
10.407	76.49777	77.04991	100.50000	0.0
10.902	76.00367	77.01200	100.50000	0.0
11.398	75.50956	76.97409	100.50000	0.0
11.893	75.01545	76.93618	100.50000	0.0
12.389	74.52135	76.89827	100.50000	0.0
12.885	74.02724	76.86036	100.50000	0.0
13.380	73.53314	76.82245	100.50000	0.0
13.876	73.03903	76.78455	100.50000	0.0
14.371	72.54492	76.74664	100.50000	0.0
14.867	72.05082	76.70873	100.50000	0.0
15.362	71.55671	76.67082	100.50000	0.0
15.858	71.06261	76.63291	100.50000	0.0
16.353	70.56850	76.59500	100.50000	0.029082
16.849	70.07439	76.55709	100.50000	0.067052
17.345	69.58029	76.51918	100.50000	0.10329
17.840	69.08618	76.48127	100.50000	0.13777
18.336	68.59208	76.44336	100.50000	0.17043
18.831	68.09797	76.40545	100.50000	0.20126
19.327	67.60386	76.36755	100.50000	0.23020
19.822	67.10976	76.32964	100.50000	0.25723
20.318	66.61565	76.29173	100.50000	0.28823
20.813	66.12155	76.25382	100.50000	0.32006
21.309	65.62744	76.21591	100.50000	0.34866
21.805	65.13333	76.17800	100.50000	0.37418
22.300	64.63923	76.14009	100.50000	0.39845
22.796	64.14512	76.10218	100.50000	0.42243
23.291	63.65102	76.06427	100.50000	0.44616
23.787	63.15691	76.02636	100.50000	0.46964
24.282	62.66280	75.98845	100.50000	0.49290
24.778	62.16870	75.95055	100.50000	0.51595
25.273	61.67459	75.91264	100.50000	0.53881
25.769	61.18048	75.87473	100.50000	0.56149
26.265	60.68638	75.83682	100.50000	0.58401
26.760	60.19227	75.79891	100.50000	0.60639
27.256	59.69817	75.76100	100.50000	0.62864
27.751	59.20406	75.72309	100.50000	0.65078
28.247	58.70995	75.68518	100.50000	0.67282
28.742	58.21585	75.64727	100.50000	0.69479
29.238	57.72174	75.60936	100.50000	0.71668
29.733	57.22764	75.57145	100.50000	0.73850
30.229	56.73353	75.53355	100.50000	0.75858
30.725	56.23942	75.49564	100.50000	0.77600
31.220	55.74532	75.45773	100.50000	0.79074
31.716	55.25121	75.41982	100.50000	0.80279
32.211	54.75711	75.38191	100.50000	0.81213
32.707	54.26300	75.34400	100.50000	0.81874

Structure: DH-7 | Sub-structure: DH-7

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	54.26300	75.34400	100.50000	0.81874
0.48103	54.22619	75.82362	100.50000	0.70466
0.96205	54.18938	76.30323	100.50000	0.58894
1.4431	54.15258	76.78285	100.50000	0.46939

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
1.9241	54.11577	77.26246	100.50000	0.34363
2.4051	54.07896	77.74208	100.50000	0.22665
2.8862	54.04215	78.22169	100.50000	0.13052
3.3672	54.00535	78.70131	100.50000	0.034384
3.8482	53.96854	79.18092	100.50000	0.0
4.3292	53.93173	79.66054	100.50000	0.0
4.8103	53.89492	80.14015	100.50000	0.0
5.2913	53.85812	80.61977	100.50000	0.0
5.7723	53.82131	81.09938	100.50000	0.0
6.2533	53.78450	81.57900	100.50000	0.0
6.7344	53.74769	82.05862	100.50000	0.0
7.2154	53.71088	82.53823	100.50000	0.0
7.6964	53.67408	83.01785	100.50000	0.0
8.1774	53.63727	83.49746	100.50000	0.0
8.6585	53.60046	83.97708	100.50000	0.0
9.1395	53.56365	84.45669	100.50000	0.0
9.6205	53.52685	84.93631	100.50000	0.0
10.102	53.49004	85.41592	100.50000	0.0
10.583	53.45323	85.89554	100.50000	0.0
11.064	53.41642	86.37515	100.50000	0.0
11.545	53.37962	86.85477	100.50000	0.0
12.026	53.34281	87.33438	100.50000	0.0
12.507	53.30600	87.81400	100.50000	0.0

Structure: DH-8 | Sub-structure: DH-8

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	53.30600	87.81400	100.50000	0.0
0.48457	52.82250	87.78178	100.50000	0.0
0.96915	52.33900	87.74956	100.50000	0.0
1.4537	51.85550	87.71733	100.50000	0.0
1.9383	51.37200	87.68511	100.50000	0.0
2.4229	50.88850	87.65289	100.50000	0.0
2.9074	50.40500	87.62067	100.50000	0.0
3.3920	49.92150	87.58844	100.50000	0.0
3.8766	49.43800	87.55622	100.50000	0.0
4.3612	48.95450	87.52400	100.50000	0.0
4.8457	48.47100	87.49178	100.50000	0.0
5.3303	47.98750	87.45956	100.50000	0.0
5.8149	47.50400	87.42733	100.50000	0.0
6.2994	47.02050	87.39511	100.50000	0.0
6.7840	46.53700	87.36289	100.50000	0.0
7.2686	46.05350	87.33067	100.50000	0.0
7.7532	45.57000	87.29844	100.50000	0.0
8.2377	45.08650	87.26622	100.50000	0.0
8.7223	44.60300	87.23400	100.50000	0.0

Specific Building Damage Results - All Segments

Structure: GVA-1 | Sub-structure: GVA-1

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

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

Structure: GVA-2 | Sub-structure: GVA-2

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

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

Structure: GVA-3 | Sub-structure: GVA-3

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

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

Structure: GVA-4 | Sub-structure: GVA-4

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

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

Structure: GVA-5 | Sub-structure: GVA-5

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	3.4190	1.4747	Hogging	0.0010590	0.0094468	0.0095468	-236.66E-6	-241.27E-6	13522.	0 (Negligible)
	2	4.8938	1.8997	Sagging	289.54E-6	0.022443	0.022513	-231.96E-6	-228.03E-6	51895.	0 (Negligible)
	3	6.7935	1.0205	Hogging	72.743E-6	0.020772	0.020777	-216.22E-6	-213.63E-6	137710.	0 (Negligible)

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

Structure: GVA-6 | Sub-structure: GVA-6

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	2.9540	Sagging	229.08E-6	2.4216E-6	216.62E-6	-20.931E-6	-118.76E-6	128810.	0 (Negligible)

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

Structure: GVA-7 | Sub-structure: GVA-7

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

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	3.7150	Hogging	0.0016152	0.031587	0.032338	-351.78E-6	-378.78E-6	27630.	0 (Negligible)

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

Structure: GVA-8 | Sub-structure: GVA-8

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	2.3377	Sagging	153.62E-6	-0.0011841	252.02E-6	46.203E-6	210.73E-6	108370.	0 (Negligible)
	2	2.3377	0.61726	Hogging	7.5504E-6	0.0040341	0.0040347	-43.918E-6	210.73E-6	673600.	0 (Negligible)

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

Structure: GVA-9 | Sub-structure: GVA-9

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	5.3708	Hogging	452.90E-6	0.0099886	0.010143	-132.39E-6	208.85E-6	130040.	0 (Negligible)
	2	5.3708	2.7566	Sagging	376.77E-6	0.015968	0.016099	-181.61E-6	208.41E-6	61475.	0 (Negligible)
	3	8.1274	1.2421	Hogging	0.0011197	0.0086920	0.0088106	-181.61E-6	210.21E-6	21455.	0 (Negligible)

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

Structure: GVA-10 | Sub-structure: GVA-10

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

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

Structure: GE-1 | Sub-structure: GE-1

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	7.9120	Sagging	0.0041243	-0.022718	0.0048390	348.34E-6	-288.94E-6	19059.	0 (Negligible)

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

Structure: GE-2 | Sub-structure: GE-2

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	10.084	Hogging	0.0053848	0.051435	0.057330	-592.35E-6	594.72E-6	20159.	1 (Very Slight)
	2	10.084	1.4319	Sagging	272.04E-6	0.037493	0.037591	-374.79E-6	258.39E-6	69841.	0 (Negligible)
	3	11.516	1.2994	Hogging	0.0013240	0.017987	0.018207	-374.79E-6	258.39E-6	12193.	0 (Negligible)

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

Structure: GE-3 | Sub-structure: GE-3

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

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

Structure: GE-4 | Sub-structure: GE-4

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	1.9591	1.3988	Hogging	0.0010593	0.012067	0.012256	-279.83E-6	-248.75E-6	12798.	0 (Negligible)
	2	3.3579	1.6784	Sagging	283.81E-6	0.027126	0.027246	-279.83E-6	-248.75E-6	56978.	0 (Negligible)
	3	5.0363	8.6767	Hogging	0.0031865	0.026654	0.029780	-335.89E-6	-435.97E-6	29551.	0 (Negligible)

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

Structure: DH-1 | Sub-structure: DH-1

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	9.7126	1.1131	Hogging	0.0013180	0.021357	0.021425	-374.80E-6	-268.64E-6	17559.	0 (Negligible)
	2	10.826	1.4189	Sagging	238.71E-6	0.037494	0.037523	-374.80E-6	-253.40E-6	47887.	0 (Negligible)
	3	12.245	10.093	Hogging	0.0053892	0.051439	0.053717	-592.50E-6	-594.97E-6	20157.	1 (Very Slight)

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

Structure: DH-2 | Sub-structure: DH-2

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

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	7.3900	Hogging	1.0270E-6	35.299E-6	35.655E-6	0.0	14.619E-6	84.141E+6	0 (Negligible)
	2	7.3900	3.8611	Sagging	0.0017524	-0.022563	0.0046229	499.83E-6	106.45E-6	19874.	0 (Negligible)
	3	11.251	6.1065	Hogging	78.197E-6	0.0018929	0.0019131	-19.130E-6	106.07E-6	836880.	0 (Negligible)
	4	17.358	7.8458	Sagging	0.0022762	-0.0066637	0.0018839	182.34E-6	245.22E-6	28310.	0 (Negligible)
	5	25.203	7.1790	Hogging	884.15E-6	0.012242	0.012511	-160.71E-6	245.22E-6	85080.	0 (Negligible)
	6	32.382	2.4345	Sagging	350.57E-6	0.017583	0.017656	-190.34E-6	213.47E-6	45884.	0 (Negligible)
	7	34.817	1.6330	Hogging	0.0013450	0.0069890	0.0071992	-190.34E-6	228.90E-6	15588.	0 (Negligible)

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

Structure: DH-3 | Sub-structure: DH-3

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

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

Structure: DH-4 | Sub-structure: DH-4

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

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

Structure: DH-5 | Sub-structure: DH-5

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

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

Structure: DH-6 | Sub-structure: DH-6

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	17.345	2.0824	Sagging	198.44E-6	0.0	197.73E-6	0.0	-73.131E-6	130750.	0 (Negligible)
	2	19.427	0.99809	Hogging	197.70E-6	287.57E-6	377.40E-6	-17.971E-6	-64.236E-6	144010.	0 (Negligible)
	3	20.425	12.281	Sagging	378.57E-6	267.55E-6	622.52E-6	35.974E-6	-64.236E-6	89882.	0 (Negligible)

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

Structure: DH-7 | Sub-structure: DH-7

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	1.5340	Sagging	273.93E-6	0.037384	0.037419	-373.87E-6	261.35E-6	59763.	0 (Negligible)
	2	1.5340	1.3521	Hogging	0.0011722	0.016711	0.016779	-373.87E-6	261.35E-6	11209.	0 (Negligible)

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

Structure: DH-8 | Sub-structure: DH-8

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

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

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

Structure: GVA-1 | Sub-structure: GVA-1

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

Structure: GVA-2 | Sub-structure: GVA-2

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

Structure: GVA-3 | Sub-structure: GVA-3

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

Structure: GVA-4 | Sub-structure: GVA-4

Vertical	Deflection	Average	Max	Max	Max	Max Gradient	Max Gradient	Min	Min	Damage Category

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

Structure: GVA-5 | Sub-structure: GVA-5

Offset from Line for Vertical Movement	Ratio	Horizontal Strain	Average Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0010590	0.022443	-241.27E-6	1.0576	0.022513	-236.66E-6	-241.27E-6	13522.	51895.	0 (Negligible)

Structure: GVA-6 | Sub-structure: GVA-6

Offset from Line for Vertical Movement	Ratio	Horizontal Strain	Average Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	229.08E-6	2.4216E-6	-118.76E-6	1.3872	216.62E-6	-20.931E-6	-118.76E-6	-	128810.	0 (Negligible)

Structure: GVA-7 | Sub-structure: GVA-7

Offset from Line for Vertical Movement	Ratio	Horizontal Strain	Average Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0016152	0.031587	-378.78E-6	2.5811	0.032338	-351.78E-6	-378.78E-6	27630.	-	0 (Negligible)

Structure: GVA-8 | Sub-structure: GVA-8

Offset from Line for Vertical Movement	Ratio	Horizontal Strain	Average Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	153.62E-6	0.0040341	210.73E-6	2.5814	0.0040347	46.203E-6	210.73E-6	673600.	108370.	0 (Negligible)

Structure: GVA-9 | Sub-structure: GVA-9

Offset from Line for Vertical Movement	Ratio	Horizontal Strain	Average Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0011197	0.015968	210.21E-6	1.9676	0.016099	-181.61E-6	210.21E-6	21455.	61475.	0 (Negligible)

Structure: GVA-10 | Sub-structure: GVA-10

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

Structure: GE-1 | Sub-structure: GE-1

Offset from Line for Vertical Movement	Ratio	Horizontal Strain	Average Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0041243	-0.022718	-288.94E-6	4.8741	0.0048390	348.34E-6	-288.94E-6	-	19059.	0 (Negligible)

Structure: GE-2 | Sub-structure: GE-2

Offset from Line for Vertical Movement	Ratio	Horizontal Strain	Average Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0053848	0.051435	594.72E-6	4.8734	0.057330	-592.35E-6	594.72E-6	12193.	69841.	1 (Very Slight)

Structure: GE-3 | Sub-structure: GE-3

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

Structure: GE-4 | Sub-structure: GE-4

Offset from Line for Vertical Movement	Ratio	Horizontal Strain	Average Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0031865	0.027126	-435.97E-6	3.6009	0.029780	-335.89E-6	-435.97E-6	12798.	56978.	0 (Negligible)

Structure: DH-1 | Sub-structure: DH-1

Offset from Line for Vertical Movement	Ratio	Horizontal Strain	Average Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0053892	0.051439	-594.97E-6	4.8776	0.053717	-592.50E-6	-594.97E-6	17559.	47887.	1 (Very Slight)

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

Structure: DH-2 | Sub-structure: DH-2

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0022762	-0.022563	245.22E-6	4.8782	0.017656	499.83E-6	245.22E-6	15588.	19874.	0 (Negligible)

Structure: DH-3 | Sub-structure: DH-3

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

Structure: DH-4 | Sub-structure: DH-4

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

Structure: DH-5 | Sub-structure: DH-5

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

Structure: DH-6 | Sub-structure: DH-6

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	378.57E-6	287.57E-6	-73.131E-6	0.81873	622.52E-6	35.974E-6	-73.131E-6	144010.	89882.	0 (Negligible)

Structure: DH-7 | Sub-structure: DH-7

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0011722	0.037384	261.35E-6	0.81874	0.037419	-373.87E-6	261.35E-6	11209.	59763.	0 (Negligible)

Structure: DH-8 | Sub-structure: DH-8

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

Specific Building Damage Results - Critical Segments within Each Structure

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start [m]	End [m]	Curvature	Max Slope	Max Settlement [mm]	Max Tensile Strain [%]	Min Radius of Curvature (Hogging) [m]	Min Radius of Curvature (Sagging) [m]	Damage Category
GVA-1	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
GVA-2	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
GVA-3	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
GVA-4	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
GVA-5	Max Slope	GVA-5	1	3.4190	4.8938	Hogging	**241.27E-6**	0.42758	0.0095468	13522.	-	0 (Negligible)
	Max Settlement	GVA-5	3	6.7935	7.8140	Hogging	213.63E-6	**1.0576**	0.020777	137710.	-	0 (Negligible)
	Max Tensile Strain	GVA-5	2	4.8938	6.7935	Sagging	228.03E-6	0.84110	**0.022513**	-	51895.	0 (Negligible)
	Min Radius of Curvature (Hogging)	GVA-5	1	3.4190	4.8938	Hogging	241.27E-6	0.42758	0.0095468	**13522.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	GVA-5	2	4.8938	6.7935	Sagging	228.03E-6	0.84110	0.022513	-	**51895.**	0 (Negligible)
GVA-6	Max Slope	GVA-6	1	0.0	2.9540	Sagging	**118.76E-6**	1.3872	216.62E-6	-	128810.	0 (Negligible)
	Max Settlement	GVA-6	1	0.0	2.9540	Sagging	118.76E-6	**1.3872**	216.62E-6	-	128810.	0 (Negligible)
	Max Tensile Strain	GVA-6	1	0.0	2.9540	Sagging	118.76E-6	1.3872	**216.62E-6**	-	128810.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	GVA-6	1	0.0	2.9540	Sagging	118.76E-6	1.3872	216.62E-6	-	**128810.**	0 (Negligible)
GVA-7	Max Slope	GVA-7	1	0.0	3.7150	Hogging	**378.78E-6**	2.5811	0.032338	27630.	-	0 (Negligible)
	Max Settlement	GVA-7	1	0.0	3.7150	Hogging	378.78E-6	**2.5811**	0.032338	27630.	-	0 (Negligible)
	Max Tensile Strain	GVA-7	1	0.0	3.7150	Hogging	378.78E-6	2.5811	**0.032338**	27630.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	GVA-7	1	0.0	3.7150	Hogging	378.78E-6	2.5811	0.032338	**27630.**	-	0 (Negligible)

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Max Slope	Max Settlement	Max Tensile Strain	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
	Min Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
GVA-8	Max Slope	GVA-8	1	0.0	2.3377	Sagging	**210.73E-6**	2.5814	252.02E-6	-	108370.	0 (Negligible)
	Max Settlement	GVA-8	1	0.0	2.3377	Sagging	210.73E-6	**2.5814**	252.02E-6	-	108370.	0 (Negligible)
	Max Tensile Strain	GVA-8	2	2.3377	2.9550	Hogging	210.73E-6	2.0975	**0.0040347**	673600.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	GVA-8	2	2.3377	2.9550	Hogging	210.73E-6	2.0975	0.0040347	**673600.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	GVA-8	1	0.0	2.3377	Sagging	210.73E-6	2.5814	252.02E-6	-	**108370.**	0 (Negligible)
GVA-9	Max Slope	GVA-9	3	8.1274	9.3695	Hogging	**210.21E-6**	0.41030	0.0088106	21455.	-	0 (Negligible)
	Max Settlement	GVA-9	1	0.0	5.3708	Hogging	208.85E-6	**1.9676**	0.010143	130040.	-	0 (Negligible)
	Max Tensile Strain	GVA-9	2	5.3708	8.1274	Sagging	208.41E-6	0.92895	**0.016099**	-	61475.	0 (Negligible)
	Min Radius of Curvature (Hogging)	GVA-9	3	8.1274	9.3695	Hogging	210.21E-6	0.41030	0.0088106	**21455.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	GVA-9	2	5.3708	8.1274	Sagging	208.41E-6	0.92895	0.016099	-	**61475.**	0 (Negligible)
GVA-10	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
GE-1	Max Slope	GE-1	1	0.0	7.9120	Sagging	**288.94E-6**	4.8741	0.0048390	-	19059.	0 (Negligible)
	Max Settlement	GE-1	1	0.0	7.9120	Sagging	288.94E-6	**4.8741**	0.0048390	-	19059.	0 (Negligible)
	Max Tensile Strain	GE-1	1	0.0	7.9120	Sagging	288.94E-6	4.8741	**0.0048390**	-	19059.	0 (Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min Radius of Curvature (Sagging)	GE-1	1	0.0	7.9120	Sagging	288.94E-6	4.8741	0.0048390	-	**19059.**	0 (Negligible)
GE-2	Max Slope	GE-2	1	0.0	10.084	Hogging	**594.72E-6**	4.8734	0.057330	20159.	-	1 (Very Slight)
	Max Settlement	GE-2	1	0.0	10.084	Hogging	594.72E-6	**4.8734**	0.057330	20159.	-	1 (Very Slight)
	Max Tensile Strain	GE-2	1	0.0	10.084	Hogging	594.72E-6	4.8734	**0.057330**	20159.	-	1 (Very Slight)
	Min Radius of Curvature (Hogging)	GE-2	3	11.516	12.816	Hogging	258.39E-6	0.45039	0.018207	**12193.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	GE-2	2	10.084	11.516	Sagging	258.39E-6	0.79951	0.037591	-	**69841.**	0 (Negligible)
GE-3	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
GE-4	Max Slope	GE-4	3	5.0363	13.713	Hogging	**435.97E-6**	3.6009	0.029780	29551.	-	0 (Negligible)
	Max Settlement	GE-4	3	5.0363	13.713	Hogging	435.97E-6	**3.6009**	0.029780	29551.	-	0 (Negligible)
	Max Tensile Strain	GE-4	3	5.0363	13.713	Hogging	435.97E-6	3.6009	**0.029780**	29551.	-	0 (Negligible)
	Min Radius of Curvature (Hogging)	GE-4	1	1.9591	3.3579	Hogging	248.75E-6	0.43671	0.012256	**12798.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	GE-4	2	3.3579	5.0363	Sagging	248.75E-6	0.82111	0.027246	-	**56978.**	0 (Negligible)
DH-1	Max Slope	DH-1	3	12.245	22.338	Hogging	**594.97E-6**	4.8776	0.053717	20157.	-	1 (Very Slight)
	Max Settlement	DH-1	3	12.245	22.338	Hogging	594.97E-6	**4.8776**	0.053717	20157.	-	1 (Very Slight)
	Max Tensile Strain	DH-1	3	12.245	22.338	Hogging	594.97E-6	4.8776	**0.053717**	20157.	-	1 (Very Slight)
	Min Radius of Curvature (Hogging)	DH-1	1	9.7126	10.826	Hogging	268.64E-6	0.45331	0.021425	**17559.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	DH-1	2	10.826	12.245	Sagging	253.40E-6	0.79901	0.037523	-	**47887.**	0 (Negligible)
DH-2	Max Slope	DH-2	4	17.358	25.203	Sagging	**245.22E-6**	3.9135	0.0018839	-	28310.	0 (Negligible)
	Max Settlement	DH-2	1	0.0	7.3900	Hogging	14.619E-6	**4.8782**	35.655E-6	84.141E+6	-	0 (Negligible)
	Max Tensile Strain	DH-2	6	32.382	34.817	Sagging	213.47E-6	0.89572	**0.017656**	-	45884.	0 (Negligible)
	Min Radius of Curvature (Hogging)	DH-2	7	34.817	36.450	Hogging	228.90E-6	0.41577	0.0071992	**15588.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	DH-2	2	7.3900	11.251	Sagging	106.45E-6	4.7705	0.0046229	-	**19874.**	0 (Negligible)
DH-3	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
DH-4	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
DH-5	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
DH-6	Max Slope	DH-6	1	17.345	19.427	Sagging	**73.131E-6**	0.23566	197.73E-6	-	130750.	0 (Negligible)
	Max Settlement	DH-6	3	20.425	32.706	Sagging	64.236E-6	**0.81873**	622.52E-6	-	89882.	0 (Negligible)
	Max Tensile Strain	DH-6	3	20.425	32.706	Sagging	64.236E-6	0.81873	**622.52E-6**	-	89882.	0 (Negligible)
	Min Radius of Curvature (Hogging)	DH-6	2	19.427	20.425	Hogging	64.236E-6	0.29511	377.40E-6	**144010.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	DH-6	3	20.425	32.706	Sagging	64.236E-6	0.81873	622.52E-6	-	**89882.**	0 (Negligible)
DH-7	Max Slope	DH-7	1	0.0	1.5340	Sagging	**261.35E-6**	0.81874	0.037419	-	59763.	0 (Negligible)
	Max Settlement	DH-7	1	0.0	1.5340	Sagging	261.35E-6	**0.81874**	0.037419	-	59763.	0 (Negligible)
	Max Tensile Strain	DH-7	1	0.0	1.5340	Sagging	261.35E-6	0.81874	**0.037419**	-	59763.	0 (Negligible)
	Min Radius of Curvature (Hogging)	DH-7	2	1.5340	2.8862	Hogging	261.35E-6	0.44561	0.016779	**11209.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	DH-7	1	0.0	1.5340	Sagging	261.35E-6	0.81874	0.037419	-	**59763.**	0 (Negligible)
DH-8	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											

Utility Strain Calculation Options

Neglect beneficial contribution of axial strains : No

Specific Building Damage Results - Horizontal Displacements

Structure: GVA-1 | Sub-structure: GVA-1

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	9.25200	89.52300	100.50000	0.0	0.0	0.0	0.0 d
0.48595	9.22654	89.03772	100.50000	0.0	0.0	0.0	0.0 d
0.97189	9.20108	88.55244	100.50000	0.0	0.0	0.0	0.0 d
1.4578	9.17562	88.06716	100.50000	0.0	0.0	0.0	0.0 d
1.9438	9.15016	87.58188	100.50000	0.0	0.0	0.0	0.0 d
2.4297	9.12470	87.09660	100.50000	0.0	0.0	0.0	0.0 d
2.9157	9.09924	86.61132	100.50000	0.0	0.0	0.0	0.0 d
3.4016	9.07378	86.12604	100.50000	0.0	0.0	0.0	0.0 d
3.8876	9.04832	85.64076	100.50000	0.0	0.0	0.0	0.0 d
4.3735	9.02286	85.15548	100.50000	0.0	0.0	0.0	0.0 d
4.8595	8.99740	84.67020	100.50000	0.0	0.0	0.0	0.0 d
5.3454	8.97194	84.18492	100.50000	0.0	0.0	0.0	0.0 d
5.8314	8.94648	83.69964	100.50000	0.0	0.0	0.0	0.0 d
6.3173	8.92102	83.21436	100.50000	0.0	0.0	0.0	0.0 d
6.8033	8.89556	82.72908	100.50000	0.0	0.0	0.0	0.0 d
7.2892	8.87010	82.24380	100.50000	0.0	0.0	0.0	0.0 d
7.7752	8.84464	81.75852	100.50000	0.0	0.0	0.0	0.0 d
8.2611	8.81918	81.27324	100.50000	0.0	0.0	0.0	0.0 d
8.7471	8.79372	80.78796	100.50000	0.0	0.0	0.0	0.0 d
9.2330	8.76826	80.30268	100.50000	0.0	0.0	0.0	0.0 d
9.7189	8.74280	79.81740	100.50000	0.0	0.0	0.0	0.0 d
10.205	8.71734	79.33212	100.50000	0.0	0.0	0.0	0.0 d
10.691	8.69188	78.84684	100.50000	0.0	0.0	0.0	0.0 d
11.177	8.66642	78.36156	100.50000	0.0	0.0	0.0	0.0 d
11.663	8.64096	77.87628	100.50000	0.0	0.0	0.0	0.0 d
12.149	8.61550	77.39100	100.50000	0.0	0.0	0.0	0.0 d
12.635	8.59004	76.90572	100.50000	0.0	0.0	0.0	0.0 d
13.121	8.56458	76.42044	100.50000	0.0	0.0	0.0	0.0 d
13.607	8.53912	75.93516	100.50000	0.0	0.0	0.0	0.0 d
14.092	8.51366	75.44988	100.50000	0.0	0.0	0.0	0.0 d
14.578	8.48820	74.96460	100.50000	0.0	0.0	0.0	0.0 d
15.064	8.46274	74.47932	100.50000	0.0	0.0	0.0	0.0 d
15.550	8.43728	73.99404	100.50000	0.0	0.0	0.0	0.0 d
16.036	8.41182	73.50876	100.50000	0.0	0.0	0.0	0.0 d
16.522	8.38636	73.02348	100.50000	0.0	0.0	0.0	0.0 d
17.008	8.36090	72.53820	100.50000	0.0	0.0	0.0	0.0 d
17.494	8.33544	72.05292	100.50000	0.0	0.0	0.0	0.0 d
17.980	8.30998	71.56764	100.50000	0.0	0.0	0.0	0.0 d
18.466	8.28452	71.08236	100.50000	0.0	0.0	0.0	0.0 d
18.952	8.25906	70.59708	100.50000	0.0	0.0	0.0	0.0 d
19.438	8.23360	70.11180	100.50000	0.0	0.0	0.0	0.0 d
19.924	8.20814	69.62652	100.50000	0.0	0.0	0.0	0.0 d
20.410	8.18268	69.14124	100.50000	0.0	0.0	0.0	0.0 d
20.896	8.15722	68.65596	100.50000	0.0	0.0	0.0	0.0 d
21.382	8.13176	68.17068	100.50000	0.0	0.0	0.0	0.0 d
21.868	8.10630	67.68540	100.50000	0.0	0.0	0.0	0.0 d
22.354	8.08084	67.20012	100.50000	0.0	0.0	0.0	0.0 d
22.840	8.05538	66.71484	100.50000	0.0	0.0	0.0	0.0 d
23.325	8.02992	66.22956	100.50000	0.0	0.0	0.0	0.0 d
23.811	8.00446	65.74428	100.50000	0.0	0.0	0.0	0.0 d
24.297	7.97900	65.25900	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-2 | Sub-structure: GVA-2

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	7.97900	65.25900	100.50000	0.0	0.0	0.0	0.0 d
0.48050	7.95067	64.77933	100.50000	0.0	0.0	0.0	0.0 d
0.96101	7.92233	64.29967	100.50000	0.0	0.0	0.0	0.0 d
1.4415	7.89400	63.82000	100.50000	0.0	0.0	0.0	0.0 d
1.9220	7.86567	63.34033	100.50000	0.0	0.0	0.0	0.0 d
2.4025	7.83733	62.86067	100.50000	0.0	0.0	0.0	0.0 d
2.8830	7.80900	62.38100	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-3 | Sub-structure: GVA-3

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	7.80900	62.38100	100.50000	0.0	0.0	0.0	0.0 d
0.47715	8.28487	62.34613	100.50000	0.0	0.0	0.0	0.0 d
0.95430	8.76075	62.31125	100.50000	0.0	0.0	0.0	0.0 d
1.4315	9.23663	62.27638	100.50000	0.0	0.0	0.0	0.0 d
1.9086	9.71250	62.24150	100.50000	0.0	0.0	0.0	0.0 d
2.3858	10.18838	62.20662	100.50000	0.0	0.0	0.0	0.0 d
2.8629	10.66425	62.17175	100.50000	0.0	0.0	0.0	0.0 d
3.3401	11.14012	62.13687	100.50000	0.0	0.0	0.0	0.0 d
3.8172	11.61600	62.10200	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-4 | Sub-structure: GVA-4

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	11.61600	62.10200	100.50000	0.0	0.0	0.0	0.0 d
0.47359	11.65050	62.57433	100.50000	0.0	0.0	0.0	0.0 d
0.94718	11.68500	63.04667	100.50000	0.0	0.0	0.0	0.0 d
1.4208	11.71950	63.51900	100.50000	0.0	0.0	0.0	0.0 d
1.8944	11.75400	63.99133	100.50000	0.0	0.0	0.0	0.0 d
2.3680	11.78850	64.46367	100.50000	0.0	0.0	0.0	0.0 d
2.8415	11.82300	64.93600	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-5 | Sub-structure: GVA-5

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	11.82300	64.93600	100.50000	0.0	0.0	0.0	0.0 d
0.48843	12.31013	64.90031	100.50000	0.0	0.0	0.0	0.0 d
0.97686	12.79725	64.86463	100.50000	0.0	0.0	0.0	0.0 d
1.4653	13.28438	64.82894	100.50000	0.0	0.0	0.0	0.0 d

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the	Horizontal displacement perpendicular
1.9537	13.77150	64.79325	100.50000	0.0	0.0	0.0	0.0 d
2.4422	14.25863	64.75756	100.50000	0.0	0.0	0.0	0.0 d
2.9306	14.74575	64.72187	100.50000	0.0	0.0	0.0	0.0 d
3.4190	15.23288	64.68619	100.50000	0.0	0.0	0.0	0.0 d
3.9074	15.72000	64.65050	100.50000	0.0	0.0	0.0	0.0 d
4.3959	16.20713	64.61481	100.50000	0.020812	-0.010191	0.021501	-0.0086432 d
4.8843	16.69425	64.57913	100.50000	0.13261	-0.066638	0.13712	-0.056771 d
5.3727	17.18138	64.54344	100.50000	0.24197	-0.12488	0.25044	-0.10687 d
5.8612	17.66850	64.50775	100.50000	0.34875	-0.18501	0.36134	-0.15904 d
6.3496	18.15563	64.47206	100.50000	0.45282	-0.24713	0.46967	-0.21338 d
6.8380	18.64275	64.43637	100.50000	0.55403	-0.31134	0.57530	-0.27003 d
7.3265	19.12988	64.40069	100.50000	0.65222	-0.37776	0.67807	-0.32909 d
7.8149	19.61700	64.36500	100.50000	0.74721	-0.44649	0.77783	-0.39070 d

d - Displacements include imported displacements.

Structure: GVA-6 | Sub-structure: GVA-6

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	19.61700	64.36500	100.50000	0.74721	-0.44649	0.39068	0.77784 d
0.49248	19.58100	63.87383	100.50000	0.82023	-0.46218	0.40099	0.85182 d
0.98497	19.54500	63.38267	100.50000	0.89368	-0.47369	0.40710	0.92592 d
1.4775	19.50900	62.89150	100.50000	0.96741	-0.48106	0.40905	0.99999 d
1.9699	19.47300	62.40033	100.50000	1.0412	-0.48433	0.40692	1.0739 d
2.4624	19.43700	61.90917	100.50000	1.1150	-0.48357	0.40078	1.1474 d
2.9549	19.40100	61.41800	100.50000	1.1885	-0.47889	0.39073	1.2203 d

d - Displacements include imported displacements.

Structure: GVA-7 | Sub-structure: GVA-7

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	19.40100	61.41800	100.50000	1.1885	-0.47889	1.2202	-0.39094 d
0.46449	19.86425	61.38412	100.50000	1.3011	-0.53927	1.3370	-0.44294 d
0.92897	20.32750	61.35025	100.50000	1.4589	-0.62254	1.5005	-0.51449 d
1.3935	20.79075	61.31638	100.50000	1.6127	-0.70922	1.6601	-0.58972 d
1.8579	21.25400	61.28250	100.50000	1.7622	-0.79957	1.8158	-0.66893 d
2.3224	21.71725	61.24862	100.50000	1.9072	-0.89389	1.9673	-0.75242 d
2.7869	22.18050	61.21475	100.50000	2.0474	-0.99250	2.1143	-0.84054 d
3.2514	22.64375	61.18088	100.50000	2.1825	-1.0957	2.2566	-0.93364 d
3.7159	23.10700	61.14700	100.50000	2.3123	-1.2040	2.3939	-1.0321 d

d - Displacements include imported displacements.

Structure: GVA-8 | Sub-structure: GVA-8

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	23.10700	61.14700	100.50000	2.3123	-1.2040	-1.0818	-2.3719 d
0.49250	23.13267	61.63883	100.50000	2.1678	-1.2192	-1.1046	-2.2284 d
0.98501	23.15833	62.13067	100.50000	2.0256	-1.2256	-1.1184	-2.0867 d
1.4775	23.18400	62.62250	100.50000	1.8857	-1.2231	-1.1232	-1.9469 d
1.9700	23.20967	63.11433	100.50000	1.7486	-1.2119	-1.1191	-1.8094 d
2.4625	23.23533	63.60617	100.50000	1.6144	-1.1920	-1.1062	-1.6743 d
2.9550	23.26100	64.09800	100.50000	1.4832	-1.1635	-1.0846	-1.5418 d

d - Displacements include imported displacements.

Structure: GVA-9 | Sub-structure: GVA-9

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	23.26100	64.09800	100.50000	1.4832	-1.1635	-1.0846	-1.5418 d
0.49313	23.28670	64.59046	100.50000	1.3550	-1.1265	-1.0543	-1.4119 d
0.98626	23.31240	65.08292	100.50000	1.2300	-1.0812	-1.0157	-1.2847 d
1.4794	23.33810	65.57538	100.50000	1.1083	-1.0279	-0.96871	-1.1604 d
1.9725	23.36380	66.06784	100.50000	0.98984	-0.96659	-0.91369	-1.0389 d
2.4657	23.38950	66.56030	100.50000	0.88411	-0.90734	-0.86003	-0.93020 d
2.9588	23.41520	67.05276	100.50000	0.80108	-0.86249	-0.81957	-0.84494 d
3.4519	23.44090	67.54522	100.50000	0.72046	-0.81244	-0.77379	-0.76183 d
3.9450	23.46660	68.03768	100.50000	0.64225	-0.75738	-0.72288	-0.68085 d
4.4382	23.49230	68.53014	100.50000	0.56639	-0.69746	-0.66700	-0.60197 d
4.9313	23.51800	69.02260	100.50000	0.49284	-0.63287	-0.60632	-0.52515 d
5.4244	23.54370	69.51506	100.50000	0.42155	-0.56376	-0.54103	-0.45036 d
5.9176	23.56940	70.00752	100.50000	0.35247	-0.49032	-0.47128	-0.37754 d
6.4107	23.59510	70.49998	100.50000	0.28554	-0.41269	-0.39725	-0.30666 d
6.9038	23.62080	70.99244	100.50000	0.22070	-0.33105	-0.31910	-0.23766 d
7.3970	23.64650	71.48490	100.50000	0.15790	-0.24555	-0.23699	-0.17048 d
7.8901	23.67220	71.97736	100.50000	0.097065	-0.15634	-0.15107	-0.10508 d
8.3832	23.69790	72.46982	100.50000	0.038140	-0.063566	-0.061492	-0.041401 d
8.8763	23.72360	72.96228	100.50000	0.0	0.0	0.0	0.0 d
9.3695	23.74930	73.45474	100.50000	0.0	0.0	0.0	0.0 d
9.8626	23.77500	73.94720	100.50000	0.0	0.0	0.0	0.0 d
10.356	23.80070	74.43966	100.50000	0.0	0.0	0.0	0.0 d
10.849	23.82640	74.93212	100.50000	0.0	0.0	0.0	0.0 d
11.342	23.85210	75.42458	100.50000	0.0	0.0	0.0	0.0 d
11.835	23.87780	75.91704	100.50000	0.0	0.0	0.0	0.0 d
12.328	23.90350	76.40950	100.50000	0.0	0.0	0.0	0.0 d
12.821	23.92920	76.90196	100.50000	0.0	0.0	0.0	0.0 d
13.315	23.95490	77.39442	100.50000	0.0	0.0	0.0	0.0 d
13.808	23.98060	77.88688	100.50000	0.0	0.0	0.0	0.0 d
14.301	24.00630	78.37934	100.50000	0.0	0.0	0.0	0.0 d
14.794	24.03200	78.87180	100.50000	0.0	0.0	0.0	0.0 d
15.287	24.05770	79.36426	100.50000	0.0	0.0	0.0	0.0 d
15.780	24.08340	79.85672	100.50000	0.0	0.0	0.0	0.0 d
16.273	24.10910	80.34918	100.50000	0.0	0.0	0.0	0.0 d
16.766	24.13480	80.84164	100.50000	0.0	0.0	0.0	0.0 d
17.260	24.16050	81.33410	100.50000	0.0	0.0	0.0	0.0 d
17.753	24.18620	81.82656	100.50000	0.0	0.0	0.0	0.0 d
18.246	24.21190	82.31902	100.50000	0.0	0.0	0.0	0.0 d
18.739	24.23760	82.81148	100.50000	0.0	0.0	0.0	0.0 d
19.232	24.26330	83.30394	100.50000	0.0	0.0	0.0	0.0 d
19.725	24.28900	83.79640	100.50000	0.0	0.0	0.0	0.0 d
20.218	24.31470	84.28886	100.50000	0.0	0.0	0.0	0.0 d
20.711	24.34040	84.78132	100.50000	0.0	0.0	0.0	0.0 d
21.205	24.36610	85.27378	100.50000	0.0	0.0	0.0	0.0 d
21.698	24.39180	85.76624	100.50000	0.0	0.0	0.0	0.0 d
22.191	24.41750	86.25870	100.50000	0.0	0.0	0.0	0.0 d
22.684	24.44320	86.75116	100.50000	0.0	0.0	0.0	0.0 d
23.177	24.46890	87.24362	100.50000	0.0	0.0	0.0	0.0 d
23.670	24.49460	87.73608	100.50000	0.0	0.0	0.0	0.0 d
24.163	24.52030	88.22854	100.50000	0.0	0.0	0.0	0.0 d
24.657	24.54600	88.72100	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: GVA-10 | Sub-structure: GVA-10

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement	Horizontal displacement

							along the Line	perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]		[mm]	[mm]	
0.0	24.54600	88.72100	100.50000	0.0	0.0		0.0	0.0	d
0.47859	24.06806	88.74606	100.50000	0.0	0.0		0.0	0.0	d
0.95719	23.59013	88.77112	100.50000	0.0	0.0		0.0	0.0	d
1.4358	23.11219	88.79619	100.50000	0.0	0.0		0.0	0.0	d
1.9144	22.63425	88.82125	100.50000	0.0	0.0		0.0	0.0	d
2.3930	22.15631	88.84631	100.50000	0.0	0.0		0.0	0.0	d
2.8716	21.67837	88.87138	100.50000	0.0	0.0		0.0	0.0	d
3.3502	21.20044	88.89644	100.50000	0.0	0.0		0.0	0.0	d
3.8288	20.72250	88.92150	100.50000	0.0	0.0		0.0	0.0	d
4.3073	20.24456	88.94656	100.50000	0.0	0.0		0.0	0.0	d
4.7859	19.76662	88.97163	100.50000	0.0	0.0		0.0	0.0	d
5.2645	19.28869	88.99669	100.50000	0.0	0.0		0.0	0.0	d
5.7431	18.81075	89.02175	100.50000	0.0	0.0		0.0	0.0	d
6.2217	18.33281	89.04681	100.50000	0.0	0.0		0.0	0.0	d
6.7003	17.85488	89.07188	100.50000	0.0	0.0		0.0	0.0	d
7.1789	17.37694	89.09694	100.50000	0.0	0.0		0.0	0.0	d
7.6575	16.89900	89.12200	100.50000	0.0	0.0		0.0	0.0	d
8.1361	16.42106	89.14706	100.50000	0.0	0.0		0.0	0.0	d
8.6147	15.94313	89.17212	100.50000	0.0	0.0		0.0	0.0	d
9.0933	15.46519	89.19719	100.50000	0.0	0.0		0.0	0.0	d
9.5719	14.98725	89.22225	100.50000	0.0	0.0		0.0	0.0	d
10.050	14.50931	89.24731	100.50000	0.0	0.0		0.0	0.0	d
10.529	14.03138	89.27237	100.50000	0.0	0.0		0.0	0.0	d
11.008	13.55344	89.29744	100.50000	0.0	0.0		0.0	0.0	d
11.486	13.07550	89.32250	100.50000	0.0	0.0		0.0	0.0	d
11.965	12.59756	89.34756	100.50000	0.0	0.0		0.0	0.0	d
12.443	12.11963	89.37262	100.50000	0.0	0.0		0.0	0.0	d
12.922	11.64169	89.39769	100.50000	0.0	0.0		0.0	0.0	d
13.401	11.16375	89.42275	100.50000	0.0	0.0		0.0	0.0	d
13.879	10.68581	89.44781	100.50000	0.0	0.0		0.0	0.0	d
14.358	10.20788	89.47288	100.50000	0.0	0.0		0.0	0.0	d
14.836	9.72994	89.49794	100.50000	0.0	0.0		0.0	0.0	d
15.315	9.25200	89.52300	100.50000	0.0	0.0		0.0	0.0	d

d - Displacements include imported displacements.

Structure: GE-1 | Sub-structure: GE-1

Dist.	Coordinates					Displacements		
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	28.56700	64.11000	100.50000	1.9265	-2.8596	1.7836	-2.9508	d
0.49454	29.06094	64.13431	100.50000	1.8957	-3.0521	1.7434	-3.1416	d
0.98907	29.55487	64.15863	100.50000	1.8524	-3.2503	1.6903	-3.3374	d
1.4836	30.04881	64.18294	100.50000	1.7964	-3.4537	1.6244	-3.5378	d
1.9781	30.54275	64.20725	100.50000	1.7277	-3.6618	1.5456	-3.7423	d
2.4727	31.03669	64.23156	100.50000	1.6466	-3.8738	1.4541	-3.9501	d
2.9672	31.53063	64.25588	100.50000	1.5531	-4.0889	1.3502	-4.1603	d
3.4617	32.02456	64.28019	100.50000	1.4479	-4.3061	1.2344	-4.3720	d
3.9563	32.51850	64.30450	100.50000	1.3314	-4.5240	1.1074	-4.5840	d
4.4508	33.01244	64.32881	100.50000	1.2045	-4.7414	0.96996	-4.7949	d
4.9454	33.50637	64.35312	100.50000	1.0681	-4.9567	0.82317	-5.0032	d
5.4399	34.00031	64.37744	100.50000	0.92344	-5.1683	0.66824	-5.2075	d
5.9344	34.49425	64.40175	100.50000	0.77172	-5.3744	0.50657	-5.4058	d
6.4290	34.98819	64.42606	100.50000	0.61443	-5.5732	0.33970	-5.5966	d
6.9235	35.48212	64.45037	100.50000	0.45315	-5.7627	0.16929	-5.7780	d
7.4180	35.97606	64.47469	100.50000	0.28952	-5.9412	-0.0029133	-5.9482	d
7.9126	36.47000	64.49900	100.50000	0.27903	-5.9515	-0.013895	-5.9580	d

d - Displacements include imported displacements.

Structure: GE-2 | Sub-structure: GE-2

Dist.	Coordinates					Displacements		
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	36.47000	64.49900	100.50000	0.27903	-5.9515	-5.9574	0.081985	d
0.49291	36.44014	64.99100	100.50000	0.26535	-5.6596	-5.6653	0.077964	d
0.98581	36.41029	65.48300	100.50000	0.25179	-5.3705	-5.3759	0.073982	d
1.4787	36.38043	65.97500	100.50000	0.23836	-5.0840	-5.0891	0.070035	d
1.9716	36.35057	66.46700	100.50000	0.22504	-4.7998	-4.8046	0.066120	d
2.4645	36.32071	66.95900	100.50000	0.21181	-4.5178	-4.5223	0.062235	d
2.9574	36.29086	67.45100	100.50000	0.19868	-4.2377	-4.2420	0.058377	d
3.4503	36.26100	67.94300	100.50000	0.18564	-3.9594	-3.9634	0.054544	d
3.9432	36.23114	68.43500	100.50000	0.17266	-3.6827	-3.6864	0.050732	d
4.4361	36.20129	68.92700	100.50000	0.15975	-3.4074	-3.4108	0.046938	d
4.9291	36.17143	69.41900	100.50000	0.14690	-3.1332	-3.1363	0.043161	d
5.4220	36.14157	69.91100	100.50000	0.13409	-2.8599	-2.8628	0.039397	d
5.9149	36.11171	70.40300	100.50000	0.12131	-2.5875	-2.5901	0.035644	d
6.4078	36.08186	70.89500	100.50000	0.10856	-2.3156	-2.3179	0.031899	d
6.9007	36.05200	71.38700	100.50000	0.095835	-2.0441	-2.0461	0.028158	d
7.3936	36.02214	71.87900	100.50000	0.083342	-1.7776	-1.7794	0.024488	d
7.8865	35.99229	72.37100	100.50000	0.074686	-1.5930	-1.5946	0.021944	d
8.3794	35.96243	72.86300	100.50000	0.066031	-1.4084	-1.4098	0.019401	d
8.8723	35.93257	73.35500	100.50000	0.057375	-1.2238	-1.2250	0.016858	d
9.3652	35.90271	73.84700	100.50000	0.048719	-1.0391	-1.0402	0.014315	d
9.8581	35.87286	74.33900	100.50000	0.040063	-0.85451	-0.85537	0.011771	d
10.351	35.84300	74.83100	100.50000	0.031408	-0.66989	-0.67057	0.0092282	d
10.844	35.81314	75.32300	100.50000	0.022752	-0.48527	-0.48576	0.0066849	d
11.337	35.78329	75.81500	100.50000	0.014096	-0.30066	-0.30096	0.0041417	d
11.830	35.75343	76.30700	100.50000	0.0054403	-0.11604	-0.11615	0.0015985	d
12.323	35.72357	76.79900	100.50000	0.0	0.0	0.0	0.0	d
12.816	35.69371	77.29100	100.50000	0.0	0.0	0.0	0.0	d
13.308	35.66386	77.78300	100.50000	0.0	0.0	0.0	0.0	d
13.801	35.63400	78.27500	100.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: GE-3 | Sub-structure: GE-3

Dist.	Coordinates					Displacements		
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	35.63400	78.27500	100.50000	0.0	0.0	0.0	0.0	d
0.47806	35.15681	78.24606	100.50000	0.0	0.0	0.0	0.0	d
0.95613	34.67963	78.21713	100.50000	0.0	0.0	0.0	0.0	d
1.4342	34.20244	78.18819	100.50000	0.0	0.0	0.0	0.0	d
1.9123	33.72525	78.15925	100.50000	0.0	0.0	0.0	0.0	d
2.3903	33.24806	78.13031	100.50000	0.0	0.0	0.0	0.0	d
2.8684	32.77087	78.10138	100.50000	0.0	0.0	0.0	0.0	d
3.3464	32.29369	78.07244	100.50000	0.0	0.0	0.0	0.0	d
3.8245	31.81650	78.04350	100.50000	0.0	0.0	0.0	0.0	d
4.3026	31.33931	78.01456	100.50000	0.0	0.0	0.0	0.0	d
4.7806	30.86212	77.98562	100.50000	0.0	0.0	0.0	0.0	d
5.2587	30.38494	77.95669	100.50000	0.0	0.0	0.0	0.0	d
5.7368	29.90775	77.92775	100.50000	0.0	0.0	0.0	0.0	d
6.2148	29.43056	77.89881	100.50000	0.0	0.0	0.0	0.0	d
6.6929	28.95338	77.86987	100.50000	0.0	0.0	0.0	0.0	d
7.1710	28.47619	77.84094	100.50000	0.0	0.0	0.0	0.0	d
7.6490	27.99900	77.81200	100.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: GE-4 | Sub-structure: GE-4

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal	Horizontal

						displacement along the Line	displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	27.99900	77.81200	100.50000	0.0	0.0	0.0	0.0	d
0.48978	28.01929	77.32264	100.50000	0.0	0.0	0.0	0.0	d
0.97955	28.03957	76.83329	100.50000	0.0	0.0	0.0	0.0	d
1.4693	28.05986	76.34393	100.50000	0.0	0.0	0.0	0.0	d
1.9591	28.08014	75.85457	100.50000	0.0	0.0	0.0	0.0	d
2.4489	28.10043	75.36521	100.50000	0.0	0.0	0.0	0.0	d
2.9387	28.12071	74.87586	100.50000	0.016142	-0.050823	0.051448	0.014023	d
3.4284	28.14100	74.38650	100.50000	0.060523	-0.18619	0.18854	0.052759	d
3.9182	28.16129	73.89714	100.50000	0.10638	-0.31956	0.32369	0.093055	d
4.4080	28.18157	73.40779	100.50000	0.15381	-0.45081	0.45679	0.13500	d
4.8978	28.20186	72.91843	100.50000	0.20289	-0.57980	0.58770	0.17870	d
5.3876	28.22214	72.42907	100.50000	0.25374	-0.70640	0.71630	0.22426	d
5.8773	28.24243	71.93971	100.50000	0.30645	-0.83045	0.84243	0.27179	d
6.3671	28.26271	71.45036	100.50000	0.36115	-0.95180	0.96594	0.32142	d
6.8569	28.28300	70.96100	100.50000	0.41797	-1.0703	1.0867	0.37328	d
7.3467	28.30329	70.47164	100.50000	0.47704	-1.1856	1.2044	0.42752	d
7.8364	28.32357	69.98229	100.50000	0.53851	-1.2978	1.3189	0.48430	d
8.3262	28.34386	69.49293	100.50000	0.62504	-1.4589	1.4835	0.56408	d
8.8160	28.36414	69.00357	100.50000	0.71721	-1.6194	1.6477	0.64952	d
9.3058	28.38443	68.51421	100.50000	0.81344	-1.7744	1.8066	0.73925	d
9.7955	28.40471	68.02486	100.50000	0.91408	-1.9238	1.9600	0.83361	d
10.285	28.42500	67.53550	100.50000	1.0195	-2.0671	2.1076	0.93298	d
10.775	28.44529	67.04614	100.50000	1.1300	-2.2040	2.2489	1.0377	d
11.265	28.46557	66.55679	100.50000	1.2461	-2.3339	2.3835	1.1483	d
11.755	28.48586	66.06743	100.50000	1.3682	-2.4564	2.5110	1.2652	d
12.244	28.50614	65.57807	100.50000	1.4967	-2.5709	2.6307	1.3889	d
12.734	28.52643	65.08871	100.50000	1.6322	-2.6768	2.7421	1.5200	d
13.224	28.54671	64.59936	100.50000	1.7753	-2.7733	2.8444	1.6589	d
13.714	28.56700	64.11000	100.50000	1.9265	-2.8596	2.9369	1.8064	d

d - Displacements include imported displacements.

Structure: DH-1 | Sub-structure: DH-1

Dist.	Coordinates			Displacements				
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	44.60300	87.23400	100.50000	0.0	0.0	0.0	0.0	d
0.48563	44.63204	86.74924	100.50000	0.0	0.0	0.0	0.0	d
0.97126	44.66109	86.26448	100.50000	0.0	0.0	0.0	0.0	d
1.4569	44.69013	85.77972	100.50000	0.0	0.0	0.0	0.0	d
1.9425	44.71917	85.29496	100.50000	0.0	0.0	0.0	0.0	d
2.4282	44.74822	84.81020	100.50000	0.0	0.0	0.0	0.0	d
2.9138	44.77726	84.32543	100.50000	0.0	0.0	0.0	0.0	d
3.3994	44.80630	83.84067	100.50000	0.0	0.0	0.0	0.0	d
3.8850	44.83535	83.35591	100.50000	0.0	0.0	0.0	0.0	d
4.3707	44.86439	82.87115	100.50000	0.0	0.0	0.0	0.0	d
4.8563	44.89343	82.38639	100.50000	0.0	0.0	0.0	0.0	d
5.3419	44.92248	81.90163	100.50000	0.0	0.0	0.0	0.0	d
5.8276	44.95152	81.41687	100.50000	0.0	0.0	0.0	0.0	d
6.3132	44.98057	80.93211	100.50000	0.0	0.0	0.0	0.0	d
6.7988	45.00961	80.44735	100.50000	0.0	0.0	0.0	0.0	d
7.2845	45.03865	79.96259	100.50000	0.0	0.0	0.0	0.0	d
7.7701	45.06770	79.47783	100.50000	0.0	0.0	0.0	0.0	d
8.2557	45.09674	78.99307	100.50000	0.0	0.0	0.0	0.0	d
8.7413	45.12578	78.50830	100.50000	0.0	0.0	0.0	0.0	d
9.2270	45.15483	78.02354	100.50000	0.0	0.0	0.0	0.0	d
9.7126	45.18387	77.53878	100.50000	0.0	0.0	0.0	0.0	d
10.198	45.21291	77.05402	100.50000	115.62E-6	-0.0024660	0.0024685	-32.071E-6	d
10.684	45.24196	76.56926	100.50000	0.0086437	-0.18436	0.18455	-0.0023977	d
11.169	45.27100	76.08450	100.50000	0.017172	-0.36626	0.36663	-0.0047633	d
11.655	45.30004	75.59974	100.50000	0.025700	-0.54815	0.54871	-0.0071289	d
12.141	45.32909	75.11498	100.50000	0.034228	-0.73005	0.73079	-0.0094946	d
12.626	45.35813	74.63022	100.50000	0.042756	-0.91195	0.91287	-0.011860	d
13.112	45.38717	74.14546	100.50000	0.051284	-1.0938	1.0950	-0.014226	d
13.598	45.41622	73.66070	100.50000	0.059812	-1.2757	1.2770	-0.016591	d
14.083	45.44526	73.17593	100.50000	0.068340	-1.4576	1.4591	-0.018957	d
14.569	45.47430	72.69117	100.50000	0.076868	-1.6395	1.6412	-0.021323	d
15.055	45.50335	72.20641	100.50000	0.086132	-1.8371	1.8390	-0.023892	d
15.540	45.53239	71.72165	100.50000	0.098667	-2.1045	2.1066	-0.027370	d
16.026	45.56143	71.23689	100.50000	0.11121	-2.3721	2.3745	-0.030849	d
16.511	45.59048	70.75213	100.50000	0.12378	-2.6400	2.6427	-0.034335	d
16.997	45.61952	70.26737	100.50000	0.13637	-2.9086	2.9116	-0.037827	d
17.483	45.64857	69.78261	100.50000	0.14900	-3.1779	3.1812	-0.041330	d
17.968	45.67761	69.29785	100.50000	0.16167	-3.4483	3.4518	-0.044846	d
18.454	45.70665	68.81309	100.50000	0.17440	-3.7197	3.7235	-0.048377	d
18.940	45.73570	68.32833	100.50000	0.18719	-3.9926	3.9966	-0.051925	d
19.425	45.76474	67.84357	100.50000	0.20005	-4.2669	4.2713	-0.055493	d
19.911	45.79378	67.35880	100.50000	0.21300	-4.5430	4.5477	-0.059084	d
20.396	45.82283	66.87404	100.50000	0.22603	-4.8211	4.8260	-0.062700	d
20.882	45.85187	66.38928	100.50000	0.23917	-5.1012	5.1064	-0.066343	d
21.368	45.88091	65.90452	100.50000	0.25241	-5.3836	5.3891	-0.070016	d
21.853	45.90996	65.41976	100.50000	0.26577	-5.6686	5.6743	-0.073722	d
22.339	45.93900	64.93500	100.50000	0.27925	-5.9562	5.9622	-0.077462	d

d - Displacements include imported displacements.

Structure: DH-2 | Sub-structure: DH-2

Dist.	Coordinates			Displacements				
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	45.93900	64.93500	100.50000	0.27925	-5.9562	-0.14526	-5.9610	d
0.49257	46.43032	64.97005	100.50000	0.27892	-5.9491	-0.14509	-5.9538	d
0.98513	46.92163	65.00510	100.50000	0.27858	-5.9419	-0.14492	-5.9467	d
1.4777	47.41295	65.04014	100.50000	0.27825	-5.9348	-0.14474	-5.9395	d
1.9703	47.90427	65.07519	100.50000	0.27791	-5.9276	-0.14457	-5.9324	d
2.4628	48.39559	65.11024	100.50000	0.27758	-5.9205	-0.14439	-5.9253	d
2.9554	48.88690	65.14529	100.50000	0.27724	-5.9134	-0.14422	-5.9181	d
3.4480	49.37822	65.18034	100.50000	0.27691	-5.9062	-0.14405	-5.9110	d
3.9405	49.86954	65.21538	100.50000	0.27658	-5.8991	-0.14387	-5.9038	d
4.4331	50.36086	65.25043	100.50000	0.27624	-5.8920	-0.14370	-5.8967	d
4.9257	50.85217	65.28548	100.50000	0.27591	-5.8849	-0.14352	-5.8896	d
5.4182	51.34349	65.32053	100.50000	0.27557	-5.8777	-0.14335	-5.8824	d
5.9108	51.83481	65.35558	100.50000	0.27524	-5.8706	-0.14318	-5.8753	d
6.4034	52.32612	65.39063	100.50000	0.27491	-5.8635	-0.14300	-5.8682	d
6.8959	52.81744	65.42567	100.50000	0.27457	-5.8564	-0.14283	-5.8611	d
7.3885	53.30876	65.46072	100.50000	0.27424	-5.8493	-0.14266	-5.8539	d
7.8811	53.80008	65.49577	100.50000	0.27391	-5.8421	-0.14248	-5.8468	d
8.3736	54.29139	65.53082	100.50000	0.27357	-5.8350	-0.14231	-5.8397	d
8.8662	54.78271	65.56587	100.50000	0.080389	-5.8181	-0.33380	-5.8091	d
9.3588	55.27403	65.60091	100.50000	-0.16851	-5.7873	-0.57987	-5.7607	d
9.8513	55.76535	65.63596	100.50000	-0.41244	-5.7443	-0.82012	-5.7004	d
10.344	56.25666	65.67101	100.50000	-0.62792	-5.6902	-1.0312	-5.6311	d
10.836	56.74798	65.70606	100.50000	-0.62217	-5.6381	-1.0218	-5.5795	d
11.329	57.23930	65.74111	100.50000	-0.61643	-5.5861	-1.0123	-5.5281	d
11.822	57.73062	65.77615	100.50000	-0.61070	-5.5342	-1.0029	-5.4767	d
12.314	58.22193	65.81120	100.50000	-0.60498	-5.4824	-0.99354	-5.4254	d
12.807	58.71325	65.84625	100.50000	-0.59927	-5.4306	-0.98417	-5.3742	d
13.299	59.20457	65.88130	100.50000	-0.59357	-5.3790	-0.97481	-5.3231	d
13.792	59.69588	65.91635	100.50000	-0.58788	-5.3274	-0.96546	-5.2721	d
14.284	60.18720	65.95139	100.50000	-0.58220	-5.2759	-0.95613	-5.2211	d
14.777	60.67852	65.98644	100.50000	-0.57653	-5.2245	-0.94681	-5.1702	d
15.270	61.16984	66.02149	100.50000	-0.57087	-5.1732	-0.93751	-5.1195	d
15.762	61.66115	66.05654	100.50000	-0.56521	-5.1219	-0.92823	-5.0687	d
16.255	62.15247	66.09159	100.50000	-0.55957	-5.0708	-0.91895	-5.0181	d
16.747	62.64379	66.12663	100.50000	-0.55393	-5.0197	-0.90969	-4.9675	d
17.240	63.13511	66.16168	100.50000	-0.54830	-4.9687	-0.90045	-4.9171	d
17.732	63.62642	66.19673	100.50000	-0.54268	-4.9177	-0.89122	-4.8666	d
18.225	64.11774	66.23178	100.50000	-0.53708	-4.8668	-0.88201	-4.8163	d

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the	Horizontal displacement perpendicular
18.718	64.60906	66.26683	100.50000	-0.63976	-4.6894	-0.97181	-4.6320 d
19.210	65.10038	66.30187	100.50000	-0.73664	-4.5072	-1.0555	-4.4434 d
19.703	65.59169	66.33692	100.50000	-0.82694	-4.3216	-1.1323	-4.2518 d
20.195	66.08301	66.37197	100.50000	-0.91000	-4.1335	-1.2018	-4.0583 d
20.688	66.57433	66.40702	100.50000	-0.98526	-3.9441	-1.2634	-3.8640 d
21.180	67.06564	66.44207	100.50000	-1.0523	-3.7544	-1.3167	-3.6700 d
21.673	67.55696	66.47712	100.50000	-1.1106	-3.5650	-1.3615	-3.4770 d
22.165	68.04828	66.51216	100.50000	-1.1601	-3.3769	-1.3974	-3.2858 d
22.658	68.53960	66.54721	100.50000	-1.2004	-3.1907	-1.4244	-3.0972 d
23.151	69.03091	66.58226	100.50000	-1.2316	-3.0068	-1.4424	-2.9116 d
23.643	69.52223	66.61731	100.50000	-1.2536	-2.8259	-1.4515	-2.7295 d
24.136	70.01355	66.65236	100.50000	-1.2663	-2.6482	-1.4515	-2.5513 d
24.628	70.50487	66.68740	100.50000	-1.2700	-2.4740	-1.4428	-2.3774 d
25.121	70.99618	66.72245	100.50000	-1.2647	-2.3037	-1.4254	-2.2078 d
25.613	71.48750	66.75750	100.50000	-1.2506	-2.1373	-1.3995	-2.0429 d
26.106	71.97882	66.79255	100.50000	-1.2278	-1.9750	-1.3653	-1.8827 d
26.599	72.47013	66.82760	100.50000	-1.1967	-1.8169	-1.3230	-1.7271 d
27.091	72.96145	66.86264	100.50000	-1.1574	-1.6629	-1.2728	-1.5764 d
27.584	73.45277	66.89769	100.50000	-1.1102	-1.5131	-1.2150	-1.4303 d
28.076	73.94409	66.93274	100.50000	-1.0553	-1.3675	-1.1499	-1.2889 d
28.569	74.43540	66.96779	100.50000	-0.99291	-1.2259	-1.0776	-1.1521 d
29.061	74.92672	67.00284	100.50000	-0.92335	-1.0882	-0.99844	-1.0198 d
29.554	75.41804	67.03788	100.50000	-0.86087	-0.97025	-0.92772	-0.90654 d
30.047	75.90936	67.07293	100.50000	-0.81038	-0.87493	-0.87058	-0.81505 d
30.539	76.40067	67.10798	100.50000	-0.75527	-0.78237	-0.80903	-0.72664 d
31.032	76.89199	67.14303	100.50000	-0.69573	-0.69249	-0.74324	-0.64123 d
31.524	77.38331	67.17808	100.50000	-0.63194	-0.60523	-0.67340	-0.55873 d
32.017	77.87463	67.21313	100.50000	-0.56407	-0.52050	-0.59968	-0.47905 d
32.509	78.36594	67.24817	100.50000	-0.49229	-0.43823	-0.52223	-0.40209 d
33.002	78.85726	67.28322	100.50000	-0.41678	-0.35833	-0.44122	-0.32776 d
33.494	79.34858	67.31827	100.50000	-0.33769	-0.28071	-0.35681	-0.25597 d
33.987	79.83989	67.35332	100.50000	-0.25517	-0.20531	-0.26913	-0.18663 d
34.480	80.33121	67.38837	100.50000	-0.16937	-0.13204	-0.17834	-0.11965 d
34.972	80.82253	67.42341	100.50000	-0.080442	-0.060815	-0.084565	-0.054937 d
35.465	81.31385	67.45846	100.50000	0.0	0.0	0.0	0.0 d
35.957	81.80516	67.49351	100.50000	0.0	0.0	0.0	0.0 d
36.450	82.29648	67.52856	100.50000	0.0	0.0	0.0	0.0 d
36.942	82.78780	67.56361	100.50000	0.0	0.0	0.0	0.0 d
37.435	83.27912	67.59865	100.50000	0.0	0.0	0.0	0.0 d
37.928	83.77043	67.63370	100.50000	0.0	0.0	0.0	0.0 d
38.420	84.26175	67.66875	100.50000	0.0	0.0	0.0	0.0 d
38.913	84.75307	67.70380	100.50000	0.0	0.0	0.0	0.0 d
39.405	85.24438	67.73885	100.50000	0.0	0.0	0.0	0.0 d
39.898	85.73570	67.77389	100.50000	0.0	0.0	0.0	0.0 d
40.390	86.22702	67.80894	100.50000	0.0	0.0	0.0	0.0 d
40.883	86.71834	67.84399	100.50000	0.0	0.0	0.0	0.0 d
41.376	87.20965	67.87904	100.50000	0.0	0.0	0.0	0.0 d
41.868	87.70097	67.91409	100.50000	0.0	0.0	0.0	0.0 d
42.361	88.19229	67.94913	100.50000	0.0	0.0	0.0	0.0 d
42.853	88.68361	67.98418	100.50000	0.0	0.0	0.0	0.0 d
43.346	89.17492	68.01923	100.50000	0.0	0.0	0.0	0.0 d
43.838	89.66624	68.05428	100.50000	0.0	0.0	0.0	0.0 d
44.331	90.15756	68.08933	100.50000	0.0	0.0	0.0	0.0 d
44.823	90.64888	68.12438	100.50000	0.0	0.0	0.0	0.0 d
45.316	91.14019	68.15942	100.50000	0.0	0.0	0.0	0.0 d
45.809	91.63151	68.19447	100.50000	0.0	0.0	0.0	0.0 d
46.301	92.12283	68.22952	100.50000	0.0	0.0	0.0	0.0 d
46.794	92.61414	68.26457	100.50000	0.0	0.0	0.0	0.0 d
47.286	93.10546	68.29962	100.50000	0.0	0.0	0.0	0.0 d
47.779	93.59678	68.33466	100.50000	0.0	0.0	0.0	0.0 d
48.271	94.08810	68.36971	100.50000	0.0	0.0	0.0	0.0 d
48.764	94.57941	68.40476	100.50000	0.0	0.0	0.0	0.0 d
49.257	95.07073	68.43981	100.50000	0.0	0.0	0.0	0.0 d
49.749	95.56205	68.47486	100.50000	0.0	0.0	0.0	0.0 d
50.242	96.05337	68.50990	100.50000	0.0	0.0	0.0	0.0 d
50.734	96.54468	68.54495	100.50000	0.0	0.0	0.0	0.0 d
51.227	97.03600	68.58000	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: DH-3 | Sub-structure: DH-3

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	97.03600	68.58000	100.50000	0.0	0.0	0.0	0.0 d
0.48909	96.99859	69.06765	100.50000	0.0	0.0	0.0	0.0 d
0.97817	96.96117	69.55530	100.50000	0.0	0.0	0.0	0.0 d
1.4673	96.92376	70.04296	100.50000	0.0	0.0	0.0	0.0 d
1.9563	96.88635	70.53061	100.50000	0.0	0.0	0.0	0.0 d
2.4454	96.84893	71.01826	100.50000	0.0	0.0	0.0	0.0 d
2.9345	96.81152	71.50591	100.50000	0.0	0.0	0.0	0.0 d
3.4236	96.77411	71.99357	100.50000	0.0	0.0	0.0	0.0 d
3.9127	96.73670	72.48122	100.50000	0.0	0.0	0.0	0.0 d
4.4018	96.69928	72.96887	100.50000	0.0	0.0	0.0	0.0 d
4.8909	96.66187	73.45652	100.50000	0.0	0.0	0.0	0.0 d
5.3799	96.62446	73.94417	100.50000	0.0	0.0	0.0	0.0 d
5.8690	96.58704	74.43183	100.50000	0.0	0.0	0.0	0.0 d
6.3581	96.54963	74.91948	100.50000	0.0	0.0	0.0	0.0 d
6.8472	96.51222	75.40713	100.50000	0.0	0.0	0.0	0.0 d
7.3363	96.47480	75.89478	100.50000	0.0	0.0	0.0	0.0 d
7.8254	96.43739	76.38243	100.50000	0.0	0.0	0.0	0.0 d
8.3144	96.39998	76.87009	100.50000	0.0	0.0	0.0	0.0 d
8.8035	96.36257	77.35774	100.50000	0.0	0.0	0.0	0.0 d
9.2926	96.32515	77.84539	100.50000	0.0	0.0	0.0	0.0 d
9.7817	96.28774	78.33304	100.50000	0.0	0.0	0.0	0.0 d
10.271	96.25033	78.82070	100.50000	0.0	0.0	0.0	0.0 d
10.760	96.21291	79.30835	100.50000	0.0	0.0	0.0	0.0 d
11.249	96.17550	79.79600	100.50000	0.0	0.0	0.0	0.0 d
11.738	96.13809	80.28365	100.50000	0.0	0.0	0.0	0.0 d
12.227	96.10067	80.77130	100.50000	0.0	0.0	0.0	0.0 d
12.716	96.06326	81.25896	100.50000	0.0	0.0	0.0	0.0 d
13.205	96.02585	81.74661	100.50000	0.0	0.0	0.0	0.0 d
13.694	95.98843	82.23426	100.50000	0.0	0.0	0.0	0.0 d
14.183	95.95102	82.72191	100.50000	0.0	0.0	0.0	0.0 d
14.673	95.91361	83.20957	100.50000	0.0	0.0	0.0	0.0 d
15.162	95.87620	83.69722	100.50000	0.0	0.0	0.0	0.0 d
15.651	95.83878	84.18487	100.50000	0.0	0.0	0.0	0.0 d
16.140	95.80137	84.67252	100.50000	0.0	0.0	0.0	0.0 d
16.629	95.76396	85.16017	100.50000	0.0	0.0	0.0	0.0 d
17.118	95.72654	85.64783	100.50000	0.0	0.0	0.0	0.0 d
17.607	95.68913	86.13548	100.50000	0.0	0.0	0.0	0.0 d
18.096	95.65172	86.62313	100.50000	0.0	0.0	0.0	0.0 d
18.585	95.61430	87.11078	100.50000	0.0	0.0	0.0	0.0 d
19.074	95.57689	87.59843	100.50000	0.0	0.0	0.0	0.0 d
19.563	95.53948	88.08609	100.50000	0.0	0.0	0.0	0.0 d
20.052	95.50207	88.57374	100.50000	0.0	0.0	0.0	0.0 d
20.542	95.46465	89.06139	100.50000	0.0	0.0	0.0	0.0 d
21.031	95.42724	89.54904	100.50000	0.0	0.0	0.0	0.0 d
21.520	95.38983	90.03670	100.50000	0.0	0.0	0.0	0.0 d
22.009	95.35241	90.52435	100.50000	0.0	0.0	0.0	0.0 d
22.498	95.31500	91.01200	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: DH-4 | Sub-structure: DH-4

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	95.31500	91.01200	100.50000	0.0	0.0	0.0	0.0 d
0.47118	94.84520	90.97595	100.50000	0.0	0.0	0.0	0.0 d
0.94236	94.37540	90.93990	100.50000	0.0	0.0	0.0	0.0 d
1.4135	93.90560	90.90385	100.50000	0.0	0.0	0.0	0.0 d

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the	Horizontal displacement perpendicular
1.8847	93.43580	90.86780	100.50000	0.0	0.0	0.0	0.0 d
2.3559	92.96600	90.83175	100.50000	0.0	0.0	0.0	0.0 d
2.8271	92.49620	90.79570	100.50000	0.0	0.0	0.0	0.0 d
3.2983	92.02640	90.75965	100.50000	0.0	0.0	0.0	0.0 d
3.7694	91.55660	90.72360	100.50000	0.0	0.0	0.0	0.0 d
4.2406	91.08680	90.68755	100.50000	0.0	0.0	0.0	0.0 d
4.7118	90.61700	90.65150	100.50000	0.0	0.0	0.0	0.0 d
5.1830	90.14720	90.61545	100.50000	0.0	0.0	0.0	0.0 d
5.6542	89.67740	90.57940	100.50000	0.0	0.0	0.0	0.0 d
6.1254	89.20760	90.54335	100.50000	0.0	0.0	0.0	0.0 d
6.5965	88.73780	90.50730	100.50000	0.0	0.0	0.0	0.0 d
7.0677	88.26800	90.47125	100.50000	0.0	0.0	0.0	0.0 d
7.5389	87.79820	90.43520	100.50000	0.0	0.0	0.0	0.0 d
8.0101	87.32840	90.39915	100.50000	0.0	0.0	0.0	0.0 d
8.4813	86.85860	90.36310	100.50000	0.0	0.0	0.0	0.0 d
8.9524	86.38880	90.32705	100.50000	0.0	0.0	0.0	0.0 d
9.4236	85.91900	90.29100	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: DH-5 | Sub-structure: DH-5

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	85.91900	90.29100	100.50000	0.0	0.0	0.0	0.0 d
0.48006	85.95573	89.81235	100.50000	0.0	0.0	0.0	0.0 d
0.96012	85.99246	89.33369	100.50000	0.0	0.0	0.0	0.0 d
1.4402	86.02919	88.85504	100.50000	0.0	0.0	0.0	0.0 d
1.9202	86.06592	88.37638	100.50000	0.0	0.0	0.0	0.0 d
2.4003	86.10265	87.89773	100.50000	0.0	0.0	0.0	0.0 d
2.8804	86.13938	87.41908	100.50000	0.0	0.0	0.0	0.0 d
3.3604	86.17612	86.94042	100.50000	0.0	0.0	0.0	0.0 d
3.8405	86.21285	86.46177	100.50000	0.0	0.0	0.0	0.0 d
4.3205	86.24958	85.98312	100.50000	0.0	0.0	0.0	0.0 d
4.8006	86.28631	85.50446	100.50000	0.0	0.0	0.0	0.0 d
5.2807	86.32304	85.02581	100.50000	0.0	0.0	0.0	0.0 d
5.7607	86.35977	84.54715	100.50000	0.0	0.0	0.0	0.0 d
6.2408	86.39650	84.06850	100.50000	0.0	0.0	0.0	0.0 d
6.7209	86.43323	83.58985	100.50000	0.0	0.0	0.0	0.0 d
7.2009	86.46996	83.11119	100.50000	0.0	0.0	0.0	0.0 d
7.6810	86.50669	82.63254	100.50000	0.0	0.0	0.0	0.0 d
8.1610	86.54342	82.15388	100.50000	0.0	0.0	0.0	0.0 d
8.6411	86.58015	81.67523	100.50000	0.0	0.0	0.0	0.0 d
9.1212	86.61688	81.19658	100.50000	0.0	0.0	0.0	0.0 d
9.6012	86.65362	80.71792	100.50000	0.0	0.0	0.0	0.0 d
10.081	86.69035	80.23927	100.50000	0.0	0.0	0.0	0.0 d
10.561	86.72708	79.76062	100.50000	0.0	0.0	0.0	0.0 d
11.041	86.76381	79.28196	100.50000	0.0	0.0	0.0	0.0 d
11.521	86.80054	78.80331	100.50000	0.0	0.0	0.0	0.0 d
12.002	86.83727	78.32465	100.50000	0.0	0.0	0.0	0.0 d
12.482	86.87400	77.84600	100.50000	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: DH-6 | Sub-structure: DH-6

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	86.87400	77.84600	100.50000	0.0	0.0	0.0	0.0 d
0.49556	86.37989	77.80809	100.50000	0.0	0.0	0.0	0.0 d
0.99112	85.88579	77.77018	100.50000	0.0	0.0	0.0	0.0 d
1.4867	85.39168	77.73227	100.50000	0.0	0.0	0.0	0.0 d
1.9822	84.89758	77.69436	100.50000	0.0	0.0	0.0	0.0 d
2.4778	84.40347	77.65645	100.50000	0.0	0.0	0.0	0.0 d
2.9733	83.90936	77.61855	100.50000	0.0	0.0	0.0	0.0 d
3.4689	83.41526	77.58064	100.50000	0.0	0.0	0.0	0.0 d
3.9645	82.92115	77.54273	100.50000	0.0	0.0	0.0	0.0 d
4.4600	82.42705	77.50482	100.50000	0.0	0.0	0.0	0.0 d
4.9556	81.93294	77.46691	100.50000	0.0	0.0	0.0	0.0 d
5.4511	81.43883	77.42900	100.50000	0.0	0.0	0.0	0.0 d
5.9467	80.94473	77.39109	100.50000	0.0	0.0	0.0	0.0 d
6.4423	80.45062	77.35318	100.50000	0.0	0.0	0.0	0.0 d
6.9378	79.95652	77.31527	100.50000	0.0	0.0	0.0	0.0 d
7.4334	79.46241	77.27736	100.50000	0.0	0.0	0.0	0.0 d
7.9289	78.96830	77.23945	100.50000	0.0	0.0	0.0	0.0 d
8.4245	78.47420	77.20155	100.50000	0.0	0.0	0.0	0.0 d
8.9200	77.98009	77.16364	100.50000	0.0	0.0	0.0	0.0 d
9.4156	77.48598	77.12573	100.50000	0.0	0.0	0.0	0.0 d
9.9112	76.99188	77.08782	100.50000	0.0	0.0	0.0	0.0 d
10.407	76.49777	77.04991	100.50000	0.0	0.0	0.0	0.0 d
10.902	76.00367	77.01200	100.50000	0.0	0.0	0.0	0.0 d
11.398	75.50956	76.97409	100.50000	0.0	0.0	0.0	0.0 d
11.893	75.01545	76.93618	100.50000	0.0	0.0	0.0	0.0 d
12.389	74.52135	76.89827	100.50000	0.0	0.0	0.0	0.0 d
12.885	74.02724	76.86036	100.50000	0.0	0.0	0.0	0.0 d
13.380	73.53314	76.82245	100.50000	0.0	0.0	0.0	0.0 d
13.876	73.03903	76.78455	100.50000	0.0	0.0	0.0	0.0 d
14.371	72.54492	76.74664	100.50000	0.0	0.0	0.0	0.0 d
14.867	72.05082	76.70873	100.50000	0.0	0.0	0.0	0.0 d
15.362	71.55671	76.67082	100.50000	0.0	0.0	0.0	0.0 d
15.858	71.06261	76.63291	100.50000	0.0	0.0	0.0	0.0 d
16.353	70.56850	76.59500	100.50000	0.0	0.0	0.0	0.0 d
16.849	70.07439	76.55709	100.50000	0.0	0.0	0.0	0.0 d
17.345	69.58029	76.51918	100.50000	0.0	0.0	0.0	0.0 d
17.840	69.08618	76.48127	100.50000	0.0	0.0	0.0	0.0 d
18.336	68.59208	76.44336	100.50000	0.0	0.0	0.0	0.0 d
18.831	68.09797	76.40545	100.50000	0.0	0.0	0.0	0.0 d
19.327	67.60386	76.36755	100.50000	0.0	0.0	0.0	0.0 d
19.822	67.10976	76.32964	100.50000	0.0	0.0	0.0	0.0 d
20.318	66.61565	76.29173	100.50000	-631.08E-6	-0.0041307	945.22E-6	0.0040703 d
20.813	66.12155	76.25382	100.50000	-0.0063422	-0.046115	0.0098513	0.045495 d
21.309	65.62744	76.21591	100.50000	-0.010496	-0.085633	0.017016	0.084579 d
21.805	65.13333	76.17800	100.50000	-0.013490	-0.12224	0.022802	0.12085 d
22.300	64.63923	76.14009	100.50000	-0.017269	-0.15649	0.029189	0.15471 d
22.796	64.14512	76.10218	100.50000	-0.021048	-0.19074	0.035577	0.18857 d
23.291	63.65102	76.06427	100.50000	-0.024827	-0.22498	0.041965	0.22242 d
23.787	63.15691	76.02636	100.50000	-0.028606	-0.25923	0.048353	0.25628 d
24.282	62.66280	75.98845	100.50000	-0.032385	-0.29347	0.054740	0.29014 d
24.778	62.16870	75.95055	100.50000	-0.036164	-0.32772	0.061128	0.32399 d
25.273	61.67459	75.91264	100.50000	-0.039943	-0.36197	0.067516	0.35785 d
25.769	61.18048	75.87473	100.50000	-0.043722	-0.39621	0.073904	0.39171 d
26.265	60.68638	75.83682	100.50000	-0.047501	-0.43046	0.080291	0.42556 d
26.760	60.19227	75.79891	100.50000	-0.051280	-0.46470	0.086679	0.45942 d
27.256	59.69817	75.76100	100.50000	-0.055060	-0.49895	0.093067	0.49327 d
27.751	59.20406	75.72309	100.50000	-0.058839	-0.53319	0.099454	0.52713 d
28.247	58.70995	75.68518	100.50000	-0.062618	-0.56744	0.10584	0.56099 d
28.742	58.21585	75.64727	100.50000	-0.066397	-0.60169	0.11223	0.59484 d
29.238	57.72174	75.60936	100.50000	-0.070176	-0.63593	0.11862	0.62870 d
29.733	57.22764	75.57145	100.50000	-0.071518	-0.67020	0.12258	0.66277 d
30.229	56.73353	75.53355	100.50000	-0.058890	-0.70224	0.11244	0.69568 d
30.725	56.23942	75.49564	100.50000	-0.044447	-0.73017	0.10017	0.72463 d
31.220	55.74532	75.45773	100.50000	-0.028479	-0.75393	0.086069	0.74954 d
31.716	55.25121	75.41982	100.50000	-0.011282	-0.77349	0.070419	0.77036 d
32.211	54.75711	75.38191	100.50000	0.0068366	-0.78879	0.053524	0.78701 d
32.707	54.26300	75.34400	100.50000	0.025562	-0.79982	0.035698	0.79943 d

d - Displacements include imported displacements.

Structure: DH-7 | Sub-structure: DH-7

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal	Horizontal

						displacement along the Line	displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	54.26300	75.34400	100.50000	0.025562	-0.79982	-0.79943	0.035715	d
0.48103	54.22619	75.82362	100.50000	0.020425	-0.61991	-0.61966	0.027070	d
0.96205	54.18938	76.30323	100.50000	0.014913	-0.43999	-0.43984	0.018798	d
1.4431	54.15258	76.78285	100.50000	0.0090496	-0.26004	-0.25997	0.010875	d
1.9241	54.11577	77.26246	100.50000	0.0028564	-0.080081	-0.080064	0.0032797	d
2.4051	54.07896	77.74208	100.50000	0.0	0.0	0.0	0.0	d
2.8862	54.04215	78.22169	100.50000	0.0	0.0	0.0	0.0	d
3.3672	54.00535	78.70131	100.50000	0.0	0.0	0.0	0.0	d
3.8482	53.96854	79.18092	100.50000	0.0	0.0	0.0	0.0	d
4.3292	53.93173	79.66054	100.50000	0.0	0.0	0.0	0.0	d
4.8103	53.89492	80.14015	100.50000	0.0	0.0	0.0	0.0	d
5.2913	53.85812	80.61977	100.50000	0.0	0.0	0.0	0.0	d
5.7723	53.82131	81.09938	100.50000	0.0	0.0	0.0	0.0	d
6.2533	53.78450	81.57900	100.50000	0.0	0.0	0.0	0.0	d
6.7344	53.74769	82.05862	100.50000	0.0	0.0	0.0	0.0	d
7.2154	53.71088	82.53823	100.50000	0.0	0.0	0.0	0.0	d
7.6964	53.67408	83.01785	100.50000	0.0	0.0	0.0	0.0	d
8.1774	53.63727	83.49746	100.50000	0.0	0.0	0.0	0.0	d
8.6585	53.60046	83.97708	100.50000	0.0	0.0	0.0	0.0	d
9.1395	53.56365	84.45669	100.50000	0.0	0.0	0.0	0.0	d
9.6205	53.52685	84.93631	100.50000	0.0	0.0	0.0	0.0	d
10.102	53.49004	85.41592	100.50000	0.0	0.0	0.0	0.0	d
10.583	53.45323	85.89554	100.50000	0.0	0.0	0.0	0.0	d
11.064	53.41642	86.37515	100.50000	0.0	0.0	0.0	0.0	d
11.545	53.37962	86.85477	100.50000	0.0	0.0	0.0	0.0	d
12.026	53.34281	87.33438	100.50000	0.0	0.0	0.0	0.0	d
12.507	53.30600	87.81400	100.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Structure: DH-8 | Sub-structure: DH-8

Dist.	Coordinates			Displacements				
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	53.30600	87.81400	100.50000	0.0	0.0	0.0	0.0	d
0.48457	52.82250	87.78178	100.50000	0.0	0.0	0.0	0.0	d
0.96915	52.33900	87.74956	100.50000	0.0	0.0	0.0	0.0	d
1.4537	51.85550	87.71733	100.50000	0.0	0.0	0.0	0.0	d
1.9383	51.37200	87.68511	100.50000	0.0	0.0	0.0	0.0	d
2.4229	50.88850	87.65289	100.50000	0.0	0.0	0.0	0.0	d
2.9074	50.40500	87.62067	100.50000	0.0	0.0	0.0	0.0	d
3.3920	49.92150	87.58844	100.50000	0.0	0.0	0.0	0.0	d
3.8766	49.43800	87.55622	100.50000	0.0	0.0	0.0	0.0	d
4.3612	48.95450	87.52400	100.50000	0.0	0.0	0.0	0.0	d
4.8457	48.47100	87.49178	100.50000	0.0	0.0	0.0	0.0	d
5.3303	47.98750	87.45956	100.50000	0.0	0.0	0.0	0.0	d
5.8149	47.50400	87.42733	100.50000	0.0	0.0	0.0	0.0	d
6.2994	47.02050	87.39511	100.50000	0.0	0.0	0.0	0.0	d
6.7840	46.53700	87.36289	100.50000	0.0	0.0	0.0	0.0	d
7.2686	46.05350	87.33067	100.50000	0.0	0.0	0.0	0.0	d
7.7532	45.57000	87.29844	100.50000	0.0	0.0	0.0	0.0	d
8.2377	45.08650	87.26622	100.50000	0.0	0.0	0.0	0.0	d
8.7223	44.60300	87.23400	100.50000	0.0	0.0	0.0	0.0	d

d - Displacements include imported displacements.

Specific Building Damage Results - Vertical Displacements

Structure: GVA-1 | Sub-structure: GVA-1

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	9.25200	89.52300	100.50000	-0.0090193 d
0.48595	9.22654	89.03772	100.50000	-0.0089555 d
0.97189	9.20108	88.55244	100.50000	-0.0088852 d
1.4578	9.17562	88.06716	100.50000	-0.0088082 d
1.9438	9.15016	87.58188	100.50000	-0.0087243 d
2.4297	9.12470	87.09660	100.50000	-0.0086332 d
2.9157	9.09924	86.61132	100.50000	-0.0085348 d
3.4016	9.07378	86.12604	100.50000	-0.0084287 d
3.8876	9.04832	85.64076	100.50000	-0.0083147 d
4.3735	9.02286	85.15548	100.50000	-0.0081927 d
4.8595	8.99740	84.67020	100.50000	-0.0080623 d
5.3454	8.97194	84.18492	100.50000	-0.0079233 d
5.8314	8.94648	83.69964	100.50000	-0.0077756 d
6.3173	8.92102	83.21436	100.50000	-0.0076188 d
6.8033	8.89556	82.72908	100.50000	-0.0074527 d
7.2892	8.87010	82.24380	100.50000	-0.0072772 d
7.7752	8.84464	81.75852	100.50000	-0.0070919 d
8.2611	8.81918	81.27324	100.50000	-0.0068967 d
8.7471	8.79372	80.78796	100.50000	-0.0066914 d
9.2330	8.76826	80.30268	100.50000	-0.0064757 d
9.7189	8.74280	79.81740	100.50000	-0.0062495 d
10.205	8.71734	79.33212	100.50000	-0.0060126 d
10.691	8.69188	78.84684	100.50000	-0.0057648 d
11.177	8.66642	78.36156	100.50000	-0.0055059 d
11.663	8.64096	77.87628	100.50000	-0.0052359 d
12.149	8.61550	77.39100	100.50000	-0.0049545 d
12.635	8.59004	76.90572	100.50000	-0.0046616 d
13.121	8.56458	76.42044	100.50000	-0.0043572 d
13.607	8.53912	75.93516	100.50000	-0.0040412 d
14.092	8.51366	75.44988	100.50000	-0.0037135 d
14.578	8.48820	74.96460	100.50000	-0.0033740 d
15.064	8.46274	74.47932	100.50000	-0.0030228 d
15.550	8.43728	73.99404	100.50000	-0.0026599 d
16.036	8.41182	73.50876	100.50000	-0.0022853 d
16.522	8.38636	73.02348	100.50000	-0.0018991 d
17.008	8.36090	72.53820	100.50000	-0.0015013 d
17.494	8.33544	72.05292	100.50000	-0.0010922 d
17.980	8.30998	71.56764	100.50000	-671.82E-6 d
18.466	8.28452	71.08236	100.50000	-240.42E-6 d
18.952	8.25906	70.59708	100.50000	201.77E-6 d
19.438	8.23360	70.11180	100.50000	654.48E-6 d
19.924	8.20814	69.62652	100.50000	0.0011174 d
20.410	8.18268	69.14124	100.50000	0.0015902 d
20.896	8.15722	68.65596	100.50000	0.0020724 d
21.382	8.13176	68.17068	100.50000	0.0025636 d
21.868	8.10630	67.68540	100.50000	0.0030634 d
22.354	8.08084	67.20012	100.50000	0.0035712 d
22.840	8.05538	66.71484	100.50000	0.0040864 d
23.325	8.02992	66.22956	100.50000	0.0046085 d
23.811	8.00446	65.74428	100.50000	0.0051367 d
24.297	7.97900	65.25900	100.50000	0.0056704 d

d - Displacements include imported displacements.

Structure: GVA-2 | Sub-structure: GVA-2

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	7.97900	65.25900	100.50000	0.0056704 d
0.48050	7.95067	64.77933	100.50000	0.0061950 d
0.96101	7.92233	64.29967	100.50000	0.0067229 d
1.4415	7.89400	63.82000	100.50000	0.0072533 d
1.9220	7.86567	63.34033	100.50000	0.0077853 d

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
2.4025	7.83733	62.86067	100.50000	0.0083180	d
2.8830	7.80900	62.38100	100.50000	0.0088506	d

d - Displacements include imported displacements.

Structure: GVA-3 | Sub-structure: GVA-3

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	7.80900	62.38100	100.50000	0.0088506	d
0.47715	8.28487	62.34613	100.50000	0.010279	d
0.95430	8.76075	62.31125	100.50000	0.011804	d
1.4315	9.23663	62.27638	100.50000	0.013431	d
1.9086	9.71250	62.24150	100.50000	0.015167	d
2.3858	10.18838	62.20662	100.50000	0.017018	d
2.8629	10.66425	62.17175	100.50000	0.018992	d
3.3401	11.14012	62.13687	100.50000	0.021096	d
3.8172	11.61600	62.10200	100.50000	0.023339	d

d - Displacements include imported displacements.

Structure: GVA-4 | Sub-structure: GVA-4

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	11.61600	62.10200	100.50000	0.023339	d
0.47359	11.65050	62.57433	100.50000	0.022404	d
0.94718	11.68500	63.04667	100.50000	0.021470	d
1.4208	11.71950	63.51900	100.50000	0.020538	d
1.8944	11.75400	63.99133	100.50000	0.019609	d
2.3680	11.78850	64.46367	100.50000	0.018684	d
2.8415	11.82300	64.93600	100.50000	0.017766	d

d - Displacements include imported displacements.

Structure: GVA-5 | Sub-structure: GVA-5

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	11.82300	64.93600	100.50000	0.017766	d
0.48843	12.31013	64.90031	100.50000	0.019768	d
0.97686	12.79725	64.86463	100.50000	0.021898	d
1.4653	13.28438	64.82894	100.50000	0.024163	d
1.9537	13.77150	64.79325	100.50000	0.026573	d
2.4422	14.25863	64.75756	100.50000	0.029134	d
2.9306	14.74575	64.72187	100.50000	0.060949	d
3.4190	15.23288	64.68619	100.50000	0.15324	d
3.9074	15.72000	64.65050	100.50000	0.24538	d
4.3959	16.20713	64.61481	100.50000	0.34864	d
4.8843	16.69425	64.57913	100.50000	0.46997	d
5.3727	17.18138	64.54344	100.50000	0.58505	d
5.8612	17.66850	64.50775	100.50000	0.69579	d
6.3496	18.15563	64.47206	100.50000	0.80394	d
6.8380	18.64275	64.43637	100.50000	0.91111	d
7.3265	19.12988	64.40069	100.50000	1.0187	d
7.8149	19.61700	64.36500	100.50000	1.1280	d

d - Displacements include imported displacements.

Structure: GVA-6 | Sub-structure: GVA-6

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	19.61700	64.36500	100.50000	1.1280	d
0.49248	19.58100	63.87383	100.50000	1.1897	d
0.98497	19.54500	63.38267	100.50000	1.2501	d
1.4775	19.50900	62.89150	100.50000	1.3093	d
1.9699	19.47300	62.40033	100.50000	1.3670	d
2.4624	19.43700	61.90917	100.50000	1.4231	d
2.9549	19.40100	61.41800	100.50000	1.4774	d

d - Displacements include imported displacements.

Structure: GVA-7 | Sub-structure: GVA-7

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	19.40100	61.41800	100.50000	1.4774	d
0.46449	19.86425	61.38412	100.50000	1.6079	d
0.92897	20.32750	61.35025	100.50000	1.7452	d
1.3935	20.79075	61.31638	100.50000	1.8900	d
1.8579	21.25400	61.28250	100.50000	2.0426	d
2.3224	21.71725	61.24862	100.50000	2.2034	d
2.7869	22.18050	61.21475	100.50000	2.3725	d
3.2514	22.64375	61.18088	100.50000	2.5500	d
3.7159	23.10700	61.14700	100.50000	2.7358	d

d - Displacements include imported displacements.

Structure: GVA-8 | Sub-structure: GVA-8

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	23.10700	61.14700	100.50000	2.7358	d
0.49250	23.13267	61.63883	100.50000	2.6302	d
0.98501	23.15833	62.13067	100.50000	2.5226	d
1.4775	23.18400	62.62250	100.50000	2.4137	d
1.9700	23.20967	63.11433	100.50000	2.3041	d
2.4625	23.23533	63.60617	100.50000	2.1944	d
2.9550	23.26100	64.09800	100.50000	2.0850	d

d - Displacements include imported displacements.

Structure: GVA-9 | Sub-structure: GVA-9

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	23.26100	64.09800	100.50000	2.0850	d
0.49313	23.28670	64.59046	100.50000	1.9763	d
0.98626	23.31240	65.08292	100.50000	1.8690	d
1.4794	23.33810	65.57538	100.50000	1.7631	d
1.9725	23.36380	66.06784	100.50000	1.6592	d
2.4657	23.38950	66.56030	100.50000	1.5572	d
2.9588	23.41520	67.05276	100.50000	1.4573	d
3.4519	23.44090	67.54522	100.50000	1.3595	d
3.9450	23.46660	68.03768	100.50000	1.2635	d
4.4382	23.49230	68.53014	100.50000	1.1692	d
4.9313	23.51800	69.02260	100.50000	1.0761	d

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
5.4244	23.54370	69.51506	100.50000	0.98376 d
5.9176	23.56940	70.00752	100.50000	0.89156 d
6.4107	23.59510	70.49998	100.50000	0.79872 d
6.9038	23.62080	70.99244	100.50000	0.70433 d
7.3970	23.64650	71.48490	100.50000	0.60736 d
7.8901	23.67220	71.97736	100.50000	0.50661 d
8.3832	23.69790	72.46982	100.50000	0.40075 d
8.8763	23.72360	72.96228	100.50000	0.29413 d
9.3695	23.74930	73.45474	100.50000	0.21122 d
9.8626	23.77500	73.94720	100.50000	0.12775 d
10.356	23.80070	74.43966	100.50000	0.043753 d
10.849	23.82640	74.93212	100.50000	0.030377 d
11.342	23.85210	75.42458	100.50000	0.028062 d
11.835	23.87780	75.91704	100.50000	0.025859 d
12.328	23.90350	76.40950	100.50000	0.023763 d
12.821	23.92920	76.90196	100.50000	0.021770 d
13.315	23.95490	77.39442	100.50000	0.019877 d
13.808	23.98060	77.88688	100.50000	0.018079 d
14.301	24.00630	78.37934	100.50000	0.016373 d
14.794	24.03200	78.87180	100.50000	0.014754 d
15.287	24.05770	79.36426	100.50000	0.013220 d
15.780	24.08340	79.85672	100.50000	0.011765 d
16.273	24.10910	80.34918	100.50000	0.010388 d
16.766	24.13480	80.84164	100.50000	0.0090844 d
17.260	24.16050	81.33410	100.50000	0.0078510 d
17.753	24.18620	81.82656	100.50000	0.0066847 d
18.246	24.21190	82.31902	100.50000	0.0055827 d
18.739	24.23760	82.81148	100.50000	0.0045419 d
19.232	24.26330	83.30394	100.50000	0.0035594 d
19.725	24.28900	83.79640	100.50000	0.0026327 d
20.218	24.31470	84.28886	100.50000	0.0017591 d
20.711	24.34040	84.78132	100.50000	936.00E-6 d
21.205	24.36610	85.27378	100.50000	161.10E-6 d
21.698	24.39180	85.76624	100.50000	-567.94E-6 d
22.191	24.41750	86.25870	100.50000	-0.0012533 d
22.684	24.44320	86.75116	100.50000	-0.0018972 d
23.177	24.46890	87.24362	100.50000	-0.0025016 d
23.670	24.49460	87.73608	100.50000	-0.0030685 d
24.163	24.52030	88.22854	100.50000	-0.0035996 d
24.657	24.54600	88.72100	100.50000	-0.0040969 d

d - Displacements include imported displacements.

Structure: GVA-10 | Sub-structure: GVA-10

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	24.54600	88.72100	100.50000	-0.0040969 d
0.47859	24.06806	88.74606	100.50000	-0.0043612 d
0.95719	23.59013	88.77112	100.50000	-0.0046185 d
1.4358	23.11219	88.79619	100.50000	-0.0048686 d
1.9144	22.63425	88.82125	100.50000	-0.0051114 d
2.3930	22.15631	88.84631	100.50000	-0.0053468 d
2.8716	21.67837	88.87138	100.50000	-0.0055748 d
3.3502	21.20044	88.89644	100.50000	-0.0057954 d
3.8288	20.72250	88.92150	100.50000	-0.0060086 d
4.3073	20.24456	88.94656	100.50000	-0.0062142 d
4.7859	19.76662	88.97163	100.50000	-0.0064124 d
5.2645	19.28869	88.99669	100.50000	-0.0066032 d
5.7431	18.81075	89.02175	100.50000	-0.0067865 d
6.2217	18.33281	89.04681	100.50000	-0.0069624 d
6.7003	17.85488	89.07188	100.50000	-0.0071310 d
7.1789	17.37694	89.09694	100.50000	-0.0072923 d
7.6575	16.89900	89.12200	100.50000	-0.0074465 d
8.1361	16.42106	89.14706	100.50000	-0.0075935 d
8.6147	15.94313	89.17212	100.50000	-0.0077335 d
9.0933	15.46519	89.19719	100.50000	-0.0078665 d
9.5719	14.98725	89.22225	100.50000	-0.0079928 d
10.050	14.50931	89.24731	100.50000	-0.0081123 d
10.529	14.03138	89.27237	100.50000	-0.0082252 d
11.008	13.55344	89.29744	100.50000	-0.0083316 d
11.486	13.07550	89.32250	100.50000	-0.0084317 d
11.965	12.59756	89.34756	100.50000	-0.0085255 d
12.443	12.11963	89.37262	100.50000	-0.0086132 d
12.922	11.64169	89.39769	100.50000	-0.0086950 d
13.401	11.16375	89.42275	100.50000	-0.0087709 d
13.879	10.68581	89.44781	100.50000	-0.0088412 d
14.358	10.20788	89.47288	100.50000	-0.0089059 d
14.836	9.72994	89.49794	100.50000	-0.0089652 d
15.315	9.25200	89.52300	100.50000	-0.0090193 d

d - Displacements include imported displacements.

Structure: GE-1 | Sub-structure: GE-1

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	28.56700	64.11000	100.50000	3.8207 d
0.49454	29.06094	64.13431	100.50000	3.9750 d
0.98907	29.55487	64.15863	100.50000	4.1250 d
1.4836	30.04881	64.18294	100.50000	4.2697 d
1.9781	30.54275	64.20725	100.50000	4.4083 d
2.4727	31.03669	64.23156	100.50000	4.5396 d
2.9672	31.53063	64.25588	100.50000	4.6629 d
3.4617	32.02456	64.28019	100.50000	4.7773 d
3.9563	32.51850	64.30450	100.50000	4.8818 d
4.4508	33.01244	64.32881	100.50000	4.9759 d
4.9454	33.50637	64.35312	100.50000	5.0588 d
5.4399	34.00031	64.37744	100.50000	5.1300 d
5.9344	34.49425	64.40175	100.50000	5.1890 d
6.4290	34.98819	64.42606	100.50000	5.2354 d
6.9235	35.48212	64.45037	100.50000	5.2688 d
7.4180	35.97606	64.47469	100.50000	5.2890 d
7.9126	36.47000	64.49900	100.50000	5.3018 d

d - Displacements include imported displacements.

Structure: GE-2 | Sub-structure: GE-2

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	36.47000	64.49900	100.50000	5.3018 d
0.49291	36.44014	64.99100	100.50000	4.9778 d
0.98581	36.41029	65.48300	100.50000	4.6620 d
1.4787	36.38043	65.97500	100.50000	4.3556 d
1.9716	36.35057	66.46700	100.50000	4.0597 d
2.4645	36.32071	66.95900	100.50000	3.7752 d
2.9574	36.29086	67.45100	100.50000	3.5029 d
3.4503	36.26100	67.94300	100.50000	3.2432 d
3.9432	36.23114	68.43500	100.50000	2.9966 d
4.4361	36.20129	68.92700	100.50000	2.7632 d
4.9291	36.17143	69.41900	100.50000	2.5432 d
5.4220	36.14157	69.91100	100.50000	2.3363 d
5.9149	36.11171	70.40300	100.50000	2.1422 d
6.4078	36.08186	70.89500	100.50000	1.9604 d
6.9007	36.05200	71.38700	100.50000	1.7901 d
7.3936	36.02214	71.87900	100.50000	1.6306 d
7.8865	35.99229	72.37100	100.50000	1.4807 d
8.3794	35.96243	72.86300	100.50000	1.3391 d
8.8723	35.93257	73.35500	100.50000	1.2046 d
9.3652	35.90271	73.84700	100.50000	1.0753 d

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
9.8581	35.87286	74.33900	100.50000	0.94963 d
10.351	35.84300	74.83100	100.50000	0.82546 d
10.844	35.81314	75.32300	100.50000	0.70067 d
11.337	35.78329	75.81500	100.50000	0.57290 d
11.830	35.75343	76.30700	100.50000	0.43960 d
12.323	35.72357	76.79900	100.50000	0.30813 d
12.816	35.69371	77.29100	100.50000	0.20442 d
13.308	35.66386	77.78300	100.50000	0.10105 d
13.801	35.63400	78.27500	100.50000	0.050324 d

d - Displacements include imported displacements.

Structure: GE-3 | Sub-structure: GE-3

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	35.63400	78.27500	100.50000	0.050324 d
0.47806	35.15681	78.24606	100.50000	0.049122 d
0.95613	34.67963	78.21713	100.50000	0.047897 d
1.4342	34.20244	78.18819	100.50000	0.046650 d
1.9123	33.72525	78.15925	100.50000	0.045385 d
2.3903	33.24806	78.13031	100.50000	0.044103 d
2.8684	32.77087	78.10138	100.50000	0.042807 d
3.3464	32.29369	78.07244	100.50000	0.041500 d
3.8245	31.81650	78.04350	100.50000	0.040185 d
4.3026	31.33931	78.01456	100.50000	0.038863 d
4.7806	30.86212	77.98562	100.50000	0.037537 d
5.2587	30.38494	77.95669	100.50000	0.036211 d
5.7368	29.90775	77.92775	100.50000	0.034885 d
6.2148	29.43056	77.89881	100.50000	0.033562 d
6.6929	28.95338	77.86987	100.50000	0.032244 d
7.1710	28.47619	77.84094	100.50000	0.030934 d
7.6490	27.99900	77.81200	100.50000	0.029633 d

d - Displacements include imported displacements.

Structure: GE-4 | Sub-structure: GE-4

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	27.99900	77.81200	100.50000	0.029633 d
0.48978	28.01929	77.32264	100.50000	0.032397 d
0.97955	28.03957	76.83329	100.50000	0.035334 d
1.4693	28.05986	76.34393	100.50000	0.073982 d
1.9591	28.08014	75.85457	100.50000	0.17048 d
2.4489	28.10043	75.36521	100.50000	0.26698 d
2.9387	28.12071	74.87586	100.50000	0.38143 d
3.4284	28.14100	74.38650	100.50000	0.50726 d
3.9182	28.16129	73.89714	100.50000	0.62701 d
4.4080	28.18157	73.40779	100.50000	0.74285 d
4.8978	28.20186	72.91843	100.50000	0.85676 d
5.3876	28.22214	72.42907	100.50000	0.97053 d
5.8773	28.24243	71.93971	100.50000	1.0858 d
6.3671	28.26271	71.45036	100.50000	1.2041 d
6.8569	28.28300	70.96100	100.50000	1.3266 d
7.3467	28.30329	70.47164	100.50000	1.4545 d
7.8364	28.32357	69.98229	100.50000	1.5887 d
8.3262	28.34386	69.49293	100.50000	1.7300 d
8.8160	28.36414	69.00357	100.50000	1.8791 d
9.3058	28.38443	68.51421	100.50000	2.0364 d
9.7955	28.40471	68.02486	100.50000	2.2022 d
10.285	28.42500	67.53550	100.50000	2.3767 d
10.775	28.44529	67.04614	100.50000	2.5598 d
11.265	28.46557	66.55679	100.50000	2.7513 d
11.755	28.48586	66.06743	100.50000	2.9511 d
12.244	28.50614	65.57807	100.50000	3.1585 d
12.734	28.52643	65.08871	100.50000	3.3731 d
13.224	28.54671	64.59936	100.50000	3.5941 d
13.714	28.56700	64.11000	100.50000	3.8207 d

d - Displacements include imported displacements.

Structure: DH-1 | Sub-structure: DH-1

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	44.60300	87.23400	100.50000	0.010677 d
0.48563	44.63204	86.74924	100.50000	0.012372 d
0.97126	44.66109	86.26448	100.50000	0.014190 d
1.4569	44.69013	85.77972	100.50000	0.016141 d
1.9425	44.71917	85.29496	100.50000	0.018235 d
2.4282	44.74822	84.81020	100.50000	0.020480 d
2.9138	44.77726	84.32543	100.50000	0.022888 d
3.3994	44.80630	83.84067	100.50000	0.025470 d
3.8850	44.83535	83.35591	100.50000	0.028239 d
4.3707	44.86439	82.87115	100.50000	0.031208 d
4.8563	44.89343	82.38639	100.50000	0.034391 d
5.3419	44.92248	81.90163	100.50000	0.037804 d
5.8276	44.95152	81.41687	100.50000	0.041464 d
6.3132	44.98057	80.93211	100.50000	0.045387 d
6.7988	45.00961	80.44735	100.50000	0.049594 d
7.2845	45.03865	79.96259	100.50000	0.054105 d
7.7701	45.06770	79.47783	100.50000	0.058943 d
8.2557	45.09674	78.99307	100.50000	0.064131 d
8.7413	45.12578	78.50830	100.50000	0.069695 d
9.2270	45.15483	78.02354	100.50000	0.16274 d
9.7126	45.18387	77.53878	100.50000	0.26626 d
10.198	45.21291	77.05402	100.50000	0.37578 d
10.684	45.24196	76.56926	100.50000	0.51366 d
11.169	45.27100	76.08450	100.50000	0.64468 d
11.655	45.30004	75.59974	100.50000	0.77139 d
12.141	45.32909	75.11498	100.50000	0.89618 d
12.626	45.35813	74.63022	100.50000	1.0213 d
13.112	45.38717	74.14546	100.50000	1.1487 d
13.598	45.41622	73.66070	100.50000	1.2803 d
14.083	45.44526	73.17593	100.50000	1.4178 d
14.569	45.47430	72.69117	100.50000	1.5628 d
15.055	45.50335	72.20641	100.50000	1.7164 d
15.540	45.53239	71.72165	100.50000	1.8801 d
16.026	45.56143	71.23689	100.50000	2.0547 d
16.511	45.59048	70.75213	100.50000	2.2411 d
16.997	45.61952	70.26737	100.50000	2.4399 d
17.483	45.64857	69.78261	100.50000	2.6517 d
17.968	45.67761	69.29785	100.50000	2.8769 d
18.454	45.70665	68.81309	100.50000	3.1155 d
18.940	45.73570	68.32833	100.50000	3.3676 d
19.425	45.76474	67.84357	100.50000	3.6330 d
19.911	45.79378	67.35880	100.50000	3.9115 d
20.396	45.82283	66.87404	100.50000	4.2025 d
20.882	45.85187	66.38928	100.50000	4.5054 d
21.368	45.88091	65.90452	100.50000	4.8195 d
21.853	45.90996	65.41976	100.50000	5.1438 d
22.339	45.93900	64.93500	100.50000	5.4772 d

d - Displacements include imported displacements.

Structure: DH-2 | Sub-structure: DH-2

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

Vertical Offset 1

0.0	45.93900	64.93500	100.50000	5.4772	d
0.49257	46.43032	64.97005	100.50000	5.4713	d
0.98513	46.92163	65.00510	100.50000	5.4648	d
1.4777	47.41295	65.04014	100.50000	5.4576	d
1.9703	47.90427	65.07519	100.50000	5.4497	d
2.4628	48.39559	65.11024	100.50000	5.4411	d
2.9554	48.88690	65.14529	100.50000	5.4320	d
3.4480	49.37822	65.18034	100.50000	5.4221	d
3.9405	49.86954	65.21538	100.50000	5.4116	d
4.4331	50.36086	65.25043	100.50000	5.4006	d
4.9257	50.85217	65.28548	100.50000	5.3889	d
5.4182	51.34349	65.32053	100.50000	5.3766	d
5.9108	51.83481	65.35558	100.50000	5.3637	d
6.4034	52.32612	65.39063	100.50000	5.3503	d
6.8959	52.81744	65.42567	100.50000	5.3363	d
7.3885	53.30876	65.46072	100.50000	5.3217	d
7.8811	53.80008	65.49577	100.50000	5.3067	d
8.3736	54.29139	65.53082	100.50000	5.2911	d
8.8662	54.78271	65.56587	100.50000	5.2714	d
9.3588	55.27403	65.60091	100.50000	5.2389	d
9.8513	55.76535	65.63596	100.50000	5.1936	d
10.344	56.25666	65.67101	100.50000	5.1358	d
10.836	56.74798	65.70606	100.50000	5.0727	d
11.329	57.23930	65.74111	100.50000	5.0095	d
11.822	57.73062	65.77615	100.50000	4.9462	d
12.314	58.22193	65.81120	100.50000	4.8827	d
12.807	58.71325	65.84625	100.50000	4.8192	d
13.299	59.20457	65.88130	100.50000	4.7557	d
13.792	59.69588	65.91635	100.50000	4.6923	d
14.284	60.18720	65.95139	100.50000	4.6289	d
14.777	60.67852	65.98644	100.50000	4.5656	d
15.270	61.16984	66.02149	100.50000	4.5025	d
15.762	61.66115	66.05654	100.50000	4.4396	d
16.255	62.15247	66.09159	100.50000	4.3769	d
16.747	62.64379	66.12663	100.50000	4.3146	d
17.240	63.13511	66.16168	100.50000	4.2526	d
17.732	63.62642	66.19673	100.50000	4.1910	d
18.225	64.11774	66.23178	100.50000	4.1298	d
18.718	64.60906	66.26683	100.50000	4.0642	d
19.210	65.10038	66.30187	100.50000	3.9896	d
19.703	65.59169	66.33692	100.50000	3.9066	d
20.195	66.08301	66.37197	100.50000	3.8158	d
20.688	66.57433	66.40702	100.50000	3.7178	d
21.180	67.06564	66.44207	100.50000	3.6133	d
21.673	67.55696	66.47712	100.50000	3.5030	d
22.165	68.04828	66.51216	100.50000	3.3877	d
22.658	68.53960	66.54721	100.50000	3.2681	d
23.151	69.03091	66.58226	100.50000	3.1450	d
23.643	69.52223	66.61731	100.50000	3.0192	d
24.136	70.01355	66.65236	100.50000	2.8915	d
24.628	70.50487	66.68740	100.50000	2.7627	d
25.121	70.99618	66.72245	100.50000	2.6333	d
25.613	71.48750	66.75750	100.50000	2.5042	d
26.106	71.97882	66.79255	100.50000	2.3760	d
26.599	72.47013	66.82760	100.50000	2.2492	d
27.091	72.96145	66.86264	100.50000	2.1244	d
27.584	73.45277	66.89769	100.50000	2.0019	d
28.076	73.94409	66.93274	100.50000	1.8822	d
28.569	74.43540	66.96779	100.50000	1.7654	d
29.061	74.92672	67.00284	100.50000	1.6517	d
29.554	75.41804	67.03788	100.50000	1.5413	d
30.047	75.90936	67.07293	100.50000	1.4338	d
30.539	76.40067	67.10798	100.50000	1.3294	d
31.032	76.89199	67.14303	100.50000	1.2275	d
31.524	77.38331	67.17808	100.50000	1.1278	d
32.017	77.87463	67.21313	100.50000	1.0296	d
32.509	78.36594	67.24817	100.50000	0.93241	d
33.002	78.85726	67.28322	100.50000	0.83521	d
33.494	79.34858	67.31827	100.50000	0.73706	d
33.987	79.83989	67.35332	100.50000	0.63681	d
34.480	80.33121	67.38837	100.50000	0.53316	d
34.972	80.82253	67.42341	100.50000	0.42466	d
35.465	81.31385	67.45846	100.50000	0.30874	d
35.957	81.80516	67.49351	100.50000	0.22302	d
36.450	82.29648	67.52856	100.50000	0.13688	d
36.942	82.78780	67.56361	100.50000	0.050328	d
37.435	83.27912	67.59865	100.50000	0.027893	d
37.928	83.77043	67.63370	100.50000	0.025508	d
38.420	84.26175	67.66875	100.50000	0.023255	d
38.913	84.75307	67.70380	100.50000	0.021129	d
39.405	85.24438	67.73885	100.50000	0.019123	d
39.898	85.73570	67.77389	100.50000	0.017231	d
40.390	86.22702	67.80894	100.50000	0.015448	d
40.883	86.71834	67.84399	100.50000	0.013767	d
41.376	87.20965	67.87904	100.50000	0.012184	d
41.868	87.70097	67.91409	100.50000	0.010693	d
42.361	88.19229	67.94913	100.50000	0.0092909	d
42.853	88.68361	67.98418	100.50000	0.0079718	d
43.346	89.17492	68.01923	100.50000	0.0067317	d
43.838	89.66624	68.05428	100.50000	0.0055665	d
44.331	90.15756	68.08933	100.50000	0.0044722	d
44.823	90.64888	68.12438	100.50000	0.0034451	d
45.316	91.14019	68.15942	100.50000	0.0024816	d
45.809	91.63151	68.19447	100.50000	0.0015783	d
46.301	92.12283	68.22952	100.50000	732.03E-6	d
46.794	92.61414	68.26457	100.50000	-60.368E-6	d
47.286	93.10546	68.29962	100.50000	-801.79E-6	d
47.779	93.59678	68.33466	100.50000	-0.0014950	d
48.271	94.08810	68.36971	100.50000	-0.0021426	d
48.764	94.57941	68.40476	100.50000	-0.0027472	d
49.257	95.07073	68.43981	100.50000	-0.0033111	d
49.749	95.56205	68.47486	100.50000	-0.0038365	d
50.242	96.05337	68.50990	100.50000	-0.0043255	d
50.734	96.54468	68.54495	100.50000	-0.0047803	d
51.227	97.03600	68.58000	100.50000	-0.0052027	d

d - Displacements include imported displacements.

Structure: DH-3 | Sub-structure: DH-3

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

Vertical Offset 1

0.0	97.03600	68.58000	100.50000	-0.0052027	d
0.48909	96.99859	69.06765	100.50000	-0.0053821	d
0.97817	96.96117	69.55530	100.50000	-0.0055590	d
1.4673	96.92376	70.04296	100.50000	-0.0057330	d
1.9563	96.88635	70.53061	100.50000	-0.0059039	d
2.4454	96.84893	71.01826	100.50000	-0.0060717	d
2.9345	96.81152	71.50591	100.50000	-0.0062360	d
3.4236	96.77411	71.99357	100.50000	-0.0063967	d
3.9127	96.73670	72.48122	100.50000	-0.0065537	d
4.4018	96.69928	72.96887	100.50000	-0.0067068	d
4.8909	96.66187	73.45652	100.50000	-0.0068558	d
5.3799	96.62446	73.94417	100.50000	-0.0070008	d
5.8690	96.58704	74.43183	100.50000	-0.0071415	d
6.3581	96.54963	74.91948	100.50000	-0.0072778	d
6.8472	96.51222	75.40713	100.50000	-0.0074098	d
7.3363	96.47480	75.89478	100.50000	-0.0075373	d
7.8254	96.43739	76.38243	100.50000	-0.0076603	d
8.3144	96.39998	76.87009	100.50000	-0.0077787	d
8.8035	96.36257	77.35774	100.50000	-0.0078925	d
9.2926	96.32515	77.84539	100.50000	-0.0080017	d
9.7817	96.28774	78.33304	100.50000	-0.0081062	d
10.271	96.25033	78.82070	100.50000	-0.0082061	d
10.760	96.21291	79.30835	100.50000	-0.0083013	d
11.249	96.17550	79.79600	100.50000	-0.0083919	d

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
11.738	96.13809	80.28365	100.50000	-0.0084779 d
12.227	96.10067	80.77130	100.50000	-0.0085594 d
12.716	96.06326	81.25896	100.50000	-0.0086362 d
13.205	96.02585	81.74661	100.50000	-0.0087086 d
13.694	95.98843	82.23426	100.50000	-0.0087765 d
14.183	95.95102	82.72191	100.50000	-0.0088400 d
14.673	95.91361	83.20957	100.50000	-0.0088991 d
15.162	95.87620	83.69722	100.50000	-0.0089540 d
15.651	95.83878	84.18487	100.50000	-0.0090046 d
16.140	95.80137	84.67252	100.50000	-0.0090511 d
16.629	95.76396	85.16017	100.50000	-0.0090935 d
17.118	95.72654	85.64783	100.50000	-0.0091319 d
17.607	95.68913	86.13548	100.50000	-0.0091664 d
18.096	95.65172	86.62313	100.50000	-0.0091971 d
18.585	95.61430	87.11078	100.50000	-0.0092240 d
19.074	95.57689	87.59843	100.50000	-0.0092472 d
19.563	95.53948	88.08609	100.50000	-0.0092669 d
20.052	95.50207	88.57374	100.50000	-0.0092831 d
20.542	95.46465	89.06139	100.50000	-0.0092959 d
21.031	95.42724	89.54904	100.50000	-0.0093053 d
21.520	95.38983	90.03670	100.50000	-0.0093116 d
22.009	95.35241	90.52435	100.50000	-0.0093147 d
22.498	95.31500	91.01200	100.50000	-0.0093149 d

d - Displacements include imported displacements.

Structure: DH-4 | Sub-structure: DH-4

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	95.31500	91.01200	100.50000	-0.0093149 d
0.47118	94.84520	90.97595	100.50000	-0.0093185 d
0.94236	94.37540	90.93990	100.50000	-0.0093189 d
1.4135	93.90560	90.90385	100.50000	-0.0093160 d
1.8847	93.43580	90.86780	100.50000	-0.0093096 d
2.3559	92.96600	90.83175	100.50000	-0.0092996 d
2.8271	92.49620	90.79570	100.50000	-0.0092859 d
3.2983	92.02640	90.75965	100.50000	-0.0092684 d
3.7694	91.55660	90.72360	100.50000	-0.0092468 d
4.2406	91.08680	90.68755	100.50000	-0.0092211 d
4.7118	90.61700	90.65150	100.50000	-0.0091912 d
5.1830	90.14720	90.61545	100.50000	-0.0091569 d
5.6542	89.67740	90.57940	100.50000	-0.0091180 d
6.1254	89.20760	90.54335	100.50000	-0.0090745 d
6.5965	88.73780	90.50730	100.50000	-0.0090262 d
7.0677	88.26800	90.47125	100.50000	-0.0089729 d
7.5389	87.79820	90.43520	100.50000	-0.0089146 d
8.0101	87.32840	90.39915	100.50000	-0.0088510 d
8.4813	86.85860	90.36310	100.50000	-0.0087821 d
8.9524	86.38880	90.32705	100.50000	-0.0087077 d
9.4236	85.91900	90.29100	100.50000	-0.0086277 d

d - Displacements include imported displacements.

Structure: DH-5 | Sub-structure: DH-5

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	85.91900	90.29100	100.50000	-0.0086277 d
0.48006	85.95573	89.81235	100.50000	-0.0085206 d
0.96012	85.99246	89.33369	100.50000	-0.0084046 d
1.4402	86.02919	88.85504	100.50000	-0.0082795 d
1.9202	86.06592	88.37638	100.50000	-0.0081450 d
2.4003	86.10265	87.89773	100.50000	-0.0080006 d
2.8804	86.13938	87.41908	100.50000	-0.0078461 d
3.3604	86.17612	86.94042	100.50000	-0.0076811 d
3.8405	86.21285	86.46177	100.50000	-0.0075052 d
4.3205	86.24958	85.98312	100.50000	-0.0073181 d
4.8006	86.28631	85.50446	100.50000	-0.0071194 d
5.2807	86.32304	85.02581	100.50000	-0.0069088 d
5.7607	86.35977	84.54715	100.50000	-0.0066858 d
6.2408	86.39650	84.06850	100.50000	-0.0064501 d
6.7209	86.43323	83.58985	100.50000	-0.0062014 d
7.2009	86.46996	83.11119	100.50000	-0.0059393 d
7.6810	86.50669	82.63254	100.50000	-0.0056634 d
8.1610	86.54342	82.15388	100.50000	-0.0053733 d
8.6411	86.58015	81.67523	100.50000	-0.0050688 d
9.1212	86.61688	81.19658	100.50000	-0.0047493 d
9.6012	86.65362	80.71792	100.50000	-0.0044147 d
10.081	86.69035	80.23927	100.50000	-0.0040645 d
10.561	86.72708	79.76062	100.50000	-0.0036985 d
11.041	86.76381	79.28196	100.50000	-0.0033163 d
11.521	86.80054	78.80331	100.50000	-0.0029177 d
12.002	86.83727	78.32465	100.50000	-0.0025022 d
12.482	86.87400	77.84600	100.50000	-0.0020698 d

d - Displacements include imported displacements.

Structure: DH-6 | Sub-structure: DH-6

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	86.87400	77.84600	100.50000	-0.0020698 d
0.49556	86.37989	77.80809	100.50000	-0.0015094 d
0.99112	85.88579	77.77018	100.50000	-917.53E-6 d
1.4867	85.39168	77.73227	100.50000	-293.17E-6 d
1.9822	84.89758	77.69436	100.50000	364.91E-6 d
2.4778	84.40347	77.65645	100.50000	0.0010579 d
2.9733	83.90936	77.61855	100.50000	0.0017871 d
3.4689	83.41526	77.58064	100.50000	0.0025536 d
3.9645	82.92115	77.54273	100.50000	0.0033587 d
4.4600	82.42705	77.50482	100.50000	0.0042037 d
4.9556	81.93294	77.46691	100.50000	0.0050897 d
5.4511	81.43883	77.42900	100.50000	0.0060180 d
5.9467	80.94473	77.39109	100.50000	0.0069898 d
6.4423	80.45062	77.35318	100.50000	0.0080063 d
6.9378	79.95652	77.31527	100.50000	0.0090686 d
7.4334	79.46241	77.27736	100.50000	0.010178 d
7.9289	78.96830	77.23945	100.50000	0.011335 d
8.4245	78.47420	77.20155	100.50000	0.012542 d
8.9200	77.98009	77.16364	100.50000	0.013798 d
9.4156	77.48598	77.12573	100.50000	0.015106 d
9.9112	76.99188	77.08782	100.50000	0.016465 d
10.407	76.49777	77.04991	100.50000	0.017878 d
10.902	76.00367	77.01200	100.50000	0.019343 d
11.398	75.50956	76.97409	100.50000	0.020863 d
11.893	75.01545	76.93618	100.50000	0.022437 d
12.389	74.52135	76.89827	100.50000	0.024065 d
12.885	74.02724	76.86036	100.50000	0.025749 d
13.380	73.53314	76.82245	100.50000	0.027488 d
13.876	73.03903	76.78455	100.50000	0.029282 d
14.371	72.54492	76.74664	100.50000	0.031131 d
14.867	72.05082	76.70873	100.50000	0.033034 d
15.362	71.55671	76.67082	100.50000	0.034991 d
15.858	71.06261	76.63291	100.50000	0.037001 d
16.353	70.56850	76.59500	100.50000	0.068145 d
16.849	70.07439	76.55709	100.50000	0.10823 d
17.345	69.58029	76.51918	100.50000	0.14663 d
17.840	69.08618	76.48127	100.50000	0.18331 d
18.336	68.59208	76.44336	100.50000	0.21823 d
18.831	68.09797	76.40545	100.50000	0.25136 d

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
19.327	67.60386	76.36755	100.50000	0.28264 d
19.822	67.10976	76.32964	100.50000	0.31205 d
20.318	66.61565	76.29173	100.50000	0.34547 d
20.813	66.12155	76.25382	100.50000	0.37975 d
21.309	65.62744	76.21591	100.50000	0.41082 d
21.805	65.13333	76.17800	100.50000	0.43884 d
22.300	64.63923	76.14009	100.50000	0.46563 d
22.796	64.14512	76.10218	100.50000	0.49216 d
23.291	63.65102	76.06427	100.50000	0.51845 d
23.787	63.15691	76.02636	100.50000	0.54449 d
24.282	62.66280	75.98845	100.50000	0.57032 d
24.778	62.16870	75.95055	100.50000	0.59594 d
25.273	61.67459	75.91264	100.50000	0.62136 d
25.769	61.18048	75.87473	100.50000	0.64659 d
26.265	60.68638	75.83682	100.50000	0.67165 d
26.760	60.19227	75.79891	100.50000	0.69654 d
27.256	59.69817	75.76100	100.50000	0.72128 d
27.751	59.20406	75.72309	100.50000	0.74588 d
28.247	58.70995	75.68518	100.50000	0.77034 d
28.742	58.21585	75.64727	100.50000	0.79468 d
29.238	57.72174	75.60936	100.50000	0.81890 d
29.733	57.22764	75.57145	100.50000	0.84299 d
30.229	56.73353	75.53355	100.50000	0.86528 d
30.725	56.23942	75.49564	100.50000	0.88485 d
31.220	55.74532	75.45773	100.50000	0.90167 d
31.716	55.25121	75.41982	100.50000	0.91573 d
32.211	54.75711	75.38191	100.50000	0.92699 d
32.707	54.26300	75.34400	100.50000	0.93544 d

d - Displacements include imported displacements.

Structure: DH-7 | Sub-structure: DH-7

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	54.26300	75.34400	100.50000	0.93544 d
0.48103	54.22619	75.82362	100.50000	0.81282 d
0.96205	54.18938	76.30323	100.50000	0.68913 d
1.4431	54.15258	76.78285	100.50000	0.56213 d
1.9241	54.11577	77.26246	100.50000	0.42941 d
2.4051	54.07896	77.74208	100.50000	0.30594 d
2.8862	54.04215	78.22169	100.50000	0.20375 d
3.3672	54.00535	78.70131	100.50000	0.10195 d
3.8482	53.96854	79.18092	100.50000	0.062273 d
4.3292	53.93173	79.66054	100.50000	0.057329 d
4.8103	53.89492	80.14015	100.50000	0.052709 d
5.2913	53.85812	80.61977	100.50000	0.048393 d
5.7723	53.82131	81.09938	100.50000	0.044360 d
6.2533	53.78450	81.57900	100.50000	0.040591 d
6.7344	53.74769	82.05862	100.50000	0.037070 d
7.2154	53.71088	82.53823	100.50000	0.033779 d
7.6964	53.67408	83.01785	100.50000	0.030705 d
8.1774	53.63727	83.49746	100.50000	0.027832 d
8.6585	53.60046	83.97708	100.50000	0.025148 d
9.1395	53.56365	84.45669	100.50000	0.022641 d
9.6205	53.52685	84.93631	100.50000	0.020299 d
10.102	53.49004	85.41592	100.50000	0.018111 d
10.583	53.45323	85.89554	100.50000	0.016068 d
11.064	53.41642	86.37515	100.50000	0.014161 d
11.545	53.37962	86.85477	100.50000	0.012380 d
12.026	53.34281	87.33438	100.50000	0.010718 d
12.507	53.30600	87.81400	100.50000	0.0091672 d

d - Displacements include imported displacements.

Structure: DH-8 | Sub-structure: DH-8

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	53.30600	87.81400	100.50000	0.0091672 d
0.48457	52.82250	87.78178	100.50000	0.0093737 d
0.96915	52.33900	87.74956	100.50000	0.0095674 d
1.4537	51.85550	87.71733	100.50000	0.0097480 d
1.9383	51.37200	87.68511	100.50000	0.0099150 d
2.4229	50.88850	87.65289	100.50000	0.010068 d
2.9074	50.40500	87.62067	100.50000	0.010207 d
3.3920	49.92150	87.58844	100.50000	0.010331 d
3.8766	49.43800	87.55622	100.50000	0.010440 d
4.3612	48.95450	87.52400	100.50000	0.010535 d
4.8457	48.47100	87.49178	100.50000	0.010613 d
5.3303	47.98750	87.45956	100.50000	0.010677 d
5.8149	47.50400	87.42733	100.50000	0.010724 d
6.2994	47.02050	87.39511	100.50000	0.010756 d
6.7840	46.53700	87.36289	100.50000	0.010772 d
7.2686	46.05350	87.33067	100.50000	0.010772 d
7.7532	45.57000	87.29844	100.50000	0.010757 d
8.2377	45.08650	87.26622	100.50000	0.010725 d
8.7223	44.60300	87.23400	100.50000	0.010677 d

d - Displacements include imported displacements.

Specific Building Damage Results - All Segments

Structure: GVA-1 | Sub-structure: GVA-1

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

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

Structure: GVA-2 | Sub-structure: GVA-2

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

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

Structure: GVA-3 | Sub-structure: GVA-3

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

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

Structure: GVA-4 | Sub-structure: GVA-4

Vertical Offset	Segment	Start Length	Curvature	Deflection	Average	Max	Max Gradient	Max Gradient	Min	Damage

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

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

Structure: GVA-5 | Sub-structure: GVA-5

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	3.4190	1.4969	Hogging	0.0010751	0.0096504	0.0097534	-236.66E-6	-248.36E-6	13386.	0 (Negligible)
	2	4.9159	1.7880	Sagging	259.73E-6	0.022474	0.022533	-231.96E-6	-235.55E-6	55095.	0 (Negligible)
	3	6.7039	1.1101	Hogging	89.450E-6	0.020841	0.020847	-216.22E-6	-223.71E-6	118520.	0 (Negligible)

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

Structure: GVA-6 | Sub-structure: GVA-6

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	2.9540	Sagging	222.67E-6	2.4216E-6	210.61E-6	-20.931E-6	-125.26E-6	130750.	0 (Negligible)

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

Structure: GVA-7 | Sub-structure: GVA-7

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	3.7150	Hogging	0.0017163	0.031587	0.032385	-351.78E-6	-399.82E-6	25893.	0 (Negligible)

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

Structure: GVA-8 | Sub-structure: GVA-8

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	2.1540	Sagging	137.56E-6	-0.0015087	311.46E-6	46.203E-6	222.83E-6	114350.	0 (Negligible)
	2	2.1540	0.80100	Hogging	18.437E-6	0.0037100	0.0037119	-43.918E-6	222.83E-6	470290.	0 (Negligible)

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

Structure: GVA-9 | Sub-structure: GVA-9

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	5.4832	Hogging	504.00E-6	0.010065	0.010240	-141.42E-6	220.32E-6	119190.	0 (Negligible)
	2	5.4832	2.6355	Sagging	351.71E-6	0.016057	0.016174	-181.61E-6	214.64E-6	63804.	0 (Negligible)
	3	8.1188	1.7438	Hogging	0.0011527	0.0062809	0.0064528	-181.61E-6	216.17E-6	14093.	0 (Negligible)

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

Structure: GVA-10 | Sub-structure: GVA-10

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

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

Structure: GE-1 | Sub-structure: GE-1

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	7.9120	Sagging	0.0040686	-0.022718	0.0048311	348.34E-6	-311.92E-6	18969.	0 (Negligible)

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

Structure: GE-2 | Sub-structure: GE-2

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	10.198	Hogging	0.0060108	0.051280	0.057911	-592.35E-6	656.94E-6	18361.	1 (Very Slight)
	2	10.198	1.2969	Sagging	225.73E-6	0.037493	0.037567	-374.79E-6	270.34E-6	79597.	0 (Negligible)
	3	11.495	1.8134	Hogging	0.0014352	0.013325	0.013657	-374.79E-6	270.34E-6	6136.7	0 (Negligible)

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

Structure: GE-3 | Sub-structure: GE-3

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

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

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	1.9591	1.4108	Hogging	0.0010721	0.012203	0.012396	-279.83E-6	-256.84E-6	12659.	0 (Negligible)
	2	3.3699	1.5791	Sagging	257.32E-6	0.027167	0.027270	-279.83E-6	-256.84E-6	61129.	0 (Negligible)
	3	4.9490	8.7640	Hogging	0.0034163	0.026650	0.030027	-335.89E-6	-462.56E-6	27872.	0 (Negligible)

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

Structure: GE-4 | Sub-structure: GE-4

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	1.9591	1.4108	Hogging	0.0010721	0.012203	0.012396	-279.83E-6	-256.84E-6	12659.	0 (Negligible)
	2	3.3699	1.5791	Sagging	257.32E-6	0.027167	0.027270	-279.83E-6	-256.84E-6	61129.	0 (Negligible)
	3	4.9490	8.7640	Hogging	0.0034163	0.026650	0.030027	-335.89E-6	-462.56E-6	27872.	0 (Negligible)

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

Structure: DH-1 | Sub-structure: DH-1

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	9.2270	1.6375	Hogging	0.0014519	0.015406	0.015519	-374.80E-6	-283.81E-6	8244.3	0 (Negligible)
	2	10.864	1.2212	Sagging	200.53E-6	0.037494	0.037515	-374.80E-6	-269.68E-6	54502.	0 (Negligible)
	3	12.086	10.252	Hogging	0.0063235	0.051223	0.053937	-592.50E-6	-686.15E-6	17557.	1 (Very Slight)

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

Structure: DH-2 | Sub-structure: DH-2

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	12.935	Sagging	0.0019813	-0.0064667	0.0016696	499.83E-6	128.92E-6	19352.	0 (Negligible)
	2	12.935	4.4640	Hogging	47.354E-6	0.0018876	0.0018966	-19.003E-6	128.92E-6	639120.	0 (Negligible)
	3	17.399	7.5603	Sagging	0.0021477	-0.0070585	0.0018839	182.34E-6	262.53E-6	28950.	0 (Negligible)
	4	24.959	7.5512	Hogging	0.0010184	0.012039	0.012364	-164.43E-6	262.53E-6	77462.	0 (Negligible)
	5	32.510	2.2951	Sagging	326.90E-6	0.017679	0.017743	-190.34E-6	220.22E-6	47518.	0 (Negligible)
	6	34.805	1.6444	Hogging	0.0013627	0.0070724	0.0072856	-190.34E-6	235.30E-6	15435.	0 (Negligible)

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

Structure: DH-3 | Sub-structure: DH-3

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

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

Structure: DH-4 | Sub-structure: DH-4

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

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

Structure: DH-5 | Sub-structure: DH-5

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

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

Structure: DH-6 | Sub-structure: DH-6

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	16.849	0.17807	Sagging	0.0	0.0	0.0	0.0	-80.883E-6	254540.	0 (Negligible)
	2	17.027	2.3911	Sagging	223.10E-6	0.0	222.12E-6	0.0	-77.494E-6	133710.	0 (Negligible)
	3	19.418	1.0125	Hogging	200.20E-6	293.53E-6	383.99E-6	-17.971E-6	-69.175E-6	141170.	0 (Negligible)
	4	20.431	12.275	Sagging	395.28E-6	266.84E-6	637.40E-6	35.974E-6	-69.175E-6	87133.	0 (Negligible)

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

Structure: DH-7 | Sub-structure: DH-7

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0.0	1	0.0	1.5103	Sagging	218.14E-6	0.037383	0.037411	-373.87E-6	275.79E-6	69202.	0 (Negligible)
	2	1.5103	1.8569	Hogging	0.0013276	0.012646	0.012761	-373.87E-6	275.79E-6	5807.5	0 (Negligible)

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

Structure: DH-8 | Sub-structure: DH-8

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

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

Vertical Offset from Line for Vertical Movement	Segment	Start Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max Tensile Strain	Max Gradient of Horizontal Displacement	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category

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

Structure: GVA-1 | Sub-structure: GVA-1

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

Structure: GVA-2 | Sub-structure: GVA-2

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

Structure: GVA-3 | Sub-structure: GVA-3

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

Structure: GVA-4 | Sub-structure: GVA-4

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

Structure: GVA-5 | Sub-structure: GVA-5

Vertical Offset from Line for Vertical Movement	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0010751	0.022474	-248.36E-6	1.1278	0.022533	-236.66E-6	-248.36E-6	13386.	55095.	0 (Negligible)

Structure: GVA-6 | Sub-structure: GVA-6

Vertical Offset from Line for Vertical Movement	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	222.67E-6	2.4216E-6	-125.26E-6	1.4773	210.61E-6	-20.931E-6	-125.26E-6	-	130750.	0 (Negligible)

Structure: GVA-7 | Sub-structure: GVA-7

Vertical Offset from Line for Vertical Movement	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0017163	0.031587	-399.82E-6	2.7354	0.032385	-351.78E-6	-399.82E-6	25893.	-	0 (Negligible)

Structure: GVA-8 | Sub-structure: GVA-8

Vertical Offset from Line for Vertical Movement	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	137.56E-6	0.0037100	222.83E-6	2.7358	0.0037119	46.203E-6	222.83E-6	470290.	114350.	0 (Negligible)

Structure: GVA-9 | Sub-structure: GVA-9

Vertical Offset from Line for Vertical Movement	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0011527	0.016057	220.32E-6	2.0850	0.016174	-181.61E-6	220.32E-6	14093.	63804.	0 (Negligible)

Structure: GVA-10 | Sub-structure: GVA-10

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

Structure: GE-1 | Sub-structure: GE-1

Vertical Offset from Line for Vertical Movement	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0040686	-0.022718	-311.92E-6	5.3018	0.0048311	348.34E-6	-311.92E-6	-	18969.	0 (Negligible)

Structure: GE-2 | Sub-structure: GE-2

Vertical	Deflection	Average	Max Slope	Max	Max	Max Gradient	Max Gradient	Min	Min	Damage Category

Offset from Vertical Movement Calculations	Ratio	Horizontal Strain	Settlement	Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	
[m]	[%]	[%]	[mm]	[%]			[m]	[m]	
0.0	0.0060108	0.051280	656.94E-6	5.3018	0.057911	-592.35E-6	656.94E-6	6136.7	79597. 1 (Very Slight)

Structure: GE-3 | Sub-structure: GE-3

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

Structure: GE-4 | Sub-structure: GE-4

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0034163	0.027167	-462.56E-6	3.8204	0.030027	-335.89E-6	-462.56E-6	12659.	61129. 0 (Negligible)	

Structure: DH-1 | Sub-structure: DH-1

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0063235	0.051223	-686.15E-6	5.4765	0.053937	-592.50E-6	-686.15E-6	8244.3	54502. 1 (Very Slight)	

Structure: DH-2 | Sub-structure: DH-2

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0021477	0.017679	262.53E-6	5.4772	0.017743	499.83E-6	262.53E-6	15435.	19352. 0 (Negligible)	

Structure: DH-3 | Sub-structure: DH-3

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

Structure: DH-4 | Sub-structure: DH-4

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

Structure: DH-5 | Sub-structure: DH-5

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

Structure: DH-6 | Sub-structure: DH-6

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	395.28E-6	293.53E-6	-80.883E-6	0.93543	637.40E-6	35.974E-6	-80.883E-6	141170.	87133. 0 (Negligible)	

Structure: DH-7 | Sub-structure: DH-7

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Max Slope	Max Settlement	Max Tensile Strain	Max Gradient of Horizontal Displacement Curve	Max Gradient of Vertical Displacement Curve	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0013276	0.037383	275.79E-6	0.93544	0.037411	-373.87E-6	275.79E-6	5807.5	69202. 0 (Negligible)	

Structure: DH-8 | Sub-structure: DH-8

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

Specific Building Damage Results - Critical Segments within Each Structure

Structure Name	Parameter	Critical Sub-Structure	Critical Start Segment [m]	End [m]	Curvature Max Slope	Max Settlement [mm]	Max Tensile Strain [%]	Min Radius of Curvature (Hogging) [m]	Min Radius of Curvature (Sagging) [m]	Damage Category
GVA-1	All settlements are less than the Settlement Trough Limit Sensitivity.									
	All settlements are less than the Settlement Trough Limit Sensitivity.									
	All settlements are less than the Settlement Trough Limit Sensitivity.									
	All settlements are less than the Settlement Trough Limit Sensitivity.									
	All settlements are less than the Settlement Trough Limit Sensitivity.									

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Max Slope	Max Settlement	Max Tensile Strain	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
GVA-2	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
GVA-3	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
GVA-4	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
GVA-5	Max Slope	GVA-5	1	3.4190	4.9159	Hogging	**248.36E-6**	0.47742	0.0097534	13386.	- 0	(Negligible)
	Max Settlement	GVA-5	3	6.7039	7.8140	Hogging	223.71E-6	**1.1278**	0.020847	118520.	- 0	(Negligible)
	Max Tensile Strain	GVA-5	2	4.9159	6.7039	Sagging	235.55E-6	0.88168	**0.022533**	-	55095. 0	(Negligible)
	Min Radius of Curvature (Hogging)	GVA-5	1	3.4190	4.9159	Hogging	248.36E-6	0.47742	0.0097534	**13386.**	- 0	(Negligible)
	Min Radius of Curvature (Sagging)	GVA-5	2	4.9159	6.7039	Sagging	235.55E-6	0.88168	0.022533	-	**55095.** 0	(Negligible)
GVA-6	Max Slope	GVA-6	1	0.0	2.9540	Sagging	**125.26E-6**	1.4773	210.61E-6	-	130750. 0	(Negligible)
	Max Settlement	GVA-6	1	0.0	2.9540	Sagging	125.26E-6	**1.4773**	210.61E-6	-	130750. 0	(Negligible)
	Max Tensile Strain	GVA-6	1	0.0	2.9540	Sagging	125.26E-6	1.4773	**210.61E-6**	-	130750. 0	(Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	- -	
	Min Radius of Curvature (Sagging)	GVA-6	1	0.0	2.9540	Sagging	125.26E-6	1.4773	210.61E-6	-	**130750.** 0	(Negligible)
GVA-7	Max Slope	GVA-7	1	0.0	3.7150	Hogging	**399.82E-6**	2.7354	0.032385	25893.	- 0	(Negligible)
	Max Settlement	GVA-7	1	0.0	3.7150	Hogging	399.82E-6	**2.7354**	0.032385	25893.	- 0	(Negligible)
	Max Tensile Strain	GVA-7	1	0.0	3.7150	Hogging	399.82E-6	2.7354	**0.032385**	25893.	- 0	(Negligible)
	Min Radius of Curvature (Hogging)	GVA-7	1	0.0	3.7150	Hogging	399.82E-6	2.7354	0.032385	**25893.**	- 0	(Negligible)
	Min Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	- -	
GVA-8	Max Slope	GVA-8	1	0.0	2.1540	Sagging	**222.83E-6**	2.7358	311.46E-6	-	114350. 0	(Negligible)
	Max Settlement	GVA-8	1	0.0	2.1540	Sagging	222.83E-6	**2.7358**	311.46E-6	-	114350. 0	(Negligible)
	Max Tensile Strain	GVA-8	2	2.1540	2.9550	Hogging	222.83E-6	2.2631	**0.0037119**	470290.	- 0	(Negligible)
	Min Radius of Curvature (Hogging)	GVA-8	2	2.1540	2.9550	Hogging	222.83E-6	2.2631	0.0037119	**470290.**	- 0	(Negligible)
	Min Radius of Curvature (Sagging)	GVA-8	1	0.0	2.1540	Sagging	222.83E-6	2.7358	311.46E-6	-	**114350.** 0	(Negligible)
GVA-9	Max Slope	GVA-9	1	0.0	5.4832	Hogging	**220.32E-6**	2.0850	0.010240	119190.	- 0	(Negligible)
	Max Settlement	GVA-9	1	0.0	5.4832	Hogging	220.32E-6	**2.0850**	0.010240	119190.	- 0	(Negligible)
	Max Tensile Strain	GVA-9	2	5.4832	8.1188	Sagging	214.64E-6	0.97277	**0.016174**	-	63804. 0	(Negligible)
	Min Radius of Curvature (Hogging)	GVA-9	3	8.1188	9.8626	Hogging	216.17E-6	0.45752	0.0064528	**14093.**	- 0	(Negligible)
	Min Radius of Curvature (Sagging)	GVA-9	2	5.4832	8.1188	Sagging	214.64E-6	0.97277	0.016174	-	**63804.** 0	(Negligible)
GVA-10	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
GE-1	Max Slope	GE-1	1	0.0	7.9120	Sagging	**311.92E-6**	5.3018	0.0048311	-	18969. 0	(Negligible)
	Max Settlement	GE-1	1	0.0	7.9120	Sagging	311.92E-6	**5.3018**	0.0048311	-	18969. 0	(Negligible)
	Max Tensile Strain	GE-1	1	0.0	7.9120	Sagging	311.92E-6	5.3018	**0.0048311**	-	18969. 0	(Negligible)
	Min Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	- -	
	Min Radius of Curvature (Sagging)	GE-1	1	0.0	7.9120	Sagging	311.92E-6	5.3018	0.0048311	-	**18969.** 0	(Negligible)
GE-2	Max Slope	GE-2	1	0.0	10.198	Hogging	**656.94E-6**	5.3018	0.057911	18361.	- 1	(Very Slight)
	Max Settlement	GE-2	1	0.0	10.198	Hogging	656.94E-6	**5.3018**	0.057911	18361.	- 1	(Very Slight)
	Max Tensile Strain	GE-2	1	0.0	10.198	Hogging	656.94E-6	5.3018	**0.057911**	18361.	- 1	(Very Slight)
	Min Radius of Curvature (Hogging)	GE-2	3	11.495	13.308	Hogging	270.34E-6	0.53012	0.013657	**6136.7**	- 0	(Negligible)
	Min Radius of Curvature (Sagging)	GE-2	2	10.198	11.495	Sagging	270.34E-6	0.86398	0.037567	-	**79597.** 0	(Negligible)
GE-3	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
GE-4	Max Slope	GE-4	3	4.9490	13.713	Hogging	**462.56E-6**	3.8204	0.030027	27872.	- 0	(Negligible)
	Max Settlement	GE-4	3	4.9490	13.713	Hogging	462.56E-6	**3.8204**	0.030027	27872.	- 0	(Negligible)
	Max Tensile Strain	GE-4	3	4.9490	13.713	Hogging	462.56E-6	3.8204	**0.030027**	27872.	- 0	(Negligible)
	Min Radius of Curvature (Hogging)	GE-4	1	1.9591	3.3699	Hogging	256.84E-6	0.49222	0.012396	**12659.**	- 0	(Negligible)
	Min Radius of Curvature (Sagging)	GE-4	2	3.3699	4.9490	Sagging	256.84E-6	0.86866	0.027270	-	**61129.** 0	(Negligible)
DH-1	Max Slope	DH-1	3	12.086	22.338	Hogging	**686.15E-6**	5.4765	0.053937	17557.	- 1	(Very Slight)
	Max Settlement	DH-1	3	12.086	22.338	Hogging	686.15E-6	**5.4765**	0.053937	17557.	- 1	(Very Slight)
	Max Tensile Strain	DH-1	3	12.086	22.338	Hogging	686.15E-6	5.4765	**0.053937**	17557.	- 1	(Very Slight)
	Min Radius of Curvature (Hogging)	DH-1	1	9.2270	10.864	Hogging	283.81E-6	0.56239	0.015519	**8244.3**	- 0	(Negligible)
	Min Radius of Curvature (Sagging)	DH-1	2	10.864	12.086	Sagging	269.68E-6	0.88204	0.037515	-	**54502.** 0	(Negligible)
DH-2	Max Slope	DH-2	3	17.399	24.959	Sagging	**262.53E-6**	4.2327	0.0018839	-	28950. 0	(Negligible)
	Max Settlement	DH-2	1	0.0	12.935	Sagging	128.92E-6	**5.4772**	0.0016696	-	19352. 0	(Negligible)
	Max Tensile Strain	DH-2	5	32.510	34.805	Sagging	220.22E-6	0.93220	**0.017743**	-	47518. 0	(Negligible)
	Min Radius of Curvature (Hogging)	DH-2	6	34.805	36.450	Hogging	235.30E-6	0.46138	0.0072856	**15435.**	- 0	(Negligible)
	Min Radius of Curvature (Sagging)	DH-2	1	0.0	12.935	Sagging	128.92E-6	5.4772	0.0016696	-	**19352.** 0	(Negligible)
DH-3	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
DH-4	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
DH-5	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Max Slope	Max Settlement	Max Tensile Strain	Min Radius of Curvature (Hogging)	Min Radius of Curvature (Sagging)	Damage Category
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
DH-6	Max Slope	DH-6	1	16.849	17.027	Sagging	**80.883E-6**	0.12203	0.0	-	254540.	0 (Negligible)
	Max Settlement	DH-6	4	20.431	32.706	Sagging	69.175E-6	**0.93543**	637.40E-6	-	87133.	0 (Negligible)
	Max Tensile Strain	DH-6	4	20.431	32.706	Sagging	69.175E-6	0.93543	**637.40E-6**	-	87133.	0 (Negligible)
	Min Radius of Curvature (Hogging)	DH-6	3	19.418	20.431	Hogging	69.175E-6	0.35327	383.99E-6	**141170.**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	DH-6	4	20.431	32.706	Sagging	69.175E-6	0.93543	637.40E-6	-	**87133.**	0 (Negligible)
DH-7	Max Slope	DH-7	1	0.0	1.5103	Sagging	**275.79E-6**	0.93544	0.037411	-	69202.	0 (Negligible)
	Max Settlement	DH-7	1	0.0	1.5103	Sagging	275.79E-6	**0.93544**	0.037411	-	69202.	0 (Negligible)
	Max Tensile Strain	DH-7	1	0.0	1.5103	Sagging	275.79E-6	0.93544	**0.037411**	-	69202.	0 (Negligible)
	Min Radius of Curvature (Hogging)	DH-7	2	1.5103	3.3672	Hogging	275.79E-6	0.54358	0.012761	**5807.5**	-	0 (Negligible)
	Min Radius of Curvature (Sagging)	DH-7	1	0.0	1.5103	Sagging	275.79E-6	0.93544	0.037411	-	**69202.**	0 (Negligible)
DH-8	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											