Asbestos Management Survey Report

18a Frognal Gardens
Hampstead
NW3 6XA

Contents:

1.0 Executive Summary:

Asbestos containing materials have been identified during the Asbestos Management Survey and the specific areas are shown below in order according to the initial Material Risk Assessment made by Artisan Surveyors Ltd.

Building	Floor	Room	Item	Material	Risk assessment Score	Recommendations
18a Frognal Gardens	Z-Sub Level 1	Boiler room Z107	Insulation board ceiling panels	Asbestos Insulating Board	MEDIUM (7)	B - Immediate Encapsulation
18a Frognal Gardens	External	Roof E01	Cement cowl	Asbestos Cement	LOW (5)	D - No Attention Required, Label
18a Frognal Gardens	External	Roof E01	Cement lid to metal tank	Asbestos Cement	LOW (5)	D - No Attention Required, Label

1.0 Executive Summary (Cont):

AREAS OF NO ACCESS

Asbestos Containing Materials have been presumed as being present to the following areas where access could not be gained. A management policy and plan needs to identify that these areas require inspection once access can be provided. These areas require re-inspection for accessibility prior to further works

Building	Floor	Room/Area	Comments	Recommendation
18a Frognal Gardens	1st Floor	Bathroom 108	No intrusive access behind ceramic tiles and within ceramic tiled boxing behind toilet	E - Inspect Prior to Disturbance
18a Frognal Gardens	1st Floor	Bathroom 108	No intrusive access beneath bath without causing potential damage to bath panel	E - Inspect Prior to Disturbance
18a Frognal Gardens	1st Floor	En-suite shower room 107	No intrusive access behind ceramic tiles to boxing	E - Inspect Prior to Disturbance
18a Frognal Gardens	Ground Floor	Hallway cupboard G04	No intrusive access within timber vertical boxing	E - Inspect Prior to Disturbance
18a Frognal Gardens	Z-Sub Level 1	Boiler room Z107	No intrusive access within boiler	E - Inspect Prior to Disturbance
18a Frognal Gardens	Z-Sub Level 1	Garage Z106	No intrusive access within chipboard ceiling boxing	E - Inspect Prior to Disturbance
18a Frognal Gardens	Z-Sub Level 1	Lobby Z101	No intrusive access within boxing	E - Inspect Prior to Disturbance
18a Frognal Gardens	Z-Sub Level 1	Shower room Z104	No intrusive access behind hatch panel - fixed in place by boxing behind toilet	E - Inspect Prior to Disturbance

EXTERNAL DESCRIPTION

The building consists of Modern roofing felt to roof and front porch areas, brick walls supported by concrete structure, metal window frames, timber soffit and fascia to entrance porch, plaster soffit above front door

2.0 Contract Review:

Name and address of site:	18a Frognal Gardens, Hampstead		
Name and address of client:	Progress UK, 18a Frognal Gardens, Hampstead		
Client contact:	Nathalie Bagnoud		
Type of survey:	Asbestos Management Survey (with MA only)		
Date of survey:	21 Mar 2019		
Report Revision Number:	1		
TEAMS internal job number:	J000215		
Lead surveyor[s]:	Jon Mackay	Signature:	
Technically reviewed by:	Jon Mackay	Signature:	
Report issue date:	27 Mar 2019		
Company name and address:	Artisan Surveyors Ltd F4 Fareham Heights, Standard Way, Fareham, Hampshire, PO16 8XT		
Company details:	Email: office@artisansurveyors.co.uk Tel: 023 8098 2598		

3.0 Introduction & Objectives:

Artisan Surveyors Ltd received an order of confirmation to undertake an Asbestos Management Survey from Progress UK. This order has been accepted on the basis of the original quotation and our terms and conditions of business.

The order relates to an Asbestos Management Survey of:

18a Frognal Gardens
Hampstead
NW3 6XA

The survey was carried out by Jon Mackay.

3.1 Purpose of Survey

The purpose of this Management Survey is to help the duty holder manage asbestos in these premises. It provides sufficient information for an asbestos register to be generated in accordance with HSG 264 so that the duty holder can carry out a risk assessment and prepare a suitable management plan in accordance with regulation of the Control of Asbestos Regulations 2012 (CAR 2012).

3.2 Aim of Survey

The aim of the survey was to;

1. Locate and record the location, extent, and product type as far as reasonably practicable of known or presumed ACM's.
2. Inspect and record information on the accessibility, condition and surface treatment of know or presumed ACM's
3. Determine and record the asbestos type based on sampling or by making a presumption based on product type and appearance

3.0 Introduction & Objectives (Cont):

3.3 Type of Survey – Management Survey

This management survey is required for the normal occupation and use of the building to ensure continued management of any ACM's in situ, and is the standard survey type.

Its purpose is to locate as far as is reasonably practicable, the presence and extent of any suspect ACM's in the building which could be damaged or disturbed during normal occupancy, including foreseeable maintenance and installation and to assess their condition.

All areas have been accessed as far as is reasonably practicable. Any areas that it was not possible to access have been presumed to contain asbestos and documented within this report. This survey involved sampling and analysis to comfirm the presence or absence of of asbestos containing materials, however presumptions may have also been used within this report to presume or strongly presume the presence of ACM's.

Management surveys will involve minor intrusive work and some disturbance. The extent of the intrusion will vary between premises and depend on what is reasonably practicable for individual properties eg type of building, nature of construction, etc.

The survey report can be used as a basis to start developing a management plan and prioritise actions, but in itself does not constitute a management plan as required under CAR 2012.

In order for the building occupier under regulation 4 of CAR 2012 they must implement a management policy and plan for confirmed or presumed asbestos containing materials.

This management survey includes a material assessment of the identified or presumed ACM's which relates to their condition and their potential to release fibres. This material assessment will provide the duty holder with an initial guide to the priority for managing ACM's as it will identify those ACM's which will most readily release fibres if they are disturbed.

4.0 Desk Top Review and Survey Planning:

Details of information requested from the Duty Holder by Artisan Surveyors Ltd in order to carry out a desk top review and plan the survey in accordance with HSG 264 were recorded on our pre-survey questionnaire, along with details of all the information that were provided by Nathalie Bagnoud on behalf of the client.

The Information provided was assessed during the desktop review and a survey plan, and risk assessment was produced for the survey of:

18a Frognal Gardens
Hampstead
NW3 6XA

SCOPE OF WORKS

The survey was carried out to A 3 storey residential property. A management asbestos survey was carried out to all accessible areas.

Where information was provided regarding the presence of known or presumed asbestos materials then this has been validated during the course of the survey, and recorded within this report.

Detailed drawing were provided by the client at the time of the survey.

A decontamination unit was not needed onsite during the survey.

Utilities and services were still live at the time of the survey.

Access equipment for working at heights was not required.

The survey did not involve confined space working.

The client did not inform Artisan Surveyors Ltd of any chemical/biological hazards.

5.0 Survey Method

5.1 This survey has been undertaken in accordance with HSG264 and Artisan Surveyors Ltd in house procedures.

5.2 Clients of Artisan Surveyors that have signed our terms and conditions are deemed to have agreed, and accepted, our surveying approach, our sampling strategy, and our standard planning, surveying and reporting format unless they have made specific requests to the contrary.

5.3 The information provided by the client or their representative are recorded in the planning document and has been used to define the scope of the survey.

5.4 Photographs of suspected ACM's will be taken at the time of the survey unless the client expressly requests otherwise. Sampling points and suspected ACM's will not be identified with labels unless the client expressly requests otherwise.

5.5 All fibrous materials and item will be included in the survey unless, in the surveyors professional opinion, these items can be excluded (eg. Wood, wallpaper, man-made mineral fibre). Samples of all thermoplastic floor coverings will be taken unless, in the surveyors professional opinion, such items can be excluded. All textured coatings and novel bituminous will be sampled.

5.6 Areas that could not be accessed were presumed to have ACM's present until proven otherwise. Each area requiring further inspection is documented within the Executive summary (Inaccessible areas). Inaccessible areas are also shown on the plan drawings (Appendix 5)

5.7 Materials that could not be accessed and in the surveyors opinion can be dismissed will be presumed to be ACM unless proven otherwise. Materials that are not sampled but, in the surveyors opinion, have a similar appearance, location and function as a previously sampled material will be strongly presumed to be similar to the sampled material.

5.8 The quantity of samples taken may have been minimised by using 'strongly presumed' as defined above. Materials that are 'strongly presumed' to be similar to a material that has already been sampled will be recorded in the comments section of the survey and referenced against the original sampled material.

5.9 Our surveyor has made every attempt to avoid causing damage during the management surveys whilst attempting to identify possible ACM's. Minor repairs will be made and any areas accessed will be left in a safe condition.

5.10 Intrusive damage that is required to gain access to an area/location that is within the scope of the survey has been agreed with the client or the clients representative. Any remedial action will be put in place before such action is attempted. If remedial action cannot be arranged, no attempt to access the area will be made and the reasons recorded. The area/locationwill be presumed to have ACM's present until proven otherwise.

5.11 Non fibrous materials and item known not to contain asbestos (eg Breeze block, plaster, plasterboard plastics and non textured paints) will be excluded from the survey unless the surveyor suspects that these materials have been contaminated with asbestos from other sources or specifically requested by the client.

5.12 Older electrical equipment, which cannot be shown to contain ACM's, has been presumed to have ACM's present unless, in the surveyors professional opinion, such items can be excluded.

6.0 Exclusions and Caveats:

6.1 For safety reasons it is not possible to inspect internal areas of plant and machinery.

Where areas have been designated as 'no access' or ‘restricted access’, unless further inspection/sampling proves otherwise, the presumption has been made that these structures/areas contain asbestos materials.

During the course of the survey it may not have been possible to access all areas of the site. Details of areas requiring further access are identified within the Data Sheets of this report. In accordance with HSG 264, asbestos is presumed to be present within these areas and should be treated accordingly until further inspection and analysis of building fabric and services proves otherwise.

It is recommended that further intrusive inspection and sampling be carried out where site refurbishment, maintenance, or similar may disturb Asbestos Containing Materials that have remained inaccessible during this survey, this should be a refurbishment/demolition survey as described in HSG 264.

Textured Coatings such as “Artex” may contain a trace quantity of Chrysotile asbestos. Due to this low asbestos content, applications of this product may be non-homogenous and may elicit both positive and negative samples. Where both positive and negative samples are obtained the client should presume that the textured coating contains Chrysotile throughout even though a non-detected result has been obtained.

This report does not include investigations into land contamination associated with asbestos or any other contaminant.

6.2 Specific caveats

It was agreed with the client that access above or behind known ACM’s was not required within the survey.

Underground services were not included in the survey.

It has been agreed with Progress UK that there was not any unsafe structures on site.

7.0 Sampling and Analysis:

7.1 The object of bulk sampling is to identify the nature and extent of any visible ACM.

7.2 Bulk sampling is undertaken inline with the recognised safe procedures in order to cause minimal possible nuisance and potential risk to health of the building occupants and visitors. Bulk samples are taken in accordance with documented in house procedures, following guidelines detailed in HSG264 'The Survey Guide' and HSG248 'The Analyst Guide'. The quantity of samples taken will be minimised by using 'strongly presumed'. Materials that are 'strongly presumed ‘to be similar to a material that has already been sampled will be recorded in the comments section of the survey record and referenced against the original sampled material.

7.3 Bulk samples are returned to the appointed bulk analysis laboratory with the appropriate sample / report reference number. Where appropriate; a label will be left on site adjacent to the sample location.

7.4 The label will indicate the sample number and the date taken. This label can be used along with the report for cross reference purposes.

7.5 Bulk sample analysis is carried out in accordance with HSE document HSG 248 ‘The Analysts Guide’ by a UKAS accredited laboratory. Samples are examined under a low magnification stereomicroscope and the fibres teased apart. The fibres are then mounted in liquids of known refractive indices and examined under high magnification using polarised light and dispersion staining in accordance with HSG 248 ‘The Analysts Guide’.

7.6 The bulk sample description and analysis results can be found in Appendix 4 of this report – The analysis certificate.

Key to Analysis Results:

Chrysotile - White Asbestos

Amosite - Brown Asbestos

Crocidolite - Blue Asbestos

Tremolite - Rare Asbestos

Actinolite - Rare Asbestos

Anthophyllite - Rare Asbestos

8.0 Survey Results - Interpretation:

Survey Results

8.1 The results of the survey inspections and sampling undertaken are recorded on the enclosed Survey Data Sheets (appendix 2), Asbestos Register (appendix 1) and Room Register (appendix 3). Where asbestos containing material have been identified or presumed to be present then a Material Assessment Algorithm has been calculated as detailed in HSG 264 and reproduced in the table below:

8.2 Within the survey data sheets the individual scores in brackets, for each sample variable, are added together to form the final material/priority risk assessment algorithm score.

8.0 Survey Results - Interpretation (Cont):

Material Risk Assessment Algorithm

Product type [or debris from product]

Score	Examples of scores
1	Asbestos reinforced composites [plastics, resins, mastics, roofing felts, vinyl floor tiles, semi- rigid paint, decorative finishes and asbestos cement etc]
2	Asbestos insulating board, mill boards, other low-density boards, textiles, gaskets, ropes and woven materials and asbestos paper.
3	Thermal insulation [e.g. pipe and boiler lagging], sprayed asbestos, loose asbestos, asbestos mattresses and packing.

Extent of damage/deterioration

Score	Examples of scores
0	Good condition: no visible damage
1	Low damage: a few scratches or surface marks, broken edges on boards or tiles, etc.
2	Moderate damage: significant breakage of materials or several small areas where material has been damaged exposing fibrous edges.
3	High damage or deterioration of materials, sprays and thermal insulation. Visible asbestos contamination by debris or residues.

Surface treatment

Score	Examples of scores
0	Composite materials containing asbestos, reinforced plastics, resins, vinyl tiles
1	Enclosed sprays or insulation, AIB [with exposed face encapsulated], cement sheets, etc.
2	Unsealed AIB, encapsulated insulation and sprays.
3	Unsealed insulation and sprays.

Asbestos Type

Score	Examples of scores
1	Chrysotile
2	Amphibole asbestos (excluding Crocidolite)
3	Crocidolite

Material Risk Assessment Score

Risk Category	Risk	Score Range	Fibre release potential
A	HIGH	Material Score 10 and above or Priority Score of 18-24	High risk with a high potential to release fibres if disturbed
B	MEDIUM	Material Score Between 7 and 9 or Priority Score of 12-17	Medium risk with a medium potential to release fibres if disturbed
C	LOW	Material Score Between 5 and 6 or Priority score of 9-11	Low risk with and having low potential to release fibres if disturbed
D	VERY LOW	Material Score 4 and below or Priority Score of less than 8	Very low risk with and having very low potential to release fibres if disturbed

9.0 Recommendations:

9.1 To comply with and ensure that the requirements of section 2 & 3 of the Health and Safety at Work Act (as amended) 1974, the Management of Health and Safety at Work Regulations 1999, the Control of Asbestos Regulations 2012 and the Control of Substances Hazardous to Health 2002 are met, the following recommendations should be implemented:

9.2 Undertake suitable and sufficient Risk Assessments of identified asbestos containing materials against normal occupation and maintenance operations, in compliance with Regulations 3 of the Management of Health & Safety at Work Regulations 1999 and Regulation 6 of the Control of Asbestos Regulations 2012.

9.3 The findings of the survey be brought to the attention of those persons who are likely to come in contact with asbestos, in compliance with Section 2 and 3 of the Health and Safety at Work Act (as amended) 1974 and Regulation 10 of the Control of Asbestos Regulations 2012.

9.4 Implement an Asbestos Management Policy, Plan and review process in compliance Regulation 4 of the Control of Asbestos Regulations 2012.

9.5 Instigate regular inspections, to record and update details of retained asbestos containing materials.

9.6 Review the arrangement under the management plan in accordance with regulation 4 of the CAR 2012.

9.7 During the course of the survey it may not have been possible to access all areas of the site. Details of areas requiring further access are identified within the Data Sheets of this report. In accordance with HSG 264, asbestos has been presumed to be present within these areas and should be treated accordingly until further inspection and analysis of building fabric and services proves otherwise.

9.8 Where asbestos debris or asbestos in poor condition has been found it is recommended that access is restricted and or controlled to these areas in accordance with Regulation 11 and Regulation 16 of the Control of Asbestos Regulations 2012.

9.9 If we have identified asbestos materials in poor condition, it is recommended that air monitoring is carried out within a number of areas where asbestos materials have been identified in order to assess airborne fibre levels within adjacent occupied areas in relation to the clearance indicator, as documented by HSG 248 the Analyst Guide.

9.10 All identified asbestos to be appropriately identified and subject to risk assessment, management, and re-inspection.

9.11 Site specific recommendations in respect to the location and condition of asbestos materials identified during the course of this inspection are detailed in the Survey Data Sheets and Asbestos register. In considering the management of asbestos materials identified to date, these recommendations should be taken into consideration.

9.12 In accordance with the Control of Asbestos Regulations 2012 the removal of ACM's fall into one of the three categories below:

Licensed Asbestos Removal
Is defined as any work, which is undertaken on a friable asbestos product or which is likely to exceed the control limit of 0.1f/cm3. A licensed asbestos removal contractor must undertake this work and a 14-day notice must be given to the HSE prior to the commencement of the work.

Notifiable Non Licensed Works
If work on an ACM causes the deterioration of the matrix material in which the asbestos fibres are firmly linked, then these works are Notifiable Non Licensed Work (NNLW). Work of this type does not require an asbestos removal licence, but the company undertaking the work must have the following:
-Notification of the work to the relevant enforcing authority prior to the work commencing.
-Medical examinations to assess each worker’s state of health to be carried out, before any possible – exposure to asbestos. Then re-examinations every three years.
-Insurance for working with asbestos containing materials.
-A register of work to be kept by the employer for each employee exposed to asbestos.

Non Notifiable Non Licensed work
-Non-Licensed Works Is defined as any work, which involves short, non-continuous maintenance activities, during which only nonfriable materials are removed. It can also involve the removal of non-friable materials for refurbishment purposes. However, work of this type is only applicable where the matrix material in which the asbestos fibres are firmly linked remains intact.
-If a non-licensed contractor is appointed to undertake the removal works on the above materials, the following points must be adhered to:
-All operatives undertaking work on the material must have asbestos awareness training and practical asbestos training.

9.13 It is recommended that further intrusive investigations and sampling be carried out in accordance with HSG.264, where any major refurbishment, maintenance, installation or similar activity may expose asbestos materials that have remained inaccessible during the survey. This should be as a refurbishment/demolition survey as documented in HSG264.

9.14 The findings of this report should not be solely relied upon in obtaining costs for proposed asbestos abatement work. Any proposed abatement/removal of the asbestos should be undertaken against a detailed specification.

Appendix 1 - Asbestos Register

Building	Floor	Location /Room	S,P,SP,AS Sample No	Product Type	Condition	Surface Treatment	Asbestos Type	Quantity	Accessibility	Material Score	Recommendation	Additional Comments
18a Frognal Gardens	Ground Floor	Hallway cupboard G04, Timber vertical boxing	P Visual	N/A	N/A	N/A	N/A	N/A	N/A	N/A	E - Inspect Prior to Disturbance	No intrusive access within timber vertical boxing
18a Frognal Gardens	1st Floor	En-suite shower room 107, Ceramic tiled boxing	P Visual	N/A	N/A	N/A	N/A	N/A	N/A	N/A	E - Inspect Prior to Disturbance	No intrusive access behind ceramic tiles to boxing
18a Frognal Gardens	1st Floor	Bathroom 108, Ceramic tiled boxing	P Visual	N/A	N/A	N/A	N/A	N/A	N/A	N/A	E - Inspect Prior to Disturbance	No intrusive access behind ceramic tiles and within ceramic tiled boxing behind toilet
18a Frognal Gardens	1st Floor	Bathroom 108, Beneath bath	P Visual	N/A	N/A	N/A	N/A	N/A	N/A	N/A	E - Inspect Prior to Disturbance	No intrusive access beneath bath without causing potential damage to bath panel
18a Frognal Gardens	Z-Sub Level 1	Lobby Z101, Timber boxings to ceiling	P Visual	N/A	N/A	N/A	N/A	N/A	N/A	N/A	E - Inspect Prior to Disturbance	No intrusive access within boxing
18a Frognal Gardens	Z-Sub Level 1	Shower room Z104, Wall void behind timber hatch	P Visual	N/A	N/A	N/A	N/A	N/A	N/A	N/A	E - Inspect Prior to Disturbance	No intrusive access behind hatch panel - fixed in place by boxing behind toilet
18a Frognal Gardens	Z-Sub Level 1	Garage Z106, Chipboard ceiling boxing adjoining boiler room	P Visual	N/A	N/A	N/A	N/A	N/A	N/A	N/A	E - Inspect Prior to Disturbance	No intrusive access within chipboard ceiling boxing
18a Frognal Gardens	Z-Sub Level 1	Boiler room Z107, Boiler unit	P Visual	N/A	N/A	N/A	N/A	N/A	N/A	N/A	E - Inspect Prior to Disturbance	No intrusive access within boiler
18a Frognal Gardens	Z-Sub Level 1	Boiler room Z107, Insulation board ceiling panels to ceiling	S AA001021	Asbestos Insulating Board	Low Damage	Unsealed	Chrysotile + Amosite	5m²	Occasionally likely to be disturbed	7	B - Immediate Encapsulation	N/A
18a Frognal Gardens	External	Roof E01, Cement cowl to top of vent pipe	S AA001024	Asbestos Cement	Low Damage	Surface Sealed	Chrysotile + Amosite	1no.	Occasionally likely to be disturbed	5	D - No Attention Required, Label	N/A

KEY:

S – Sampled, P – Presumed, SP – Strongly Presumed, AS – Cross reference to former sample

Appendix 1 - Asbestos Register (cont)

Building	Floor	Location /Room	S,P,SP,AS Sample No	Product Type	Condition	Surface Treatment	Asbestos Type	Quantity	Accessibility	Material Score	Recommendation	Additional Comments
18a Frognal Gardens	External	Roof E01, Cement lid to metal tank to top of vent pipe	SP As AA001024	Asbestos Cement	Low Damage	Surface Sealed	Chrysotile + Amosite	2m²	Occasionally likely to be disturbed	5	D - No Attention Required, Label	N/A

KEY:

S – Sampled, P – Presumed, SP – Strongly Presumed, AS – Cross reference to former sample

Appendix 2 – Survey Data Sheets

Service Type	**Asbestos Management Survey**		
Report Revision Number	**1**	**Surveyors**	**Jon Mackay**
TEAMS Job Number	**J000215**	**Survey Date**	**21 Mar 2019**
Site Address:	**18a Frognal Gardens Hampstead NW3 6XA**	**Bulk Analysis Laboratory**	**N/A**
		Sample Analysis Date	**26 Mar 2019**

Survey Data Sheets

Survey Date:	Lead Surveyor	Survey Type	Floor	Analysis
21 Mar 2019	Jon Mackay	Management Survey	Ground Floor	N/A
Building	**Room**	**Item**	**Quantity**	
18a Frognal Gardens	Hallway cupboard G04	Timber vertical boxing	N/A	
Sample No (S,SP,P,As)	**Product Type**	**Surface Treatment**	**Condition**	**Accessibility**
Visual (P)	N/A	N/A	N/A	N/A
Material Risk Score				
N/A				
Recommended action	Inspection Required			
Surveyor comments	No intrusive access within timber vertical boxing			

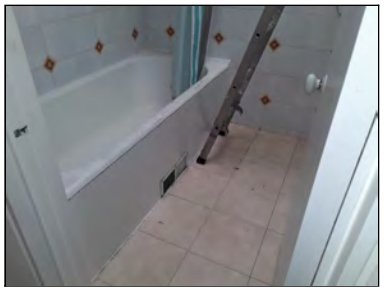
Survey Date:	Lead Surveyor	Survey Type	Floor	Analysis
21 Mar 2019	Jon Mackay	Management Survey	1st Floor	N/A
Building	**Room**	**Item**	**Quantity**	
18a Frognal Gardens	En-suite shower room 107	Ceramic tiled boxing	N/A	
Sample No (S,SP,P,As)	**Product Type**	**Surface Treatment**	**Condition**	**Accessibility**
Visual (P)	N/A	N/A	N/A	N/A
Material Risk Score				
N/A				
Recommended action	Inspection Required			
Surveyor comments	No intrusive access behind ceramic tiles to boxing			

KEY:

S – Sampled, P – Presumed, SP – Strongly Presumed, AS – Cross reference to former sample

Survey Data Sheets (cont)

Survey Date:	Lead Surveyor	Survey Type	Floor	Analysis
21 Mar 2019	Jon Mackay	Management Survey	1st Floor	N/A
Building	**Room**	**Item**	**Quantity**	
18a Frognal Gardens	Bathroom 108	Ceramic tiled boxing	N/A	
Sample No (S,SP,P,As)	**Product Type**	**Surface Treatment**	**Condition**	**Accessibility**
Visual (P)	N/A	N/A	N/A	N/A
Material Risk Score				
N/A				
Recommended action	Inspection Required			
Surveyor comments	No intrusive access behind ceramic tiles and within ceramic tiled boxing behind toilet			



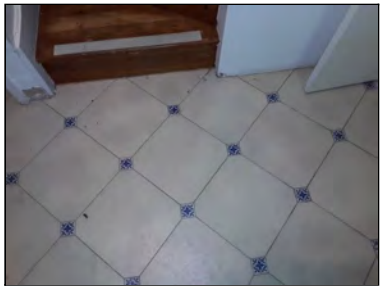
Survey Date:	Lead Surveyor	Survey Type	Floor	Analysis
21 Mar 2019	Jon Mackay	Management Survey	1st Floor	N/A
Building	**Room**	**Item**	**Quantity**	
18a Frognal Gardens	Bathroom 108	Beneath bath	N/A	
Sample No (S,SP,P,As)	**Product Type**	**Surface Treatment**	**Condition**	**Accessibility**
Visual (P)	N/A	N/A	N/A	N/A
Material Risk Score				
N/A				
Recommended action	Inspection Required			
Surveyor comments	No intrusive access beneath bath without causing potential damage to bath panel			

KEY:

S – Sampled, P – Presumed, SP – Strongly Presumed, AS – Cross reference to former sample

Survey Data Sheets (cont)

Survey Date:	Lead Surveyor	Survey Type	Floor	Analysis
21 Mar 2019	Jon Mackay	Management Survey	Z-Sub Level 1	No Asbestos Detected
Building	**Room**	**Item**	**Quantity**	
18a Frognal Gardens	Understairs cupboard Z102	Loose insulation to floor within void beneath stairs	2m²	
Sample No (S,SP,P,As)	**Product Type**	**Surface Treatment**	**Condition**	**Accessibility**
AA001019 (S)	N/A	N/A	N/A	N/A
Material Risk Score				
N/A				
Recommended action	No further action required			
Surveyor comments	N/A			

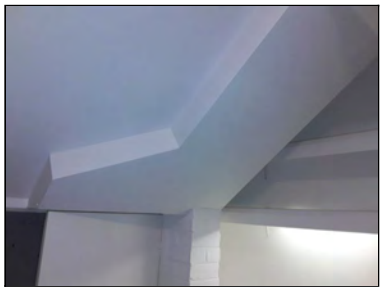


Survey Date:	Lead Surveyor	Survey Type	Floor	Analysis
21 Mar 2019	Jon Mackay	Management Survey	Z-Sub Level 1	No Asbestos Detected
Building	**Room**	**Item**	**Quantity**	
18a Frognal Gardens	Lobby Z101	Vinyl tile covering to floor	8m²	
Sample No (S,SP,P,As)	**Product Type**	**Surface Treatment**	**Condition**	**Accessibility**
AA001020 (S)	N/A	N/A	N/A	N/A
Material Risk Score				
N/A				
Recommended action	No further action required			
Surveyor comments	N/A			

KEY:

S – Sampled, P – Presumed, SP – Strongly Presumed, AS – Cross reference to former sample

Survey Data Sheets (cont)



Survey Date:	Lead Surveyor	Survey Type	Floor	Analysis
21 Mar 2019	Jon Mackay	Management Survey	Z-Sub Level 1	N/A
Building	**Room**	**Item**	**Quantity**	
18a Frognal Gardens	Lobby Z101	Timber boxings to ceiling	N/A	
Sample No (S,SP,P,As)	**Product Type**	**Surface Treatment**	**Condition**	**Accessibility**
Visual (P)	N/A	N/A	N/A	N/A
Material Risk Score				
N/A				
Recommended action	Inspection Required			
Surveyor comments	No intrusive access within boxing			

Survey Date:	Lead Surveyor	Survey Type	Floor	Analysis
21 Mar 2019	Jon Mackay	Management Survey	Z-Sub Level 1	No Asbestos Detected
Building	**Room**	**Item**	**Quantity**	
18a Frognal Gardens	Utility cupboard Z103	Vinyl tile covering to floor	1m²	
Sample No (S,SP,P,As)	**Product Type**	**Surface Treatment**	**Condition**	**Accessibility**
As AA001020 (SP)	N/A	N/A	N/A	N/A
Material Risk Score				
N/A				
Recommended action	No further action required			
Surveyor comments	N/A			

KEY:

S – Sampled, P – Presumed, SP – Strongly Presumed, AS – Cross reference to former sample

Survey Data Sheets (cont)

Survey Date:	Lead Surveyor	Survey Type	Floor	Analysis
21 Mar 2019	Jon Mackay	Management Survey	Z-Sub Level 1	N/A
Building	**Room**	**Item**	**Quantity**	
18a Frognal Gardens	Shower room Z104	Wall void behind timber hatch	N/A	
Sample No (S,SP,P,As)	**Product Type**	**Surface Treatment**	**Condition**	**Accessibility**
Visual (P)	N/A	N/A	N/A	N/A
Material Risk Score				
N/A				
Recommended action	Inspection Required			
Surveyor comments	No intrusive access behind hatch panel - fixed in place by boxing behind toilet			

Survey Date:	Lead Surveyor	Survey Type	Floor	Analysis
21 Mar 2019	Jon Mackay	Management Survey	Z-Sub Level 1	N/A
Building	**Room**	**Item**	**Quantity**	
18a Frognal Gardens	Garage Z106	Chipboard ceiling boxing adjoining boiler room	N/A	
Sample No (S,SP,P,As)	**Product Type**	**Surface Treatment**	**Condition**	**Accessibility**
Visual (P)	N/A	N/A	N/A	N/A
Material Risk Score				
N/A				
Recommended action	Inspection Required			
Surveyor comments	No intrusive access within chipboard ceiling boxing			

KEY:

S – Sampled, P – Presumed, SP – Strongly Presumed, AS – Cross reference to former sample

Survey Data Sheets (cont)

Survey Date:	Lead Surveyor	Survey Type	Floor	Analysis
21 Mar 2019	Jon Mackay	Management Survey	Z-Sub Level 1	N/A
Building	**Room**	**Item**	**Quantity**	
18a Frognal Gardens	Boiler room Z107	Boiler unit	N/A	
Sample No (S,SP,P,As)	**Product Type**	**Surface Treatment**	**Condition**	**Accessibility**
Visual (P)	N/A	N/A	N/A	N/A
Material Risk Score				
N/A				
Recommended action	Inspection Required			
Surveyor comments	No intrusive access within boiler			

Survey Date:	Lead Surveyor	Survey Type	Floor	Analysis
21 Mar 2019	Jon Mackay	Management Survey	Z-Sub Level 1	Chrysotile + Amosite (2)
Building	**Room**	**Item**	**Quantity**	
18a Frognal Gardens	Boiler room Z107	Insulation board ceiling panels to ceiling	5m²	
Sample No (S,SP,P,As)	**Product Type**	**Surface Treatment**	**Condition**	**Accessibility**
AA001021 (S)	Asbestos Insulating Board (2)	Unsealed (2)	Low Damage (1)	Occasionally likely to be disturbed
Material Risk Score				
7				
Recommended action	B - Immediate Encapsulation			
Surveyor comments	N/A			

KEY:

S – Sampled, P – Presumed, SP – Strongly Presumed, AS – Cross reference to former sample

Survey Data Sheets (cont)

Survey Date:	Lead Surveyor	Survey Type	Floor	Analysis
21 Mar 2019	Jon Mackay	Management Survey	Z-Sub Level 1	No Asbestos Detected
Building	**Room**	**Item**	**Quantity**	
18a Frognal Gardens	Boiler room Z107	Bitumenous pads to brick where ducting enters wall void behind boiler	1m²	
Sample No (S,SP,P,As)	**Product Type**	**Surface Treatment**	**Condition**	**Accessibility**
AA001022 (S)	N/A	N/A	N/A	N/A
Material Risk Score				
N/A				
Recommended action	No further action required			
Surveyor comments	N/A			

Survey Date:	Lead Surveyor	Survey Type	Floor	Analysis
21 Mar 2019	Jon Mackay	Management Survey	Z-Sub Level 1	No Asbestos Detected
Building	**Room**	**Item**	**Quantity**	
18a Frognal Gardens	Shower room Z104	Vinyl tile floor covering to floor	4m²	
Sample No (S,SP,P,As)	**Product Type**	**Surface Treatment**	**Condition**	**Accessibility**
As AA001020 (SP)	N/A	N/A	N/A	N/A
Material Risk Score				
N/A				
Recommended action	No further action required			
Surveyor comments	N/A			

KEY:

S – Sampled, P – Presumed, SP – Strongly Presumed, AS – Cross reference to former sample

Survey Data Sheets (cont)

Survey Date:	Lead Surveyor	Survey Type	Floor	Analysis
21 Mar 2019	Jon Mackay	Management Survey	External	No Asbestos Detected
Building	**Room**	**Item**	**Quantity**	
18a Frognal Gardens	Roof E01	Bitumen seal to skylight lid between timber upstand and skylight casing	3no.	
Sample No (S,SP,P,As)	**Product Type**	**Surface Treatment**	**Condition**	**Accessibility**
AA001023 (S)	N/A	N/A	N/A	N/A
Material Risk Score				
N/A				
Recommended action	No further action required			
Surveyor comments	N/A			

Survey Date:	Lead Surveyor	Survey Type	Floor	Analysis
21 Mar 2019	Jon Mackay	Management Survey	External	Chrysotile + Amosite (2)
Building	**Room**	**Item**	**Quantity**	
18a Frognal Gardens	Roof E01	Cement cowl to top of vent pipe	1no.	
Sample No (S,SP,P,As)	**Product Type**	**Surface Treatment**	**Condition**	**Accessibility**
AA001024 (S)	Asbestos Cement (1)	Surface Sealed (1)	Low Damage (1)	Occasionally likely to be disturbed
Material Risk Score				
5				
Recommended action	D - No Attention Required, Label			
Surveyor comments	N/A			

KEY:

S – Sampled, P – Presumed, SP – Strongly Presumed, AS – Cross reference to former sample

Survey Data Sheets (cont)

Survey Date:	Lead Surveyor	Survey Type	Floor	Analysis
21 Mar 2019	Jon Mackay	Management Survey	External	Chrysotile + Amosite (2)
Building	**Room**	**Item**	**Quantity**	
18a Frognal Gardens	Roof E01	Cement lid to metal tank to top of vent pipe	2m²	
Sample No (S,SP,P,As)	**Product Type**	**Surface Treatment**	**Condition**	**Accessibility**
As AA001024 (SP)	Asbestos Cement (1)	Surface Sealed (1)	Low Damage (1)	Occasionally likely to be disturbed
Material Risk Score				
5				
Recommended action	D - No Attention Required, Label			
Surveyor comments	N/A			

KEY:

S – Sampled, P – Presumed, SP – Strongly Presumed, AS – Cross reference to former sample

Appendix 3 - Room Register

Building	Floor	Room No:	Room Type	Item
18a Frognal Gardens	External	E01	Roof	Modern roofing felt to flat roof, felted timber housing to metal roof tank, PVC skylight lids
18a Frognal Gardens	External	E02	Garden shed	Timber floor, timber walls with paper lining, timber pitched roof, modern felt covers pitched roof
18a Frognal Gardens	External	E03	Crawl space beneath house	Concrete floor, brick walls, fibreboard ceiling panels, mmmf insulation to timber ceiling, mmmf insulated metal ducting, foam and hessian insulated pipework
18a Frognal Gardens	Z-Sub Level 1	Z101	Lobby	Concrete floor with modern vinyl tile covering, brick and plasterboard walls, plasterboard ceiling, plasterboard ceiling boxings
18a Frognal Gardens	Z-Sub Level 1	Z102	Understairs cupboard	N/A
18a Frognal Gardens	Z-Sub Level 1	Z103	Utility cupboard	Concrete floor, vinyl floor tiles, brick walls, timber and plasterboard wall partition adjoining stairs, plaster ceiling
18a Frognal Gardens	Z-Sub Level 1	Z104	Shower room	Concrete floor with vinyl tile covering, ceramic tiles to all walls, plasterboard ceiling, ceramic WC cistern, timber hatch panel adjacent wc
18a Frognal Gardens	Z-Sub Level 1	Z105	Bedroom 5	Concrete floor with carpet covering, plasterboard walls, plaster ceiling, built -in MDF wardrobes, modern electric wall heater, timber window sill
18a Frognal Gardens	Z-Sub Level 1	Z106	Garage	Painted concrete floor, brick walls, timber wall panelling adjoining bedroom 5, timber wall panelling adjoining shower room, plasterboard ceiling, chipboard boxing to ceiling
18a Frognal Gardens	Z-Sub Level 1	Z107	Boiler room	Concrete floor, brick walls, insulation board ceiling panels, exposed metal pipework, metal ducting, modern water heater

Appendix 3 - Room Register (cont)

Building	Floor	Room No:	Room Type	Item
18a Frognal Gardens	Ground Floor	G01	Entrance lobby	Concrete floor with ceramic tile covering, timber staircase to raised ground floor, brick and plaster walls, plaster ceiling, timber inset to ceiling skylight, plaster surround to secondary glazed window frame.
18a Frognal Gardens	Ground Floor	G02	Wc	Wooden floor with wood laminate flooring, brick and plaster walls, plaster ceiling, timber window sill, ceramic WC cistern
18a Frognal Gardens	Ground Floor	G03	Hallway	Timber floor, brick and plaster walls, plaster ceiling, timber skirting
18a Frognal Gardens	Ground Floor	G04	Hallway cupboard	Timber floor, brick and plaster walls, plaster ceiling, timber vertical boxing, modern electrical box
18a Frognal Gardens	Ground Floor	G05	Kitchen	Timber floor with wood laminate floor covering, brick and plaster walls, ceramic tile wall coverings, plaster ceiling, laminated timber window sill,
18a Frognal Gardens	Ground Floor	G06	Dining area	Raised timber floor, brick and plaster walls, plaster ceiling, metal framed windows with plaster soffit.
18a Frognal Gardens	Ground Floor	G07	Lounge	Timber floor with carpet covering, brick and plaster walls, plaster ceiling, brick fire place with marble effect hearth and mantlepiece, metal window frames with plaster soffit, plasterboard boxing housing heating grills x2.
18a Frognal Gardens	Ground Floor	G08	Bedroom 1	Timber floor, brick and plaster walls, plaster ceiling, metal window frames with plaster reveals within secondary glazing, plaster boxing housing heating grill.
18a Frognal Gardens	1st Floor	101	Stairwell cupboard	Timber floor, brick and plaster walls, plaster ceiling, timber shelving
18a Frognal Gardens	1st Floor	102	Landing	Timber floor, carpet covering, brick and plaster walls, plasterboard wall panelling, plaster ceiling

Appendix 3 - Room Register (cont)

Building	Floor	Room No:	Room Type	Item
18a Frognal Gardens	1st Floor	103	Cupboard	Timber floor with carpet covering, brick and plaster and plasterboard walls, plaster ceiling, timber shelving
18a Frognal Gardens	1st Floor	104	Airing cupboard	Timber floor with carpet covering, brick, plaster and plasterboard walls, plaster ceiling, low level metal ducting
18a Frognal Gardens	1st Floor	105	Bedroom 2	Timber floor with carpet covering, brick and plaster walls, plasterboard wall partition adjoining en-suite, plaster ceiling, metal window frames with plaster reveals within secondary glazing
18a Frognal Gardens	1st Floor	106	Bedroom 2 dressing room	Timber floor with carpet covering, brick and plaster walls, plaster ceiling, metal window frames with plaster reveals within secondary glazing
18a Frognal Gardens	1st Floor	107	En-suite shower room	Timber floor with tile effect laminate flooring, plaster walls with ceramic tile covering, plaster ceiling, ceramic WC cistern, ceramic tiled boxing, timber skylight surround
18a Frognal Gardens	1st Floor	108	Bathroom	Timber floor with tile effect laminate flooring, ceramic tile covering to all walls, plaster ceiling, ceramic tiled boxing, timber skylight surround
18a Frognal Gardens	1st Floor	109	Bedroom 3	Timber floor with carpet covering, brick and plaster walls, plasterboard wall partition adjoining bedroom 4, plaster ceiling, metal window frames with plaster reveals within secondary glazing
18a Frognal Gardens	1st Floor	110	Bedroom 4	Timber floor with carpet covering, brick and plaster walls, plasterboard wall partition adjoining hallway cupboard, fibreboard wall panelling adjoining bedroom 3, plaster ceiling, metal window frames with plaster reveals within secondary glazing

Appendix 4 – Analysis Certificates

ENVIROCHEM
Analytical Laboratories Ltd.
12 The Gardens
Broadcut, Fareham
Hampshire
PO16 8SS

UKAS TESTING
1227

Tel: (01329) 287777
Fax: (01329) 287755
www.envirochem.co.uk
office@envirochem.co.uk

Our Ref: J164012 FI: 6
Your Ref:
Date: 26/03/2019

Asbestos Fibre Identification Report

Client:	Artisan Surveyors Ltd F4 Fareham Heights, Standard Way, Fareham, Hampshire, PO16 8XT
Site Address:	18a Frognal Gardens Hampstead, NW3 6XA
Sampled By:	Artisan Surveyors Ltd
Date sampled/received:	22nd March 2019
Date analysed:	26th March 2019
Analyst/s:	Ewelina Kowalczyk Pariyar
Analysis Location:	12 The Gardens, Broadcut, Fareham, Hampshire, PO16 8SS

ANALYTICAL PROCEDURE

Fibre identification was carried out in accordance with the documented `in-house' methods based on the HSE Guidance Note HSG 248. These employed stereo microscopy, polarized microscopy and dispersion staining techniques.

RESULTS

Sample No.	Sample Ref.	Location	Asbestos Detected	Asbestos Type
AA001019	BS543352	Z-Sub Level 1, Understairs cupboard, Loose insulation to floor	No	
AA001020	BS543353	Z-Sub Level 1, Lobby, Vinyl tile covering	No	
AA001021	BS543354	Z-Sub Level 1, Boiler room, Insulation board ceiling panels	Yes	Chrysotile Amosite
AA001022	BS543355	Z-Sub Level 1, Boiler room, Bitumenous pads to brick where ducting enters wall void	No	

NOTES:
1. Sample(s) were examined for the presence of 6 types of asbestos fibres: crocidolite (blue), amosite (brown), chrysotile (white), anthophyllite, actinolite and tremolite.
2. Samples collected by the client are evaluated using information provided by the client. For samples collected by the client the date of receipt is deemed to be the same as the date sampled.
3. Envirochem is a UKAS accredited laboratory for sampling and identification of asbestos containing materials.
4. Comments, observations and opinions are outside the scope of UKAS accreditation.
5. The analytical method in the HSG248 does not quantify the amount of asbestos present, therefore UKAS accreditation does not permit quantification.
6. If, during fibre identification, only 1 or 2 fibres are seen and identified as asbestos, then the term 'trace asbestos identified' is used.

SIGNATURE: Authorised signatory PRINT NAME: Frances Scott

ENVIROCHEM
Analytical Laboratories Ltd.
12 The Gardens
Broadcut, Fareham
Hampshire
PO16 8SS

UKAS TESTING
1227

Tel: (01329) 287777
Fax: (01329) 287755
www.envirochem.co.uk
office@envirochem.co.uk

Our Ref: J164012 FI: 6
Your Ref:
Date: 26/03/2019

Asbestos Fibre Identification Report

Client:	Artisan Surveyors Ltd F4 Fareham Heights, Standard Way, Fareham, Hampshire, PO16 8XT
Site Address:	18a Frognal Gardens Hampstead, NW3 6XA
Sampled By:	Artisan Surveyors Ltd
Date sampled/received:	22nd March 2019
Date analysed:	26th March 2019
Analyst/s:	Ewelina Kowalczyk Pariyar
Analysis Location:	12 The Gardens, Broadcut, Fareham, Hampshire, PO16 8SS

ANALYTICAL PROCEDURE

Fibre identification was carried out in accordance with the documented `in-house' methods based on the HSE Guidance Note HSG 248. These employed stereo microscopy, polarized microscopy and dispersion staining techniques.

RESULTS

Sample No.	Sample Ref.	Location	Asbestos Detected	Asbestos Type
AA001023	BS543356	External, Roof, Bitumen seal to skylight lid	No	
AA001024	BS543357	External, Roof, Cement cowl	Yes	Chrysotile Amosite

NOTES:
1. Sample(s) were examined for the presence of 6 types of asbestos fibres: crocidolite (blue), amosite (brown), chrysotile (white), anthophyllite, actinolite and tremolite.
2. Samples collected by the client are evaluated using information provided by the client. For samples collected by the client the date of receipt is deemed to be the same as the date sampled.
3. Envirochem is a UKAS accredited laboratory for sampling and identification of asbestos containing materials.
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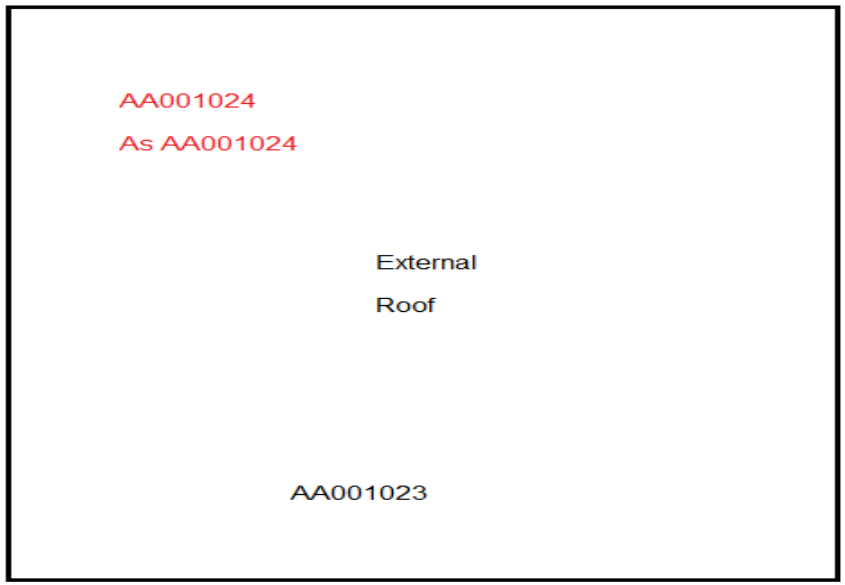
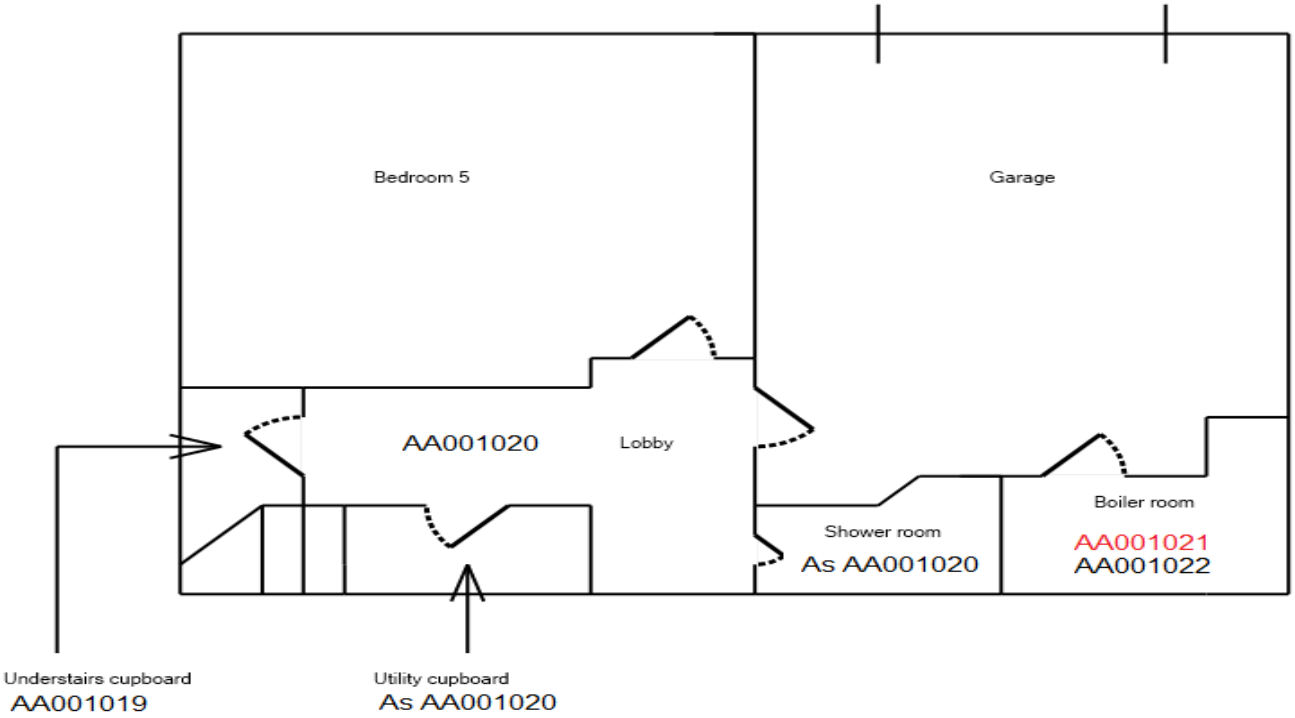
5. The analytical method in the HSG248 does not quantify the amount of asbestos present, therefore UKAS accreditation does not permit quantification.
6. If, during fibre identification, only 1 or 2 fibres are seen and identified as asbestos, then the term 'trace asbestos identified' is used.

SIGNATURE: Authorised signatory PRINT NAME: Frances Scott

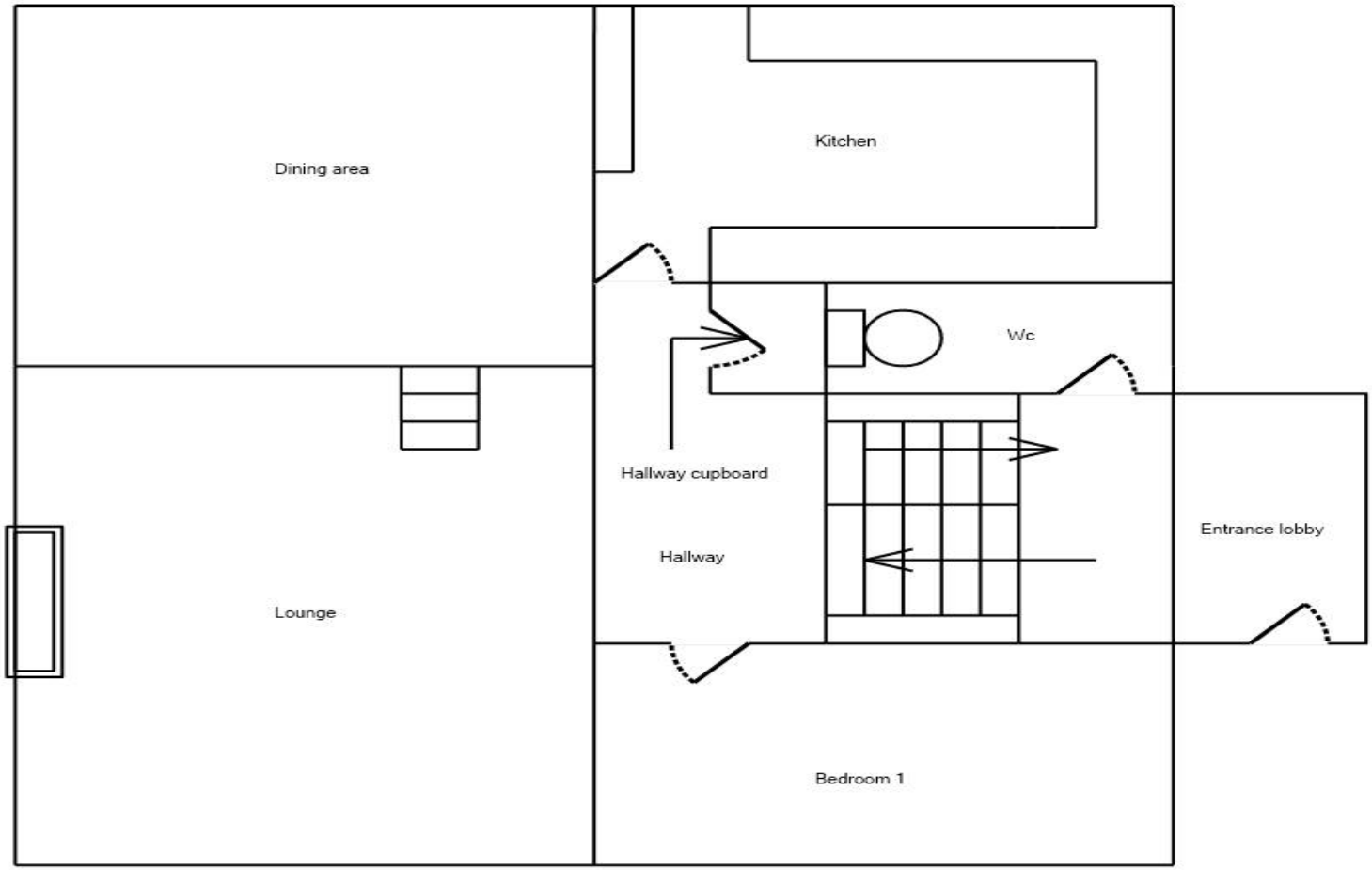
Appendix 5 – Plans



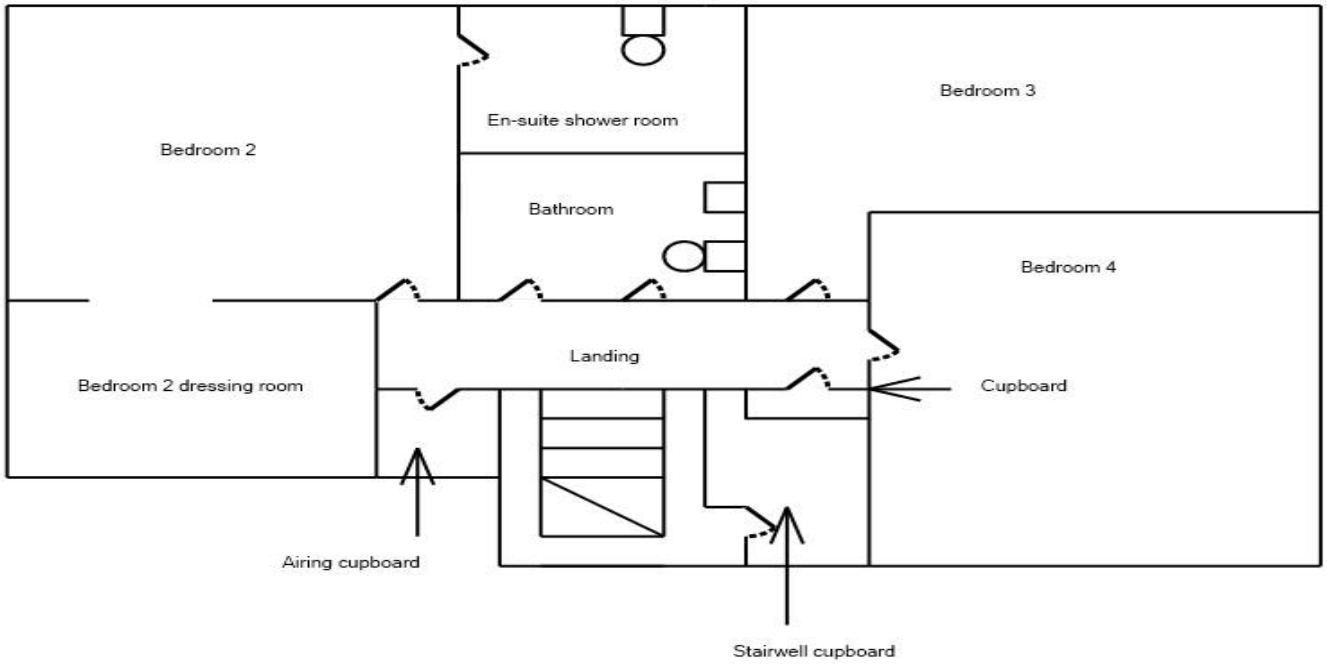
Client: Progress UK
Site: 18a Frognal Gardens
Floor: External
UPRN No: N/A



Client: Progress UK
Site: 18a Frognal Gardens
Floor: Z-Sub Level 1
UPRN No: N/A



Client: Progress UK
Site: 18a Frognal Gardens
Floor: Ground Floor
UPRN No: N/A



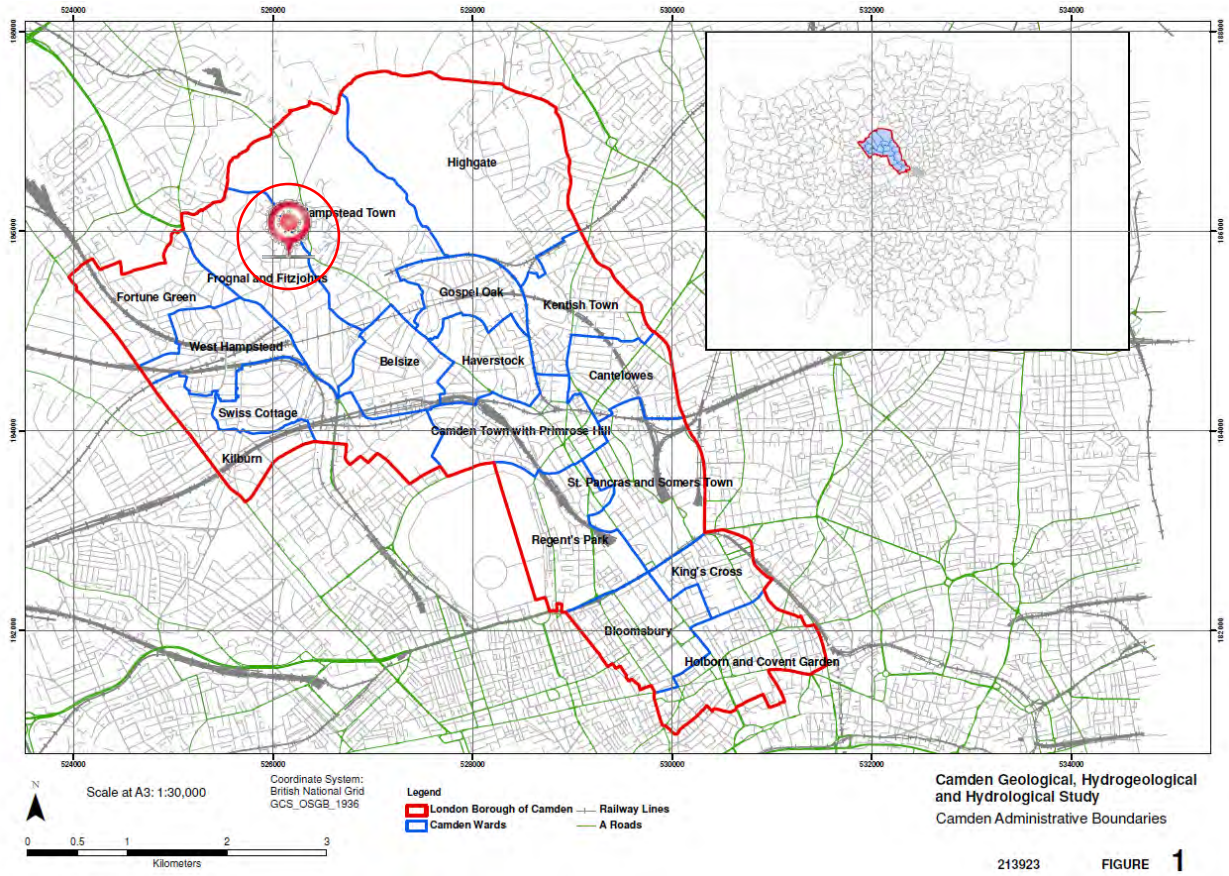
Client: Progress UK
Site: 18a Frognal Gardens
Floor: 1st Floor
UPRN No: N/A

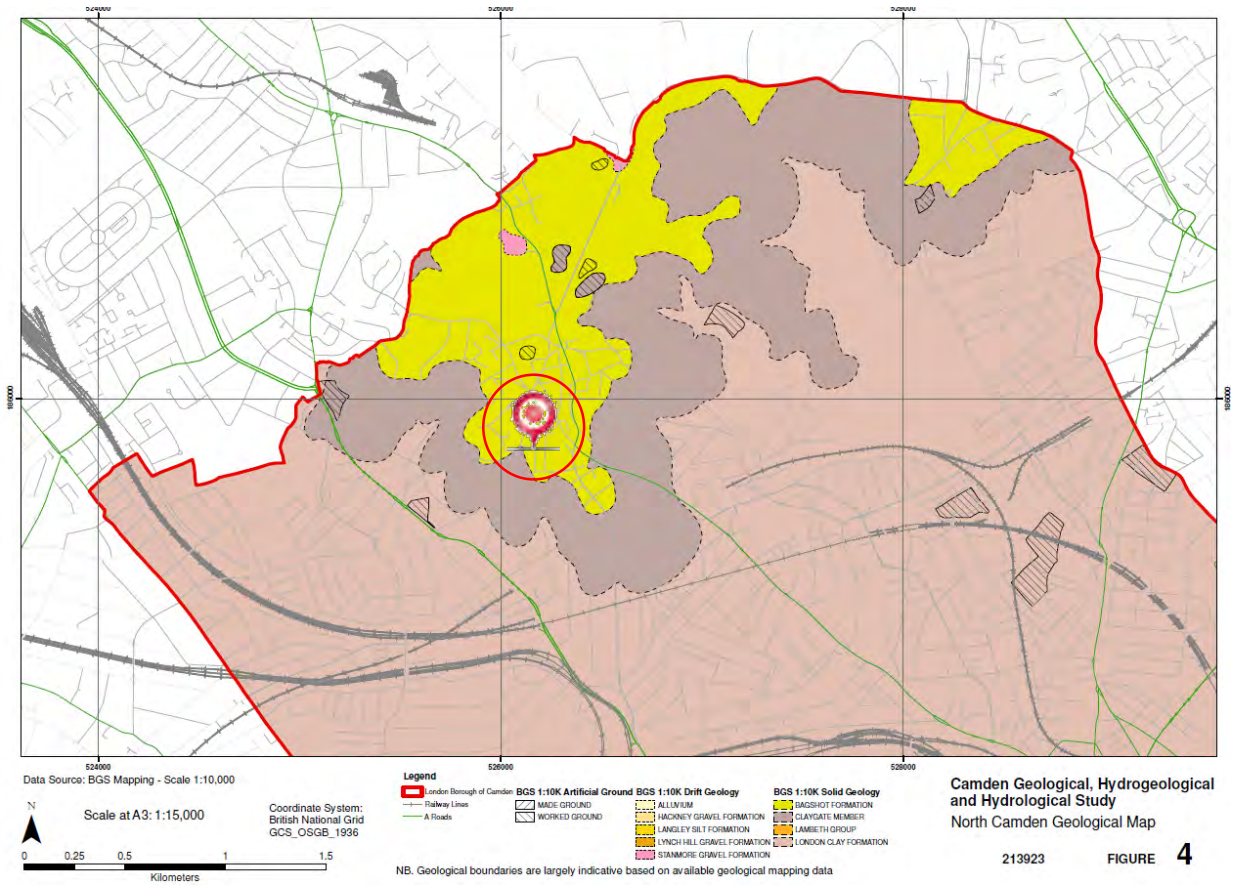
APPENDIX F

- Arup Figures for BIA Land Stability Assessment

Site & Location	18A Frognal Gardens Hampstead, London, NW3 6XA	Report No: 10402/SC

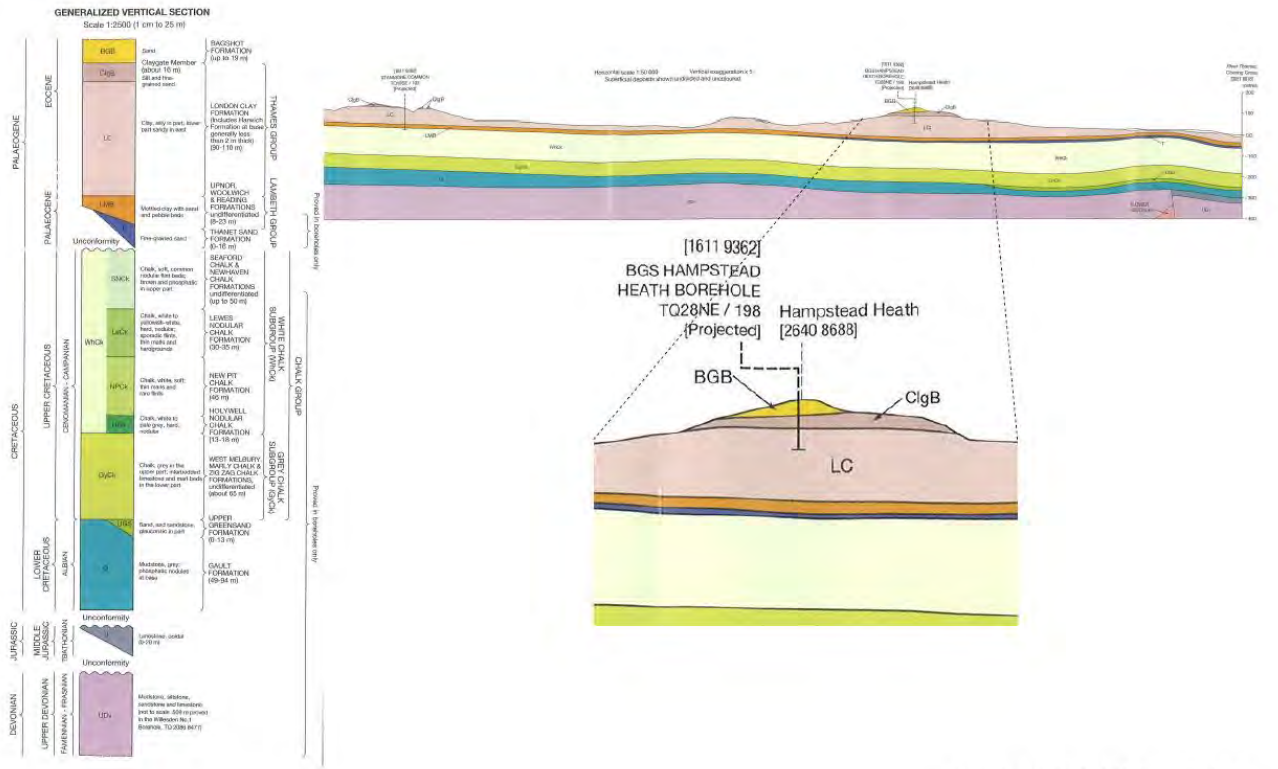
Arup Figs for BIA





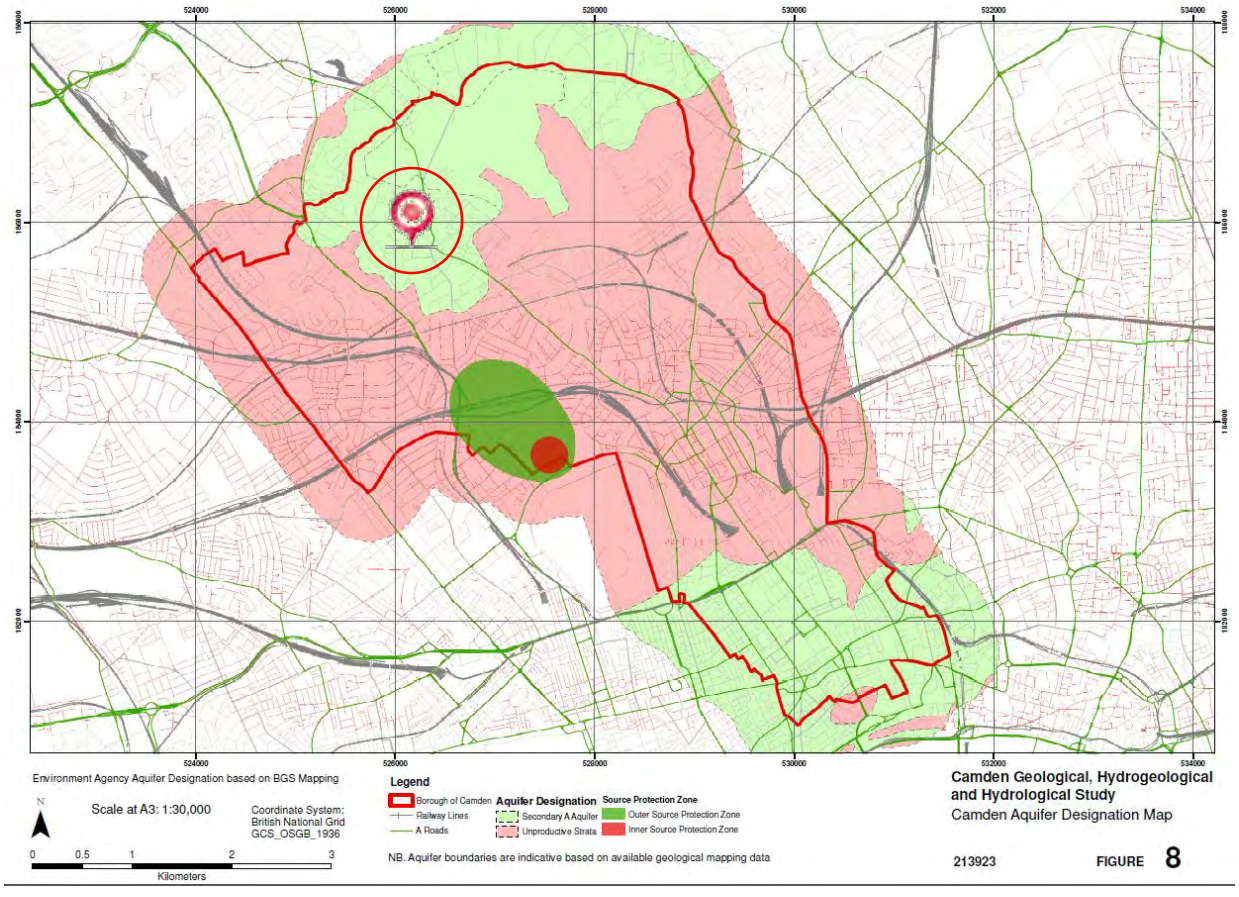
Site & Location	**18A Frognal Gardens Hampstead, London, NW3 6XA**	Report No: **10402/SC**

Arup Figs for BIA



Camden Geological, Hydrogeological and Hydrological Study
Geological Long Section (NW – SE)

213923 FIGURE **7**



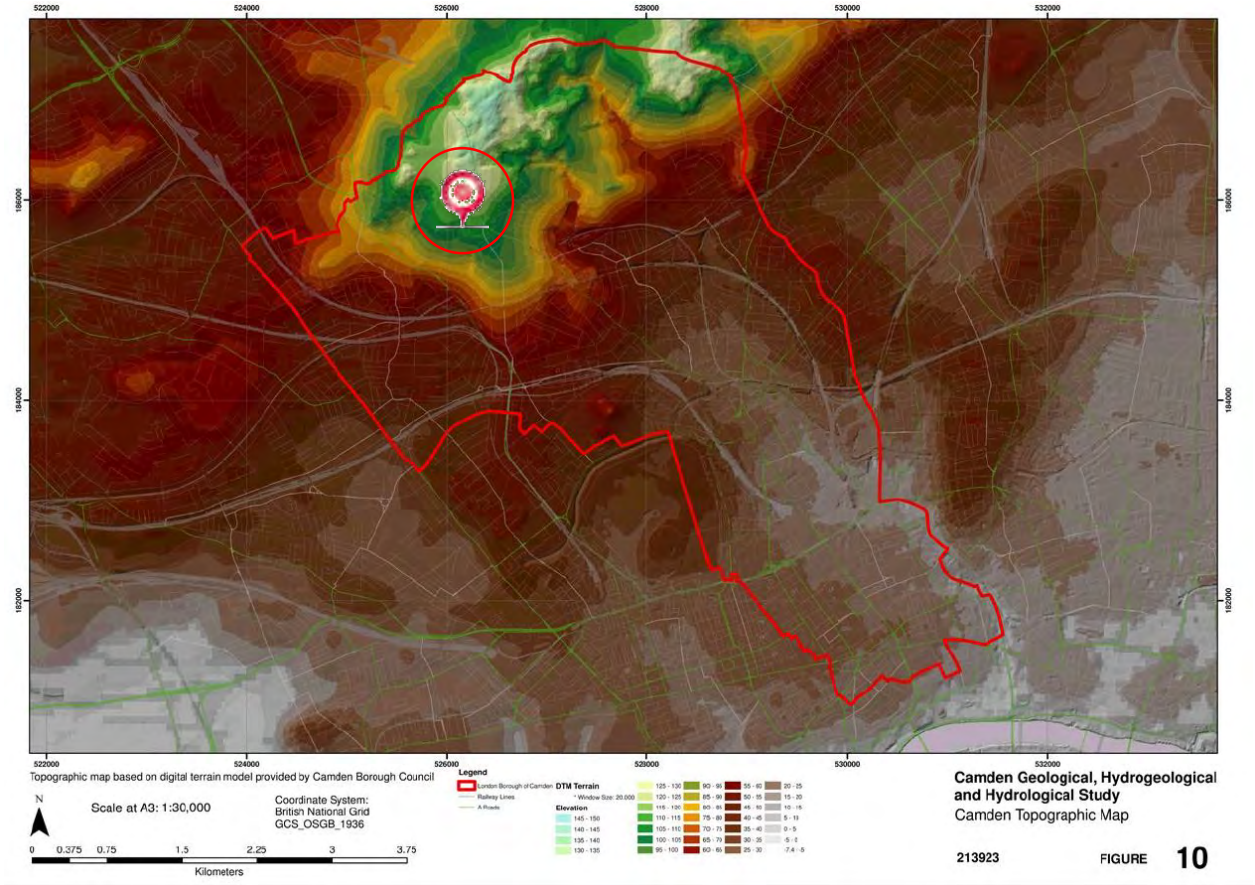
Camden Geological, Hydrogeological and Hydrological Study
Camden Aquifer Designation Map

213923 FIGURE **8**

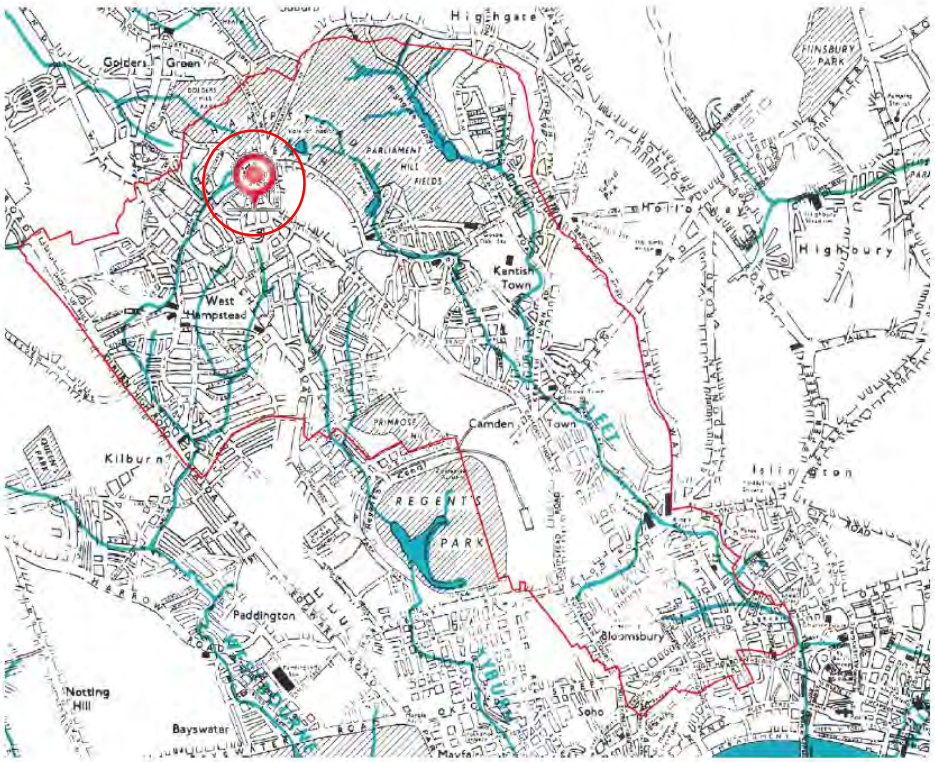
Soil Consultants

Site & Location	**18A Frognal Gardens** **Hampstead, London, NW3 6XA**	Report No: **10402/SC**

Arup Figs for BIA



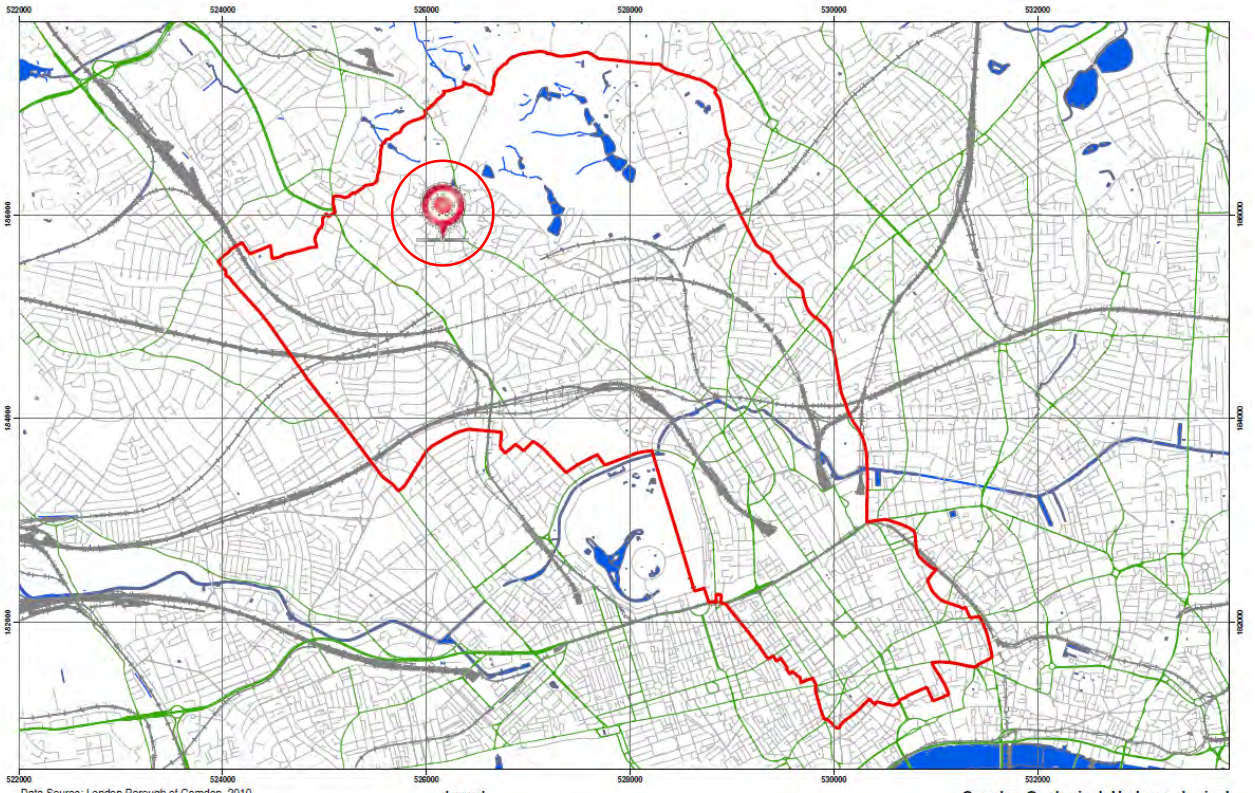
Arup Figs for BIA



Source – Barton, Lost Rivers of London

Camden Geological, Hydrogeological and Hydrological Study
Watercourses

213923 FIGURE **11**



Camden Geological, Hydrogeological and Hydrological Study
Camden Surface Water Features

213923 FIGURE **12**

Site & Location	**18A Frognal Gardens Hampstead, London, NW3 6XA**	Report No: **10402/SC**

Arup Figs for BIA

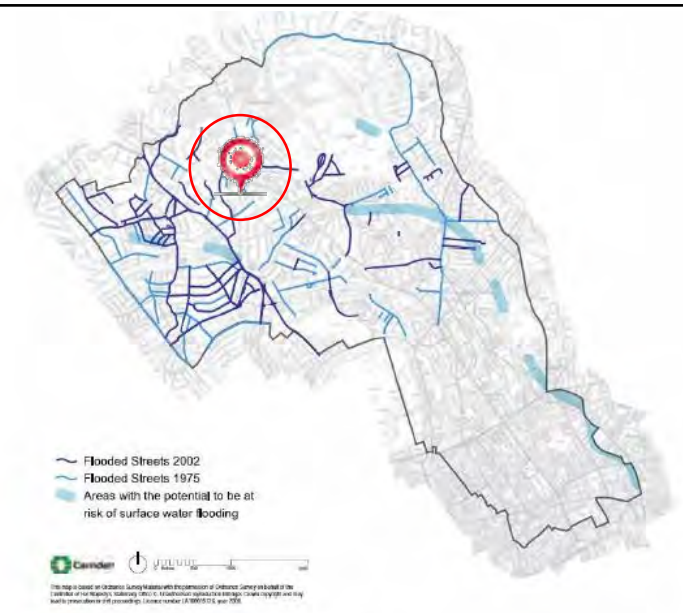
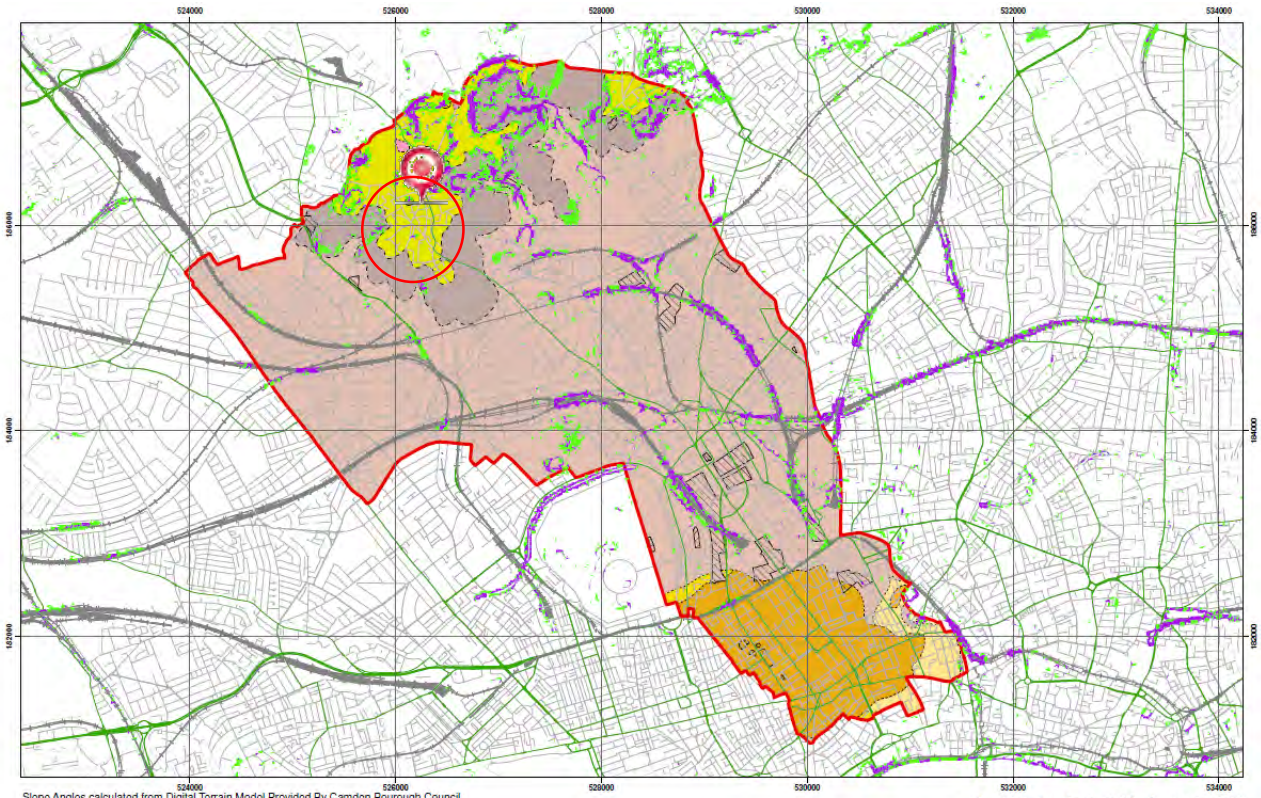


Figure 5 from Core Strategy, London Borough of Camden

Camden Geological, Hydrogeological and Hydrological Study
Flood Map

213923 FIGURE **15**

:

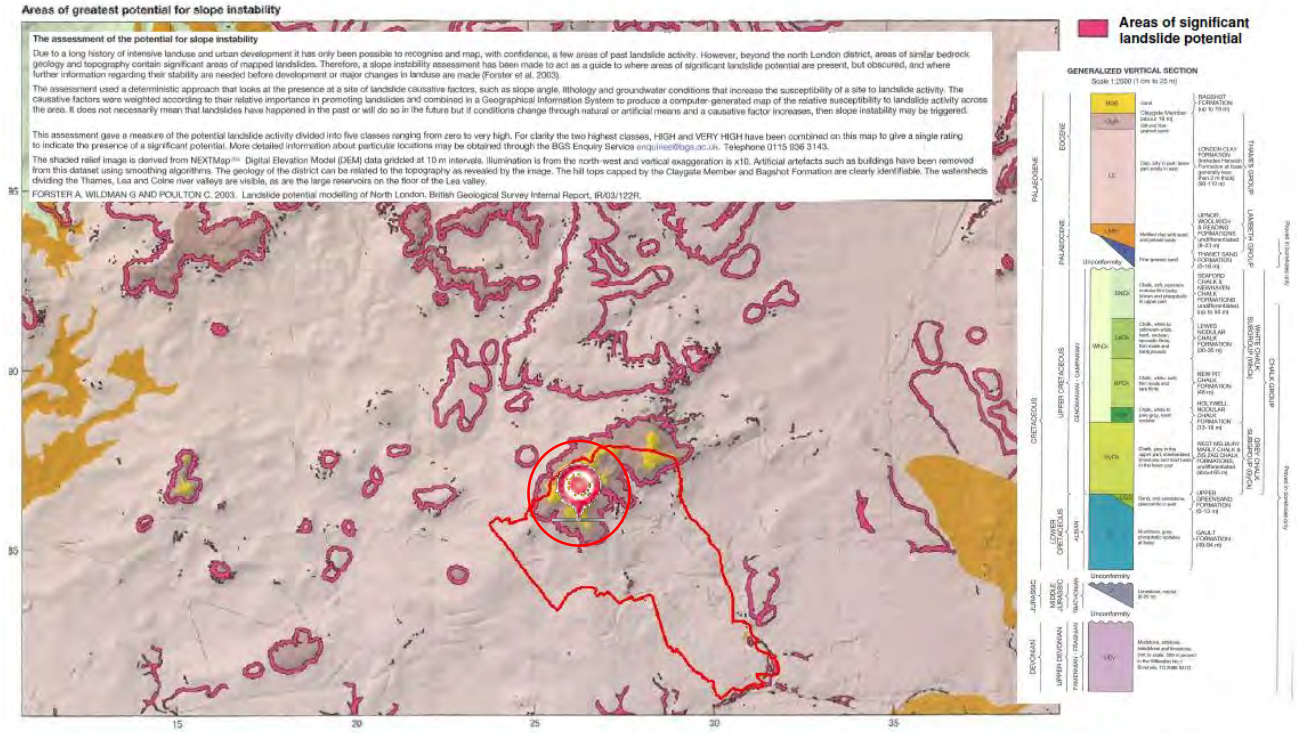


Camden Geological, Hydrogeological and Hydrological Study
Slope Angle Map

213923 FIGURE **16**

Soil Consultants

Arup Figs for BIA



Source - British Geological Society, 1:50,000 Series
England and Wales Sheet 256 – North London

Camden Geological, Hydrogeological and Hydrological Study
Areas of landslide potential

213923 FIGURE **17**

Source - London Borough of Camden, January 2010. *Camden Core Strategy Proposed Submission.*

Camden Geological, Hydrogeological and Hydrological Study
Transport Infrastructure

213923 FIGURE **18**

APPENDIX G

- CSG Usher's Ltd, 'Tree report in accordance with BS 5837:2012', ref: 031682, date: 28th August 2019

CSG USHER'S LTD

Unit 13 Waterways Business Centre
Navigation Drive, Enfield, EN3 6JJ
01992 703 840
enquiries@csgushers.co.uk
www.csgushers.co.uk

Tree report in accordance with BS 5837:2012

Site Address: 18a Frognal Gardens, London, NW3 6XA
Ref: 031682/v2

Arboriculturist: James Forrest / CSG (Usher's) Ltd. (07983443387)
Architect: Ayesha Khan / Alison Brooks Architects (02072679777)
Client: Nadine Majaro (07831392676

Signed:_____

Report Date: 28th August 2019 (v1) / 25th October 2020 (v2)

TABLE OF CONTENTS

APPENDICES

Demolition of existing structure and construction of a new 4-storey dwelling in its place

1.0 Instructions

1.1 I have been instructed by the client, Nadine Majaro, via telephone with regards to a planning application to be made by themselves in respect to the above construction project. I shall report on the following in accordance with BS 5837:2012 'Trees in Relation to design, demolition and construction – recommendations':

1. Tree survey [Appendix 1]
2. Arboricultural Impact Assessment (AIA) [Section 3.0]
3. To produce an Arboricultural Method Statement (AMS) to include a Tree Protection Plan (TPP) [Section 4.0]

Following a visit (6th February 2019) to survey the trees knowing the location of the new dwelling, the following arboricultural information is provided in support of the application.

1.2 This report is based on a previous report that was withdrawn and replaced with this v2 to reflect changes to the previously submitted proposal. These alterations included:

- Height to top of chimney reduced by 850mm
- Height to top of roof reduced by 350mm
- Curved 1220mm setback to east gable wall
- 230mm setback to top floor front wall
- 450mm top floor setback from east gable wall
- 1st and 2nd floor levels reduced 150mm
- Side wall height reduced by 450mm
- Window height reduced by 650mm
- Front GF projection set back by 1575mm
- More opaque planting to boundary with 18

Fundamentally, none of these changes have materially altered the impact the proposal will have on the retained trees. If anything, the slight footprint reduction has lessened the impact, albeit by a negligible degree. As a result, the only difference between this version of the arboricultural report, when compared to the original, is a new Tree Protection Plan (attached as Appendix 2).

2.0 The site

2.1.1 The proposed development as per drawings provided by the architects is for the construction of a new 4-storey dwelling in place of the structure currently in place.

The project will involve the demolition of the existing building. The plan is to then construct a new house on the same site but with an increase in building footprint. Deep excavation will be required to create living space below the level of the ground.

Landscaping of both the front and rear garden areas will be undertaken post construction.

2.1.2 An accurate, to scale map of the site was provided by the client [ABA-2473-20-003]. I have annotated this drawing to produce a TPP [CSG/TPP/FG2] and attach this to the report as Appendix 2. This plan presents the proposed layout opposed to the site as it currently exists.

2.1.3 As the current building is being demolished, site access will allow for heavy plant machinery on to site. The trees do not pose a height restriction to what can enter the site. Parking of construction vehicles will be on Frognal Gardens itself, comfortably outside the RPA of T10.

2.2 Trees around the site

2.2.1 There are several significant trees located around this site, both part of 18a Frognal Gardens and 3rd party trees. The wider visual impact of the some of the larger trees is dampened by them being set back from public view but, nonetheless, they provide visual amenity in combination enriching the area as a whole. A schedule of the significant trees, their condition and category of retention is attached as Appendix 1.

2.2.2 The property and neighbouring properties contains a mix of young, semi mature, early mature and mature species including lime, sycamore and horse chestnut. 18a Frognal Gardens also has a wide array of mature shrubs both in the front and rear gardens. These have not been surveyed but have been acknowledged.

2.2.3 This report includes only those trees around the proposal that require assessment as to the impact the process of construction works may have on them and what effect the trees will have on the project in the future.

Any trees that are not within a distance 12x their stem diameter may not have not been considered for this report for this reason.

2.2.4 The most significant tree with respect to the proposal is a lime (T10) [Figure 1] located towards the rear boundary of 18a Frognal Gardens' rear garden. No works are planned to occur within the RPA of this tree.

Figure 1 T10

2.2.5 Through a check with the Local Authority (London Borough of Camden), there is a Tree Preservation Order (TPO) on a tree within the front garden (not marked on survey), mixed in amongst mature shrubbery. This is a false acacia (*Robinia pseudoacacia*) that was felled by CSG (Usher's) due to poor health in late 2006. The stump is currently regenerating despite past works to prevent this. There is little in the way of amenity remaining in its current state and its complete removal is recommended to facilitate the proposal. Planting planned for the front garden area will serve to mitigate against this loss.

2.2.6 All recommended tree works considered necessary for health and safety reasons or to facilitate the development will be agreed with the Local Planning Authority and undertaken in accordance with the planning conditions attached to the planning consent. They will be undertaken in accordance with British Standard 3998:2010 'Recommendations for Tree Works', unless otherwise specified with clear justification for any deviation from the British Standard. This will be undertaken by an arboricultural contractor approved by the Local Authority.

2.3 New structures

2.3.1 New dwelling to be sited and constructed as per architectural drawings.

3.0 Arboricultural Impact Assessment (AIA)

3.1 Presence of Tree Preservation Orders (TPO) or Conservation Area Designation

3.1.1 I have checked on the London Borough of Camden's website and confirmed the site is located within a designated Conservation Area. An e-mail request to the Local Authority seeking to confirm the presence of TPOs on or around this site was been placed by the architect. It was confirmed that a TPO was attached to a tree within the front garden (*Robinia pseudoacacia*). This tree was felled in 2006 with the stump retained (see 2.2.5).

3.2 Effects on amenity value of the trees from development and facilitation pruning

3.2.1 No facilitation works are currently planned to retained trees. No impact on amenity value of the area as a result.

3.2.2 T2, T7, T8 and T9 are recommended for removal for reasons already stated (see schedule with Appendix 1b). It is anticipated that the overall loss in amenity will be minor given T7-T9 are located within the rear garden, away from public view.

The removal of the majority of the mature shrubbery both in the front and rear gardens will have the greater impact on the overall amenity. These items are being removed to facilitate development as well as clearing the way for re-landscaping where extensive planting has been planned to restore any amenity that may have been lost.

3.3 Potential incompatibilities between the layout and the trees proposed for retention

3.3.1 Construction activity will technically enter the RPA of T1 when drawn as a nominal circle. Given the established hard standing (pavement, tree surround and tarmac driveway to eastern side of property) in between T1 and the front garden of 18a, it is not anticipated that any significant roots from T1 exist within the section of the RPA that clips the front corner of the rear garden. There is very little in the way of root-induced disturbance of these surfaces that might suggest root encroachment into the RPA.

Excavation works to accommodate the basement level will occur outside the RPA of T10 as drawn as a nominal circle. There is no reason to deviate from a nominal circle. From that point of view, there is no incompatibility between T10 and the new structure. New decking will be laid to the rear of the proposed dwelling that will exist very slightly in the southern portion of T10's RPA. This will not involve extensive ground excavation and will be done by hand-only. Measures laid out within the AMS will be followed should roots from this tree be encountered.

Landscaping works will have no impact within the front garden as roots from T1 are not likely to be encountered. Landscaping works within the rear garden will not involve an alteration to level or grade of the soil and will not involve any significant groundworks that might impact on T10. T10's location in a raised area behind a retaining wall with an existing hard standing surround means that little root disruption is foreseeable despite landscaping works being planned within the RPA.

There is a proposal to remove and rebuild the retaining wall directly adjacent to T10. The demolition will be done by hand only and arboricultural advice will be sought should any significant roots impede the rebuilding of this wall. The existing paving slabs directly to the south of T10 will be lifted by hand and replaced with mulch. This will be of benefit to T10 providing an improved rooting environment. The wall will be then serve as a physical barrier between T10 and the worksite.

T4, T5 and T6 are 3rd party trees whose RPA clips the north-eastern corner of the site. Similar to T1, there is not an anticipation that significant roots will be found in this portion of the garden given the presence of a boundary wall and an established tarmac driveway [Figure 2] between the two.

Figure 2 Established driveway between 18a and 3rd party trees to the east

3.3.2 Measures have been laid in within the AMS for procedures to follow should roots be encountered in this area but, given factors previously mentioned, there is not an anticipation that any significant roots (over 25mm in diameter) will be encountered. Resultantly, the long-term health of these trees is highly unlikely to be compromised during ground disturbance caused by the demolition and excavation works.

3.3.3 The house will connect to the existing rainwater, soil and waste drainage which is located under the driveway in the front garden (marked as storage area on TPP). A tank will also be installed under the driveway to provide additional attenuation to the sewer. All lie in the centre of the current drive outside of the RPA of any retained trees.

3.4 Infrastructure requirements – highway visibility, lighting, CCTV, services etc

3.4.1 There is no requirement for any tree removal or pruning to create adequate highway visibility. There will be no requirement for street lighting or CCTV visibility or services close to any of the retained trees. Should that not be the case, any below-ground services that are installed within or pass through the RPAs of retained trees will be done in accordance with NJUG Volume 4 "Guidance for the planning, installation and maintenance of utility services in proximity of trees" to minimise the disturbance to the retained trees' root systems.

3.4.2 No services (unless otherwise highlighted in 3.4.1) or other infrastructure requirements will have any impact on the retained trees as far as I know.

3.5 Mitigating tree loss/new planting

3.5.1 There are sufficient trees of greater value within and surrounding this site to mitigate against the loss of the low value trees being removed.

Replacement tree plantings will be carried out to mitigate against the complete removal of the protected tree previously felled down to stump level.

3.6 Proximity of trees to structures

3.6.1 The impact of trees on buildings and vice versa and allowance for future growth need to be considered when designing the foundations and they need to be suitable to withstand the potential indirect damage roots from this tree, and others in the surrounding area, could have. Therefore, foundation design needs to be in accordance with NHBC Chapter 4.2 'Building near trees'.

Given the proposal includes a basement level, the foundations will be of a depth that, going forward, roots would not ordinarily be encountered at.

The canopies of retained trees will not overhang the roof of the proposed structure.

3.6.2 As T1 is south-east of the proposal and close enough to have an effect, a certain level of shading to the property will be present at the start of the day. The size and number of windows will need to be designed in acceptance of this fact to allow as much natural light in as possible while still retaining the tree without modification.

The remainder of the retained trees are due north of the proposal and, therefore, shading is not an issue

3.6.3 Following a prediction derived from previously stated factors, it is not considered likely that significant roots from any retained trees of a diameter greater than 25mm will be encountered within the construction site. Any severance of a small number of minor roots will have an insignificant effect on the future growth and health of the retained trees. Where more significant roots are encountered, procedures laid out in the AMS should be adhered to.

3.6.4 Overall the processes of construction should not have a detrimental impact on the trees provided care is taken and the AMS is adhered to.

3.7 Issues to be addressed by the arboricultural method statement (AMS)

- Protective fencing to be established around the retained trees
- Ground protection measures around the RPA of retained trees where work access is required
- Site access
- Contractors parking, welfare facilities and storage areas
- Hard surfaces within the RPA of retained trees
- Remedial tree work
- Construction within the modified RPA of retained trees

4.0 Arboricultural Method Statement (AMS) for Tree Protection Throughout the Duration of Demolition and Construction Works

Arboricultural Method Statement includes a Tree Protection Plan to identify:

- Trees to be retained – identified with a continuous black line
- Protective fence positions therefore the Construction Exclusion Zones
- Measurements to identify fence positioning in relation to centre of tree
- Contractor huts and storage areas

4.1 Construction Exclusion Zones (CEZ)

4.1.1 No need for the setting up a CEZ using protective fencing for this site. Rebuilding of retaining wall adjacent to T10 to be done prior to any other rear garden landscape works. This will then serve as a physical barrier between T10 and the work site. T1 and T4-T6 detached from the project enough to not warrant physical fencing.

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4.2 Access Details

4.2.1 Access for construction traffic will be via Frognal Gardens. No plant machinery will have access in to the RPA of any retained trees.

4.2.2 Where incursion into RPAs is unavoidable within non hard-standing areas this will be restricted only to persons. Ground protection for pedestrians within the RPA will consist of single thickness scaffold boards on a scaffold frame on top of 100mm of woodchip laid on a geotextile membrane.

4.3 Contractors car parking

4.3.1 Parking limited to Frognal Gardens. This is a tarmacked highway. Any technical incursion into T1's RPA is not considered an issue.

4.4 Site Huts and Toilets

4.4.1 Likely to be within the front garden or on Frognal Gardens. In any case, will not be within T1's RPA.

4.5 Storage Space

4.5.1 A designated storage area will be located within front of the property or garden area outside of RPA. Marked on Tree Protection Plan.

4.6 Additional Precautions

4.6.1 No storage of materials, lighting of fires will take place within any construction Exclusion Zone. No mixing or storage of materials will take place up a slope where they may leak into a Construction Exclusion Zone.

4.6.2 No fires will be lit within 20 metres of any tree stem and will take into account fire size and wind direction so that, no flames come within 5m of any foliage.

4.6.3 No notice boards, cables or other services will be attached to any tree.

4.6.4 Materials which may contaminate the soil will not be discharged within 10m of any tree stem. When undertaking the mixing of materials it is essential that, any slope of the ground does not allow contaminates to run towards a tree root area. This includes fuels, oils, concrete mix etc.

4.6.5 All services, including drainage and soakaways, to be installed outside the RPA of retained trees. Where unavoidable, any below-ground services that are installed within or pass through the RPAs of retained trees will be done in accordance with NJUG Volume 4 “Guidance for the planning, installation and maintenance of utility services in proximity of trees” to minimise the disturbance to the retained trees’ root systems.

4.7 Demolition / Excavation

4.7.1 Excavation of existing hard surface within the RPA of all retained trees to be done by hand only. Exposed roots to be wrapped in dry, clean hessian sacking to prevent desiccation and adverse temperature change. Appointed arboriculturist to be called to site to make an assessment on the implication of damage to the roots encountered.

Only roots smaller than 25mm in diameter may be pruned back but must be with a clean suitable cutting tool and, preferably, pruned to a side branch. To be done in accordance with NJUG Volume 4 "Guidance for the planning, installation and maintenance of utility services in proximity of trees". Prior to backfill, hessian wrap must be removed and retained roots must be surrounded by sharp sand prior to soil replacement. Replacement topsoil must comply with BS 3882:2007 'Specification for topsoil and requirements for use'

4.8 Hard Surfaces

4.8.1 New hard surfacing to the front of the property.

4.9 Soft Landscaping / Use of Herbicides

4.9.1 No soft landscaping within 2 metres of the base of retained trees. Only mulch to be placed within this area. Any mulch used must be BS EN 4790:1997 certified and be applied to a depth of no more than 100mm. Mulching material must be kept away from directly contacting the bark of any tree stems.

4.9.2 Any herbicide used prior to construction phase shall be systemic, spot applied, and mixed according to manufacturer's recommendations.

4.10 Contingency Plan

4.10.1 Water will be made readily available on site and will be used to flush spilt materials through the soil and avoid contamination to tree roots. At the time of any spillage the main contractor will contact an arboriculturist for advice.

4.11 Remedial Tree Works

4.11.1 Tree works (see section 3.2 of AMS) to be done prior to construction phase. All tree works are to be carried out in accordance with BS 3998 (British Standard Recommendations for Tree Work 2010).

4.12 Responsibilities

4.12.1 It will be the responsibility of the main contractor to ensure that the planning conditions attached to planning consent are adhered to at all times and that a monitoring regime in regards to tree protection is adopted on site.

4.12.2 The main contractor will be responsible for contacting the Local Planning Authority at any time issues are raised related to the trees on site.

4.12.3 If at any time pruning works are required permission must be sought from the Local Planning Authority first and then carried out in accordance with BS 3998:2010 'Recommendations for Tree Works'.

4.12.4 The main contractor will ensure the build sequence is appropriate to ensure that no damage occurs to the trees during the construction processes. Protective fences will remain in position until completion of ALL construction works on the site.

4.12.5 Any fencing and signage must be maintained in position at all times and checked on a regular basis by an on-site person designated that responsibility.

4.12.6 The main contractor will be responsible for ensuring sub-contractors do not carry out any process or operation that is likely to adversely impact upon any tree on site.

4.12.7 Appointed arboriculturist must inspect the site at the start of the works and monitor it throughout. They must be on hand to assist and advise on any further arboricultural issues that may arise during the construction phase. All relevant persons must be briefed prior to works commencing laying out the arboricultural protection in place and the measures that must be adhered to so that the trees are protected

Surveyor: James Forrest	**Client:** Nadine Majaro	**Site:** 18a Frognal Gardens, NW3 6XA
Survey Date: 6th February 2019	**Weather:** Cloudy, Windy	**Reference:** 031682

Tree No.	Species	Height (m)	Estimated Crown spread (m)	stem diameter (mm)	Existing height of (m)		Life stage	Condition		Preliminary management	Estimated remaining contribution (Years)	Category grading
					First significant branch	Canopy		Physiological	Structural			
T1	Horse chestnut (*Aesculus hippocastanum*)	16#	N 6 S 7 E 7 W 6.5	890	4.0-S#	5.5#	M	Fair. Local Authority tree. Bleeding canker present but not advanced at this moment in time	Fair	None	20+	B1/2
T2	Holm oak (*Quercus ilex*)	4#	N 1.5 S 0.5 E 1 W 1	80	2.0-W#	2.0#	Y	Fair	Fair	None	10+	C1
G3	Mixed species	9#	N/A	N/A	N/A	N/A	N/A	Fair	Fair. Small 3rd party trees / shrubs that may affect access for larger vehicles using access road to the side of the site	None	10+	C2
T4	Sycamore (*Acer pseudoplatanus*)	13#	N 4 S 4 E 4 W 4	650#	N/A (restricted view)	N/A (restricted view)	EM	Limited access to view and assess fully	3rd party tree with limited access to fully view. Been reduced recently and does not overhang the site	None	20+	B1*

Tree No.	Species	Height (m)	Estimated Crown spread (m)	stem diameter (mm)	Existing height of (m)		Life stage	Condition		Preliminary management	Estimated remaining contribution (Years)	Category grading
					First significant branch	Canopy		Physiological	Structural			
T5	Sycamore (*Acer pseudoplatanus*)	13#	N 4 S 4 E 4 W 4	650#	N/A (restricted view)	N/A (restricted view)	EM	Limited access to view and assess fully	3rd party tree with limited access to fully view. Been reduced recently and does not overhang the site	None	20+	B1*
T6	Sycamore (*Acer pseudoplatanus*)	18#	N 7 S 7 E 7 W 7	600# / 600#	N/A (restricted view)	N/A (restricted view)	EM	Limited access to view and assess fully	3rd party tree with limited access to fully view. Canopy overhangs the tarmac access road but not the site itself	None	20+	B1*
T7	Evergreen magnolia (*Magnolia grandiflora*)	5.5#	N 3 S 1.5 E 2.5 W 1.5	300 (at 1.3m AGL - low crown break)	1.5-N#	1.5#	EM	Fair	Ivy obscuring view of mid-crown. Decay noted to stem at 1.3m - relatively minor. Pruning stubs present. Previous reduction history	None	10+	C1
T8	Hazel (*Corylus avellana*)	6#	N 2 S 2.5 E 2 W 2	140	1.0-W#	1.5#	SM	Fair	Fair	None	10+	C1
T9	Elder (*Sambucus nigra*)	5#	N 0 S 4 E 1 W 1	250# (restricted access to measure)	2.0-S#	1.0#	SM	Stems have died back post-pruning	Ivy obscuring inspection of base and trunk. Leaning markedly to the south	Remove	<10	U

Tree No.	Species	Height (m)	Estimated Crown spread (m)	stem diameter (mm)	Existing height of (m)		Life stage	Condition		Preliminary management	Estimated remaining contribution (Years)	Category grading
					First significant branch	Canopy		Physiological	Structural			
T10	Lime (*Tilia* sp.)	18#	N 6 S 6 E 6 W 6	850# (restricted access to measure)	6.0-E#	6.0#	M	Appears adequate but there was restricted access preventing a view of the tree from all angles	Ivy, basal + epicormic shoots obscuring inspection of base and trunk. Fence restricting access to northern side of trunk. Decay potentially present in old pollard point on northern side - limited view to assess	Strip ivy from lowest 2m of trunk + remove basal + epicormic shoots to allow fuller inspection / Carry out aerial inspection of crown from a climbed position - condition of old pollard points of particular interest	20+	B1*
T11	Privet (*Ligustrum* sp.)	4#	N 1.5 S 2 E 1.5 W 2.5	150 / 120	1.5-S#	1.5#	EM	Fair	Ivy obscuring inspection of base and trunk	None	10+	C2*

KEY TO TREE SURVEY FORM

Tree No. Refer to plan

Species Common name (*scientific name*)

Height Measured in metres from the ground to the top of the crown [Recorded to the nearest half metre for dimensions up to 10m and the nearest whole metre for dimensions over 10m]. When suffixed with a # it denotes that the value has been estimated.

Crown spread Estimated in metres (N = north / E = east / S = south / W = west) [Rounded up to the nearest half metre for dimensions up to 10m and up to the nearest whole metre for dimensions over 10m].

Stem diameter Measured at 1.5m above ground level [Rounded to the nearest 10mm]. Where stem diameter has been measured at a different height this will be stated and justified.

Existing height of First significant branch – measured in metres from the ground up. Direction of growth noted (N = north /S = south /E = east / W = west) When suffixed with a # it denotes that the value has been estimated.
Canopy – measured in metres from the ground up. [Recorded to the nearest half metre for dimensions up to 10m and the nearest whole metre for dimensions over 10m]. When suffixed with a # it denotes that the value has been estimated.

Age class

Y Young – within 1st quarter of species' life expectancy
SM Semi-mature – within 2nd quarter of species' life expectancy
EM Early mature – within 3rd quarter of species' life expectancy
M Mature – within 4th quarter of species' life expectancy
OM Over-mature – in natural decline
V Veteran – a tree that is of interest biologically, aesthetically or culturally because of its age, size and condition

Condition

Physiological

An assessment of the physiological condition (i.e. health/vitality) of the tree categorised into:

GOOD a tree in a healthy condition with no significant problems
FAIR a tree generally in good health with some problems that can be remediated
POOR a tree in poor health with significant problems that can't be remediated
DEAD a tree without sufficient live material to sustain life

Structural

An assessment of the structural/safe condition of the tree categorised into:

GOOD a tree in a safe condition with no significant defects
FAIR a tree in a safe condition at present but with defects or with significant defects that can be remediated
POOR a tree with significant defects that can't be remediated

Notes related to both physiological and structural condition might follow the categorization in order support the statement and give greater detail on the true quality and value of the tree.

Minor deadwood – less than 25mm in diameter
Moderate deadwood – 25-50mm in diameter
Major deadwood – greater than 50mm in diameter

Preliminary management

These may include further investigations for the presence or extent of decay or climbed inspections, ivy removal or pruning works when access is a non-moveable aspect etc (NB this is **not** intended to be a specification for tree work and further advice maybe required prior to implementation). Trees assessed as being in apparently immediately hazardous condition will be notified to the client separately as soon as possible.

Estimated remaining contribution

An estimate of the remaining life contribution in years that the tree or group of trees is expected to have based on species, condition on the site in its current context. The following bands are used:

<10 - Tree is dead or dying and unlikely to contribute beyond 10 years
10+ - Tree is assessed as being able to contribute to the site for 10+ years
20+ - Tree is assessed as being able to contribute to the site for 20+ years
40+ - Tree is assessed as being able to contribute to the site for 40+ years

Category grading

A = Trees of high quality with an estimated remaining life expectancy of at least 40 years
B = Trees of moderate quality with an estimated remaining life expectancy of at least 20 years
C = Trees of low quality with an estimated life expectancy of at least 10 years, or young trees with a stem diameter below 150mm
U = Trees in such a condition that they cannot realistically be retained as living trees in the context of the current land use for >10 years

1 = Mainly arboricultural qualities
2 = Mainly landscape qualities
3 = Mainly cultural values, including conservation

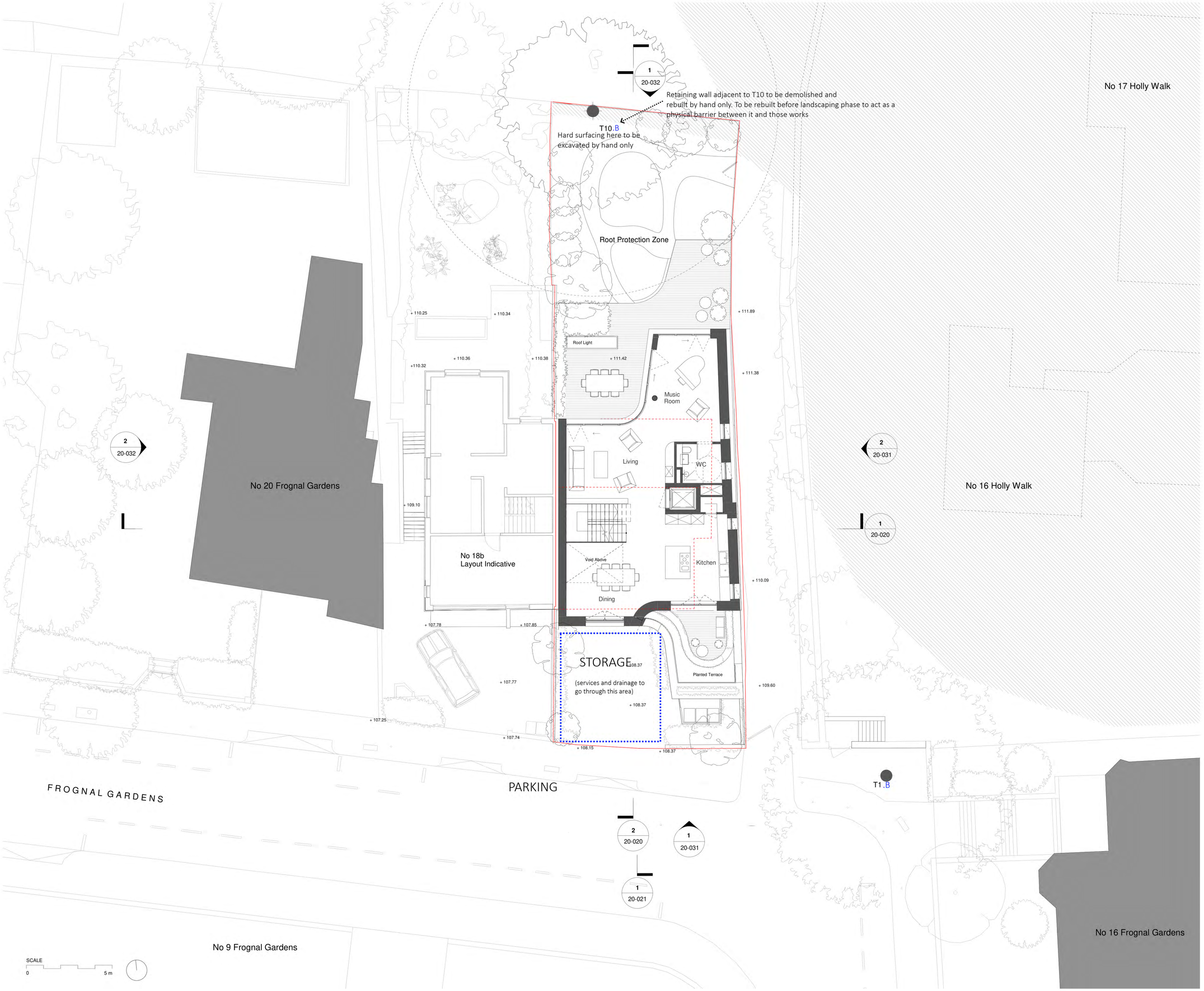
***** = denotes that the category grading is temporary and requires additional measures (e.g. climbed inspection, removal of ivy, full access all around the tree etc.) before a true grading can be assigned

ROOT PROTECTION AREA (RPA) TABLE FOR RETAINED TREES

TREE NUMBER	**RADIUS OF NOMINAL CIRCLE (m)** **[as per table D.1 (p.40 BS 5837:2012)]**	**RPA (m^2)** **[as per table D.1 (p.40 BS 5837:2012)]**	**20% offset**	**OWNERSHIP STATUS**
1	10.80	366	N/A	3rd party (Local Authority)
4	7.80	191	N/A	3rd party (private)
5	7.80	191	N/A	3rd party (private)
6	8.50	226	N/A	3rd party (private)
10	10.20	327	N/A	18a Frognal Gardens
11	1.90	12	N/A	18a Frognal Gardens

TREES SCHEDULED FOR REMOVAL

TREE NUMBER	**REASON FOR REMOVAL RECOMMENDATION**
T9	Tree condition
T2	To facilitate construction
T7	To facilitate construction
T8	To facilitate construction



Notes

Boundary Line

031682/v2 Appendix 2
Tree Protection Plan
CSG/TPP/FG2

Rev	Date	Description

Note

Do not scale from this drawing. To be read in conjuction with all relevant Architects', Services and Structural Engineer' information. Architect to be immediately notified of discrepancies.

Key Plan

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Project:
18a Frognal Gardens

Client:
Roger Pilgrim & Nadine Majaro

Project Number: **2473**

Status: **For Approval**

Drawing Title:
Floor plan - Ground Floor Upper

Date: **12/10/2020 16:18:50**

Drawn: **AK**

Scale: **1 : 100** @A1
1 : 200 @A3

Checked: **NB**

Drawing No: **ABA-2473-20-003**

Rev:

18A Frognal Gardens

Drainage Report

October 2020

EEP Ref: 3849

ENVIRONMENTAL
ENGINEERING
PARTNERSHIP

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Contents

Author	Revision	Date
TSD	A	16 October 2020
TSD	B	29 October 2020

INTRODUCTION

Where projects are proposing to incorporate a below ground level basement, in accordance with the Camden Local Plan these projects are required to submit a drainage report where the following information is required:

- Identification of flood risk (by Akera Engineers)
- Assessment of existing run-off rates
- Calculation of greenfield run-off rates
- Identification of measures, in line with the drainage hierarchy, to reduce run-off rates
- Calculation of proposed run-off rates

Existing Drainage Connection

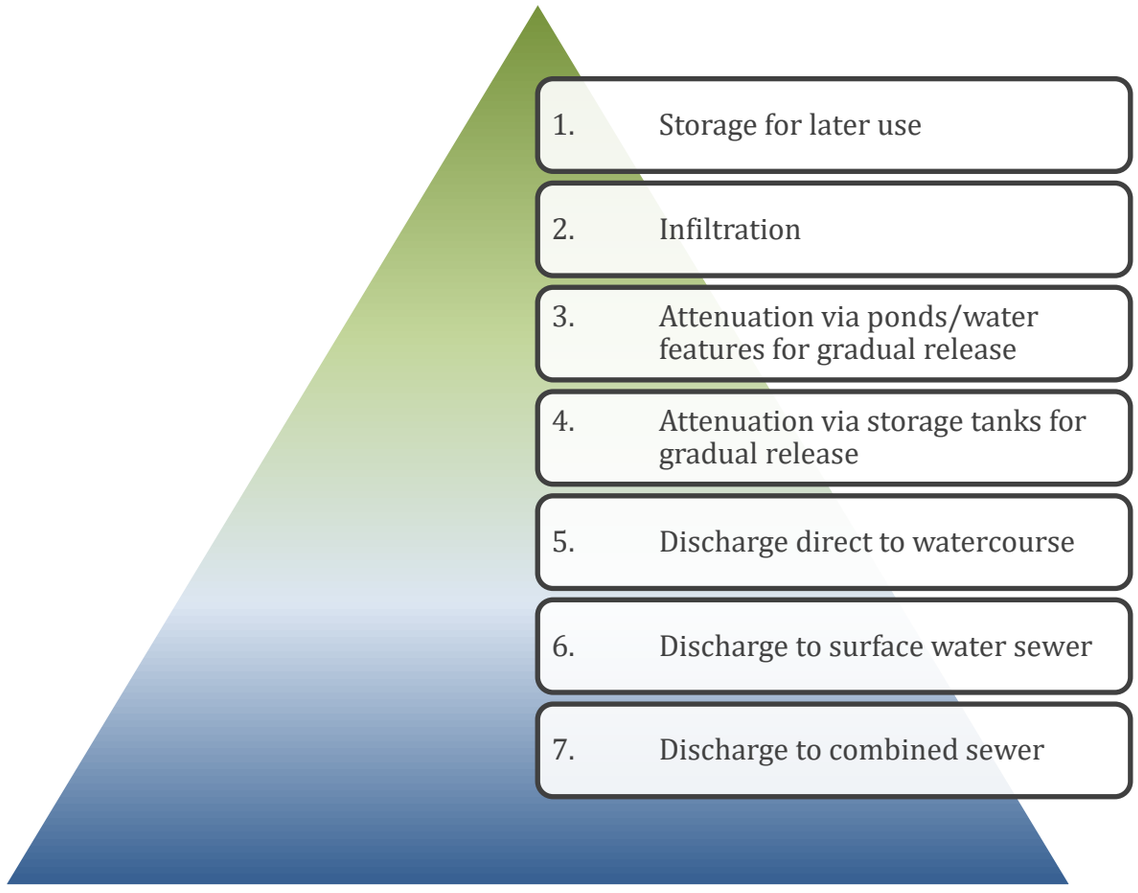
Currently, the rainwater drainage plus the soil and waste drainage from the building are combined and discharge directly to the Thames Water Sewer located beneath the Frognal Gardens road, the drainage combines within an existing manhole located within the front of house private drive/car parking area.

Accordingly, as it is known that the existing connection to the sewer is via a 'combined' drain, which has been confirmed to be Ø150 mm. However, the drainage connection from 18A connects to the drainage from 18B (Ø100 mm pipework) before connecting to the sewer. The connection between the two buildings can be seen at the manhole located on the property of 18B.

Please see a recent CCTV report of the existing drainage system in the Appendix of this report.

It is assumed that the existing rainwater drainage system would have been designed using a rainfall intensity of 75mm/hour.

Drainage Hierarchy



SURFACE AREA CALCULATION – EXISTING AND PROPOSED

Existing Areas m²		
GF	18.8	Drains to garden
	131.0	Garden
	47.9	
	71.1	Drains to street
	30.2	Garden
Roof	104.6	

Total	403.6

161.2m² Garden

Impermeable	152.5

Permeable	180.0

To street	71.1

Proposed Areas m²		
GF Lower	43.7	Drains to street
	4.5	
	11.1	Garden
GF Upper	131.1	Garden
	28.0	
	26.1	17.0m² Green Roof
01	12.9	
02	33.1	19.3m² Green Roof
	13.2	
Roof	99.9	
Total	403.6	

131.1m² Garden

36.3m² Green Roof

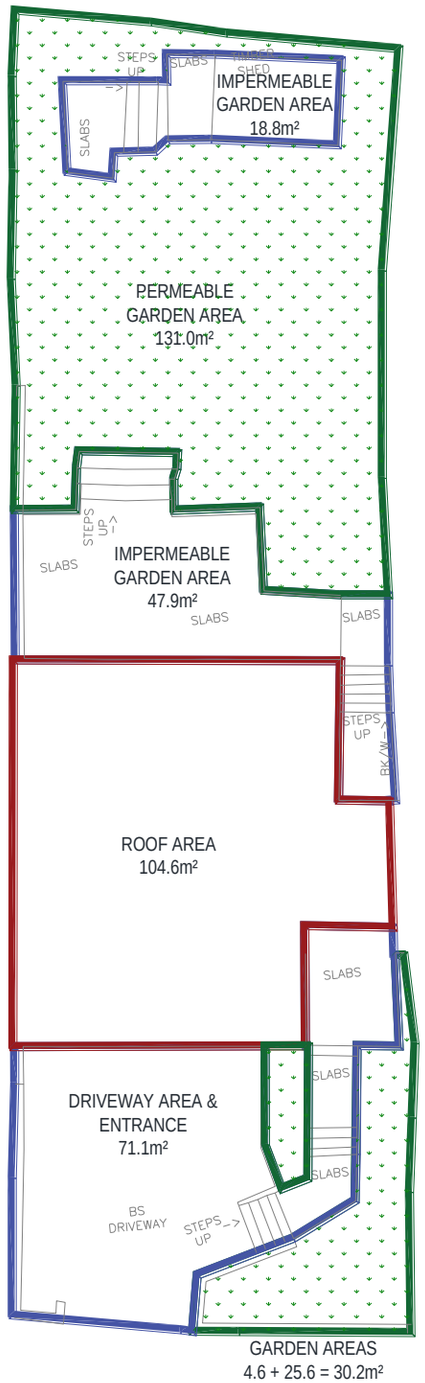
Impermeable	158.5

Permeable	142.2

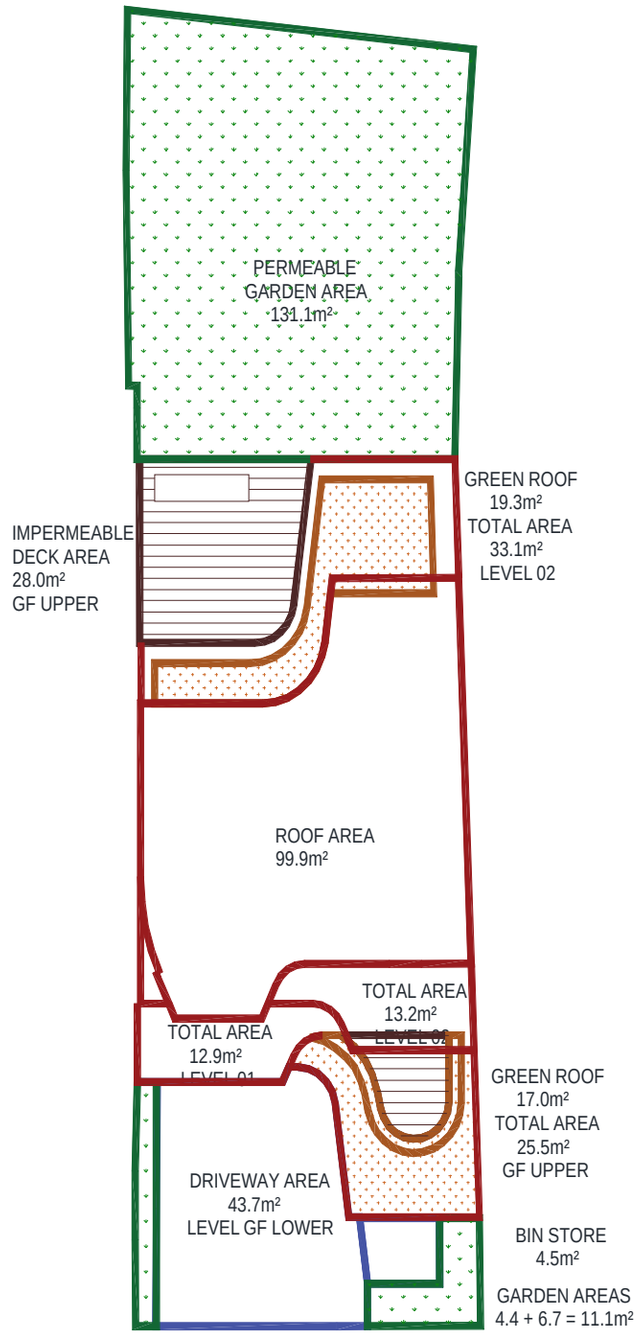
Semi Permeable	59.2

To street	43.7

Existing



Proposed



SURFACE AREA CALCULATION – EXISTING AND PROPOSED

Existing Building:

a)	Impermeable area	=	152.5m²
b)	Permeable area	=	180.0m²
c)	Discharges to street	=	71.1m²
Total			**403.6m²**

Proposed Building:

c)	Impermeable area	=	158.5m²
d)	Permeable area	=	142.2m²
e)	Semi-permeable Green Roof area	=	59.2m²
f)	Discharges to street	=	48.2m²
Total			**403.6m²**

Substrate depth / mm	Vegetation	Average annual water retention / %	Average annual rainfall run off / %
20–40	Moss, sedums	40	60
40–60	Sedums and moss	45	55
60–100	Sedums, moss and herbs	50	50
100–150	Sedums, herbs and grass	55	45
150–200	Grass and herbs	60	40

Water retention in extensive green roofs (based on 650–800 mm annual rainfall). CIBSE KS11 – Green Roofs, Table 6.

As can be seen from table 6 within the CIBSE Guide KS11 the rainfall water retention will be 50% (TBC) which affectively increases the "permeable area" by 29.6 m² (59.2 m² ÷ 2 = 29.6 m² or 50%), therefore the new site areas simplified for run-off calculation purposes we can adjust the areas as follows:-

Proposed Building (Simplified):

f)	Impermeable area	=	188.1m² (158.5 + 29.6)
g)	Permeable area	=	171.8m² (142.2 + 29.6)
h)	Discharges to street	=	48.2m²
Total			**403.6m²**

RUN-OFF RATE CALCULATIONS

The rainfall intensity stipulated within Clause 3.8 of the March 2019 version of the 'Camden Planning Guidance – Water & Flooding' for a residential development the required 'Protection Years' are for a 100 year return period, using BS EN 12056-3 this results in a design intensity of 250mm/hour (0.069 litres/second/metre^2).

Run-off Calculations

		Area m^2	Run-off l/s		
Existing	Impermeable	152.5	10.52		
	Permeable	180.0	12.42		
Proposed	Impermeable	188.1	12.98	23%	% Change
	Permeable	171.8	11.85		

Rainfall intensity calculations for **18a FROGNAL GARDENS, LONDON.**

Based on Category 2 values from BS EN 12056 part 3

BASIC DATA

Nearest geographical town	London	
Building life span required	100	years

Calculations data based on BS EN 12056 part 3 Category 2

Protection years (T) (1.5 x life span)	150	years				
Fig. NB.6 value (return period in years)	4.5	(based on 2min M5)				
From Table NB.1, fraction for 2 min. storm = 1.00						
Therefore 2 min. M5 rainfall =	4.5	X	1	=	4.5	
Factor from Fig. NB.7 using protection years	150	(M5=2)		=	1.9	
Using return period year factor for 2 min M5 =	1.85	X	4.5	=	8.325	

Calculated Flowrates

Rainfall intensity in mm/hour	30	X	8.325	=	250	mm/hour
Run off in litres per second	0.069	per square metre				

ATTENUATION TANK CAPACITY CALCULATIONS

In order to maintain the building's original rainwater discharge to the sewer any design for the attenuation and controlled release of rainwater shall not exceed the discharge rate of the original design. It is assumed that the rainfall intensity used for the original design was based on 75mm per hour/m^2.

Therefore, following the guidance from the Camden Planning Guidance documents and methodology provided in the BRE Digest 365 – Soakaway Design, and The Wallingford Procedure, the following equations can be used to size the rainwater attenuation tank:

Run-off Calculations Based on original building design (75mm/Hr/m^2)			
		Area m^2	**Run-off l/s**
	Impermeable	152.5	3.20

maximum allowable discharge to sewer

NOMENCLATURE

$MX\text{-}D_{min}$: $^{X=return\ \ period\ \ (years\ )}_{D=storm\ \ durat\ ion\ (min\ )}$

$Z1: rainfall\ factor\ taken\ from\ figure\ 1\ and\ table\ 1 - BRE\ Digest\ 365$

$Z2: growth\ factor\ taken\ from\ table\ 2 - BRE\ Digest\ 365$

$d = discharge\ rate(l/s)$

$T = time\ (s)$

$I = inflow\ (m^3)$

$O = outflow\ (m^3)$

$S = storage\ (m^3)$

EQUATIONS

$M5\text{-}D_{min} = M5\text{-}60_{\text{min } rainfall} \times Z1$

$M10\text{-}D_{min} = M5\text{-}D_{min} \times Z2$

$O = d \times M10\text{-}D_{min}$

$I = d \times T$

$I_{140\%} = I \times 1.4$

$S = I_{140\%} - O$

Area m^2	Duration	Rainfall factor Z1	M5 rainfalls mm	Growth factor Z2 (M10)	M10 year rainfall mm	Growth factor Z2 (M100)	M100 year rainfall mm	M100 year rainfall + 40% mm	Inflow m^3	Inflow (@140%) m^3	Outflow m^3	Storage required m^3
188.1	5 mins	0.38	7.6	1.19	9.0	1.96	14.9	20.9	2.8	3.9	1.0	3.0
	10 mins	0.53	10.6	1.22	12.9	2.00	21.2	29.7	4.0	5.6	1.9	3.7
	15 mins	0.64	12.8	1.24	15.9	1.96	25.1	35.1	4.7	6.6	2.9	3.7
	30 mins	0.81	16.2	1.24	20.1	2.00	32.4	45.4	6.1	8.5	5.8	2.8
	1 hour	1.00	20	1.24	24.8	2.03	40.6	56.8	7.6	10.7	11.5	0.0
	2 hours	1.20	24	1.22	29.3	2.01	48.2	67.5	9.1	12.7	23.1	0.0
	4 hours	1.42	28.4	1.19	33.8	1.97	55.9	78.3	10.5	14.7	46.1	0.0
	6 hours	1.57	31.4	1.17	36.7	1.96	61.5	86.2	11.6	16.2	69.2	0.0
	10 hours	1.74	34.8	1.14	39.7	1.92	66.8	93.5	12.6	17.6	115.3	0.0
	24 hours	2.16	43.2	1.13	48.8	1.86	80.4	112.5	15.1	21.2	276.7	0.0

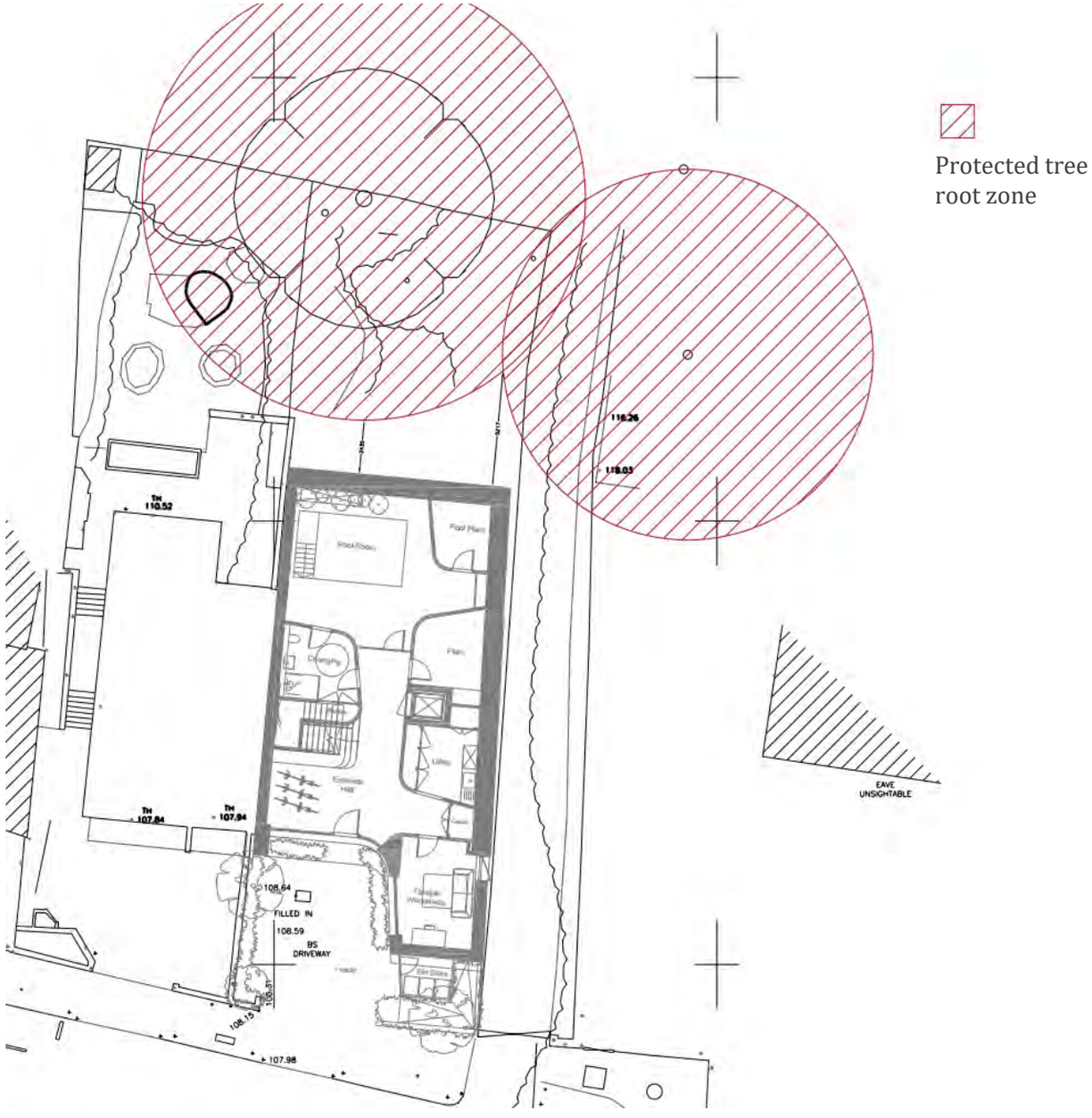
PROTECTED TREE ROOT ZONE

At 18A Frognal Gardens at the rear of the property are a number of fully established trees, a soakaway, if used, must be located outside of the root protection zone.

Building Regulations Part H and good practice requires that any soakaway be located not closer than 5m to the nearest building and section 3.20 within the 'Camden Planning Guidance – Water & Flooding' states any infiltration measures located within 5m must be designed to avoid harm to the building, in accordance with the Building Regulations.

A survey of the existing root area shows that distance of the building from the root protection zone varies from approximately 2.4m to 5.2m, this provides little or no room for the inclusion of a soakaway system of any meaningful size.

Therefore, rainwater run-off and drainage shall be addressed using a combination of solutions to be discussed in the sections to follow.



Rainwater Infiltration & Attenuation

The proposed architectural design shows extensive green roofing to be installed to some terrace and roof areas, however, it is noted that section 3.14 within the 'Camden Planning Guidance – Water & Flooding' states:

However, green roofs cannot be considered a permeable soil and should be assumed to be saturated at the point of intense storms (i.e. storms that are more intense than a 1 in 10 year storm). Due to the sporadic nature of water consumption, rainwater harvesting tanks should also be assumed to be full at the point of a storm event. Both of these systems are generally not intended to control peak run-off rate during critical events, and are mainly useful during medium and small events to capture run-off and thus reduce the volume of water entering the drainage system during these smaller events.

But section 3.15 also states:

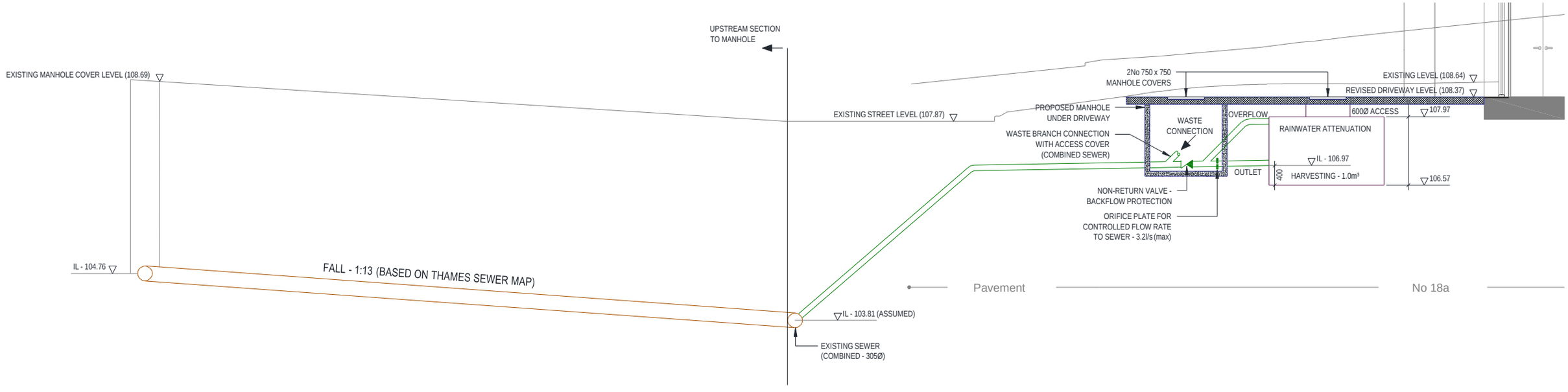
Some rainwater harvesting tanks can incorporate an attenuation chamber/ overflow with controlled release, and green roofs can incorporate an attenuation layer ("blue roof") or be designed to be substantially thick, allowing the associated attenuation volume to be included within the modelling. The Council will consider inclusion of these SuDS in developments favourably due to their additional environmental benefits.

Therefore, the proposal for mitigating the impact of the proposed development to the local sewer network shall be through the attenuation and controlled release of surface water to the sewer. The discharge to the sewer shall be designed to meet the criteria used for the original building, therefore, any additional impact due to climate and increased surface run-off shall be dealt with on site.

The inclusion of several areas of "green roofing" shall serve to provide additional attenuation to the sewer, with the guidance provided in CIBSE Guide KS11, 50% of these areas have been included in the sizing of the attenuation tank.

In order to facilitate the sustainability ambitions of the project, and in line with the drainage hierarchy, it is proposed to maintain a level of water at the bottom of the tank for the provision of harvested rainwater to be reused for irrigation of the green roofs and landscape gardens.

This will require the addition of submersible pumps to the tank that will be serviceable from the manhole cover provided. The tank shall not include a mains water backup, therefore, at times when the tank is empty irrigation will need to come from a Category 5 protected mains water supply.



Conclusions

Due to the revised layout of 18A Frognal Gardens the surface water run-off is expected to increase by 23% when compared with the volume currently coming from the building.

Due to this increase, and in order to meet the expectations of the Camden Policy Guidance documents, the following measures are proposed to relieve pressure on the local drainage system:

- Green roof attenuation – to control the flow of rainwater from the building

- Rainwater attenuation (3.7m^3 minimum) and controlled release – a hybrid underground system located to the front of the building that will be used to control the flow discharging to the combined sewer with additional harvesting capacity for reuse through irrigation.

With these measures in place we expect to mitigate the impact of any changes to the impermeable run-off surfaces whilst also addressing the future demands owing to climate change. The discharge rate from the attenuation tank shall be designed to be no worse than the original peak discharge for the current building's original design (based on 75mm/Hr/m^2).

ENVIRONMENTAL
ENGINEERING
PARTNERSHIP

CONSULTING ENGINEERS

APPENDIX – CCTV SURVEY REPORT

Aqua-Jet Specialist Drainage Contractors Ltd
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Table of Contents

Project Name	Project Number	Project Date
04.09.19 18A Frognal Gardens, London		04/09/2019

Aqua-Jet Specialist Drainage Contractors Ltd
Yard 21 Hilton Ind Est, Sutton Lane, Hilton, Derbyshire, DE65 5FE
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Project Information

Project Name	Project Number	Project Date
04.09.19 18A Frognal Gardens, London		04/09/2019

Client

Company: Environmental Engineering Partnership
Street: The Chapel House, High Street
Town or City: West Wycombe, HP14 3AG

Site

Company: EEP
Street: 18A Frognal Gardens
Town or City: London, NW3 6XA

Contractor

Company: Aqua-Jet Specialist Drainage Contractors Ltd
Contact: Rob Wilkinson
Street: Yard 21 Hilton Ind Est, Sutton Lane
Town or City: Hilton, Derbyshire, DE65 5FE
Phone: 01283 730333
Email: aquajetltd@aol.com

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Section Inspection - 04/09/2019 - MH1X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	1	04/09/19		Not Specified	No Rain Or Snow	Y	MH1X

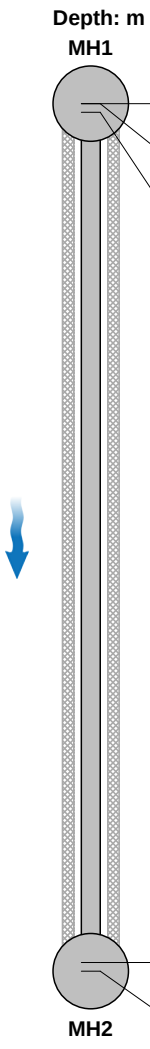
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
RR/MD	FJ17 ZDS	Flexi	Not Specified	Not Specified	Not Specified

Town or Village:	London	**Inspection Direction:**	Downstream	**Upstream Node:**	MH1
Road:	18A Frognal Gardens	**Inspected Length:**	10.00 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	10.00 m	**Downstream Node:**	MH2
Surface Type:		**Joint Length:**	0.00 m	**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Year Constructed:		**Pipe Material:**	Cast iron
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:		**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:87



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node type, manhole, reference number: MH1	00:00:00		
0.00		WL	Water level, 0% of the vertical dimension	00:00:01		
0.10	S01	DEE	Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, start: RUST / CORROSION	00:00:06		
9.90	F01	DEE	Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, finish: RUST / CORROSION	00:01:22		2
10.00		MHF	Finish node type, manhole, reference number: MH2	00:01:23		

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	1.0	1.0	10.0	2.0

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Section Pictures - 04/09/2019 - MH1X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Downstream	MH1X		

MH1X_697d6ba7-1a86-43ea-9b00-4985f68a1723_20190906_095824_558.jpg, 00:00:06, 0.10 m
Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, start

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Section Inspection - 04/09/2019 - A/MH1X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
2	2	04/09/19		Not Specified	No Rain Or Snow	Y	A/MH1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
RR/MD	FJ17 ZDS	Flexi	Not Specified	Not Specified	Not Specified

Town or Village:	London	**Inspection Direction:**	Upstream	**Upstream Node:**	A/MH1
Road:	18A Frognal Gardens	**Inspected Length:**	7.50 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	7.50 m	**Downstream Node:**	MH1
Surface Type:		**Joint Length:**	0.00 m	**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Year Constructed:		**Pipe Material:**	Cast iron
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:		**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:66	Position [m]		Code	Observation	MPEG	Photo	Grade
	0.00		MH	Start node type, manhole, reference number: MH1	00:00:00		
	0.00		WL	Water level, 5% of the vertical dimension	00:00:01		
	0.10	S01	DEE	Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, start: RUST / CORROSION	00:00:03		
	7.40	F01	DEE	Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, finish: RUST / CORROSION	00:01:22		2
	7.50		MHF	Finish node type, manhole, reference number: A/MH1	00:01:22		

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	1.0	1.1	8.0	2.0

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Section Pictures - 04/09/2019 - A/MH1X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Upstream	A/MH1X		

A_MH1X_7069cf84-8557-4d21-aaf6-a844871a4e0a_20190906_100331_033.jpg, 00:00:03, 0.10 m
Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, start

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Section Inspection - 04/09/2019 - MH2X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
3	3	04/09/19		Not Specified	No Rain Or Snow	Y	MH2X

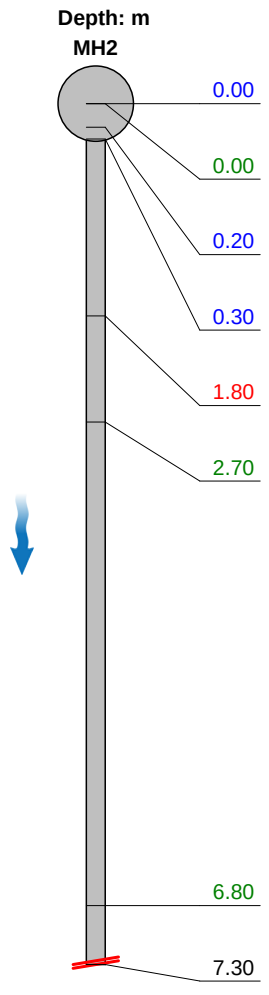
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
RR/MD	FJ17 ZDS	Flexi	Not Specified	Not Specified	Not Specified

Town or Village:	London	**Inspection Direction:**	Downstream	**Upstream Node:**	MH2
Road:	18A Frognal Gardens	**Inspected Length:**	7.30 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	7.30 m	**Downstream Node:**	D/S MH2
Surface Type:		**Joint Length:**	0.00 m	**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:		**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:64



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node type, manhole, reference number: MH2: SURVEY THROUGH TOP ACCESS HOLE OF TRAP	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
0.20	JN	Junction at 6 o'clock, diameter: 100mm: BOTTOM OUTLET OF TRAP	00:00:09		
0.30	SC	Size changes, new size(s), 150mm high	00:00:15		
1.80	CCJ	Crack, circumferential at joint from 8 o'clock to 3 o'clock	00:00:33		2
2.70	LD	Line deviates down	00:00:41		
6.80	LR	Line deviates right	00:01:23		
7.30	SA	Survey abandoned: JOINS MAIN BLIND	00:01:28		

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	10.0	1.4	10.0	2.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 04/09/2019 - MH2X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
3	Downstream	MH2X		

MH2X_99a95e93-e9bd-4658-b633-a5a8b0b76c35_20190906_101510_209.jpg, 00:00:33, 1.80 m
Crack, circumferential at joint from 8 o'clock to 3 o'clock

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Section Inspection - 04/09/2019 - JUNCTIONX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
4	4	04/09/19		Not Specified	No Rain Or Snow	N	JUNCTIONX

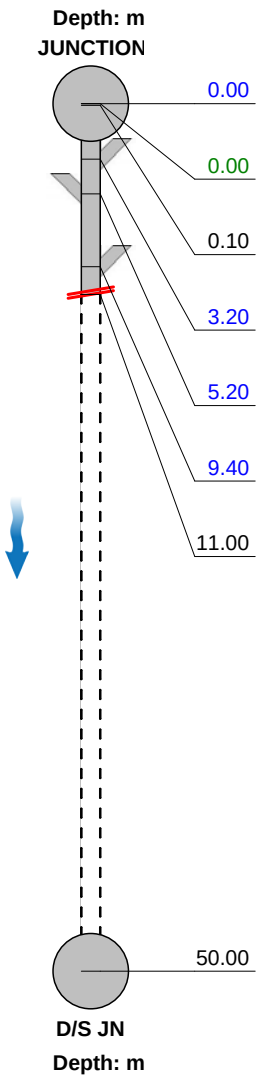
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
RR/MD	FJ17 ZDS	Flexi	Not Specified	Not Specified	Not Specified

Town or Village:	London	**Inspection Direction:**	Downstream	**Upstream Node:**	JUNCTION
Road:	18A Frognal Gardens	**Inspected Length:**	11.00 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	50.00 m	**Downstream Node:**	D/S JN
Surface Type:		**Joint Length:**	0.00 m	**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	300 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:		**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:435



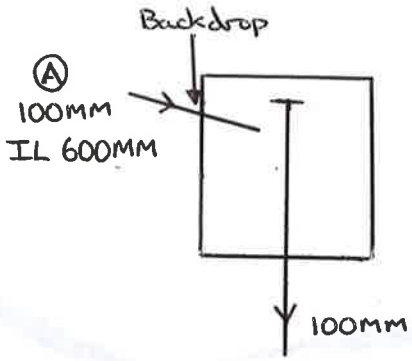
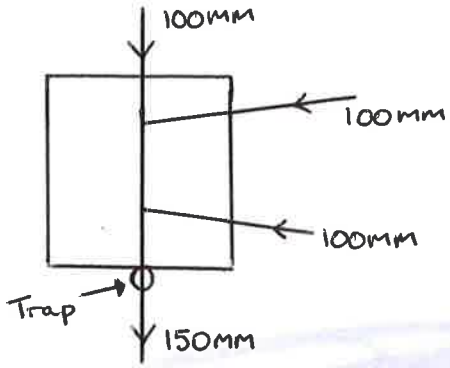
Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node type, manhole, reference number: JUNCTION	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
0.10	REM	General remark: POOR VIEW OF PIPE DUE TO SIZE	00:00:07		
3.20	JN	Junction at 9 o'clock, diameter: 150mm	00:00:31		
5.20	JN	Junction at 3 o'clock, diameter: 150mm	00:00:42		
9.40	CN	Connection other than junction at 10 o'clock, diameter: 150mm	00:01:07		
11.00	SA	Survey abandoned: LIMIT OF SURVEY	00:01:17		
50.00		End of pipe			

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Aqua-Jet

Drainage Specialists

Manhole Information

REFERENCE: MH 1	DUTY: CB	REFERENCE: MH2	DUTY: CB
DIAGRAM: 		DIAGRAM: 	
DEPTH AT OUTLET: 1740MM		DEPTH AT OUTLET: 1400MM	
MH SIZE 900MM x 500MM		MH SIZE 950MM x 600MM	
MH MATERIAL Brick / Render		MH MATERIAL Brick	
OBSERVATIONS/ COMMENTS:		OBSERVATIONS/ COMMENTS:	
REFERENCE:	DUTY:	REFERENCE:	DUTY:
DIAGRAM:		DIAGRAM:	
DEPTH AT OUTLET:		DEPTH AT OUTLET:	
MH SIZE		MH SIZE	
MH MATERIAL		MH MATERIAL	
OBSERVATIONS/ COMMENTS:		OBSERVATIONS/ COMMENTS:	

Jetting • Vacuumation • Camera Inspection • Excavation & Repairs • Septic Tanks

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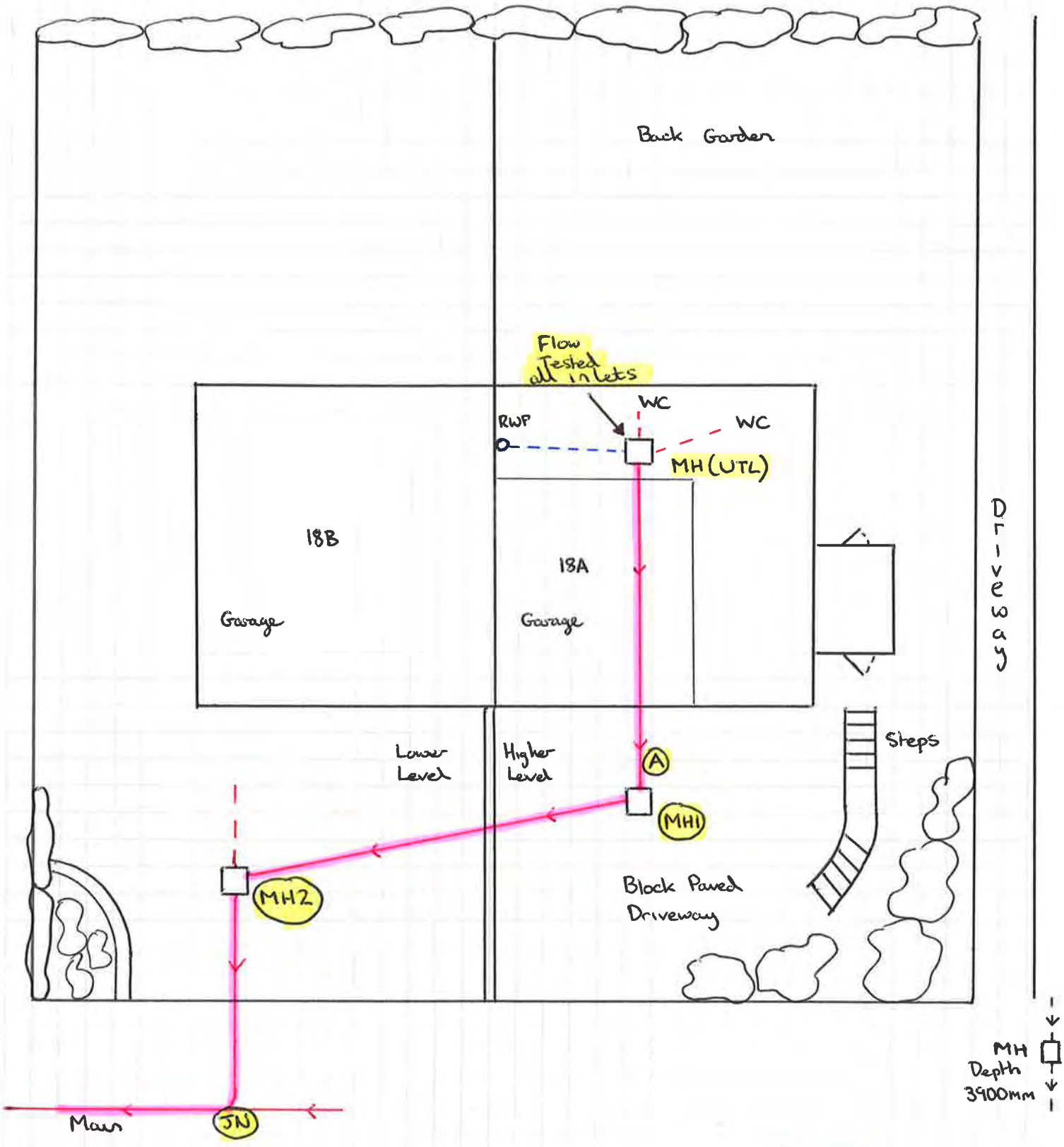
Aqua-Jet Specialist Drainage Contractors Ltd, Yard 21, Hilton Industrial Estate, Sutton Lane, Hilton, Derbyshire, DE65 5FE

Aqua-Jet

Drainage Specialists



Sketch not to scale

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APPENDIX – CCTV SURVEY REPORT

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Project Name	Project Number	Project Date
04.09.19 18A Frognal Gardens, London		04/09/2019

Aqua-Jet Specialist Drainage Contractors Ltd
Yard 21 Hilton Ind Est, Sutton Lane, Hilton, Derbyshire, DE65 5FE
Tel. 01283 730333
aquajetltd@aol.com

Project Information

Project Name	Project Number	Project Date
04.09.19 18A Frognal Gardens, London		04/09/2019

Client

Company: Environmental Engineering Partnership
Street: The Chapel House, High Street
Town or City: West Wycombe, HP14 3AG

Site

Company: EEP
Street: 18A Frognal Gardens
Town or City: London, NW3 6XA

Contractor

Company: Aqua-Jet Specialist Drainage Contractors Ltd
Contact: Rob Wilkinson
Street: Yard 21 Hilton Ind Est, Sutton Lane
Town or City: Hilton, Derbyshire, DE65 5FE
Phone: 01283 730333
Email: aquajetltd@aol.com

Aqua-Jet Specialist Drainage Contractors Ltd
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Section Inspection - 04/09/2019 - MH1X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	1	04/09/19		Not Specified	No Rain Or Snow	Y	MH1X

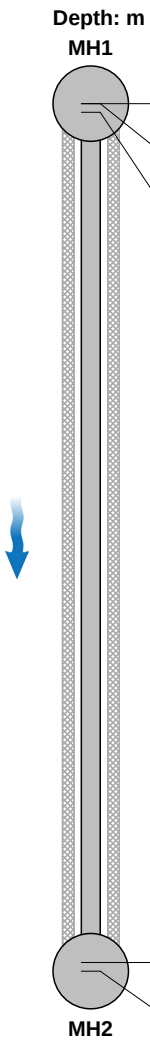
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
RR/MD	FJ17 ZDS	Flexi	Not Specified	Not Specified	Not Specified

Town or Village:	London	**Inspection Direction:**	Downstream	**Upstream Node:**	MH1
Road:	18A Frognal Gardens	**Inspected Length:**	10.00 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	10.00 m	**Downstream Node:**	MH2
Surface Type:		**Joint Length:**	0.00 m	**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Year Constructed:		**Pipe Material:**	Cast iron
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:		**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:87



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node type, manhole, reference number: MH1	00:00:00		
0.00		WL	Water level, 0% of the vertical dimension	00:00:01		
0.10	S01	DEE	Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, start: RUST / CORROSION	00:00:06		
9.90	F01	DEE	Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, finish: RUST / CORROSION	00:01:22		2
10.00		MHF	Finish node type, manhole, reference number: MH2	00:01:23		

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	1.0	1.0	10.0	2.0

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Section Pictures - 04/09/2019 - MH1X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Downstream	MH1X		

MH1X_697d6ba7-1a86-43ea-9b00-4985f68a1723_20190906_095824_558.jpg, 00:00:06, 0.10 m
Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, start

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Section Inspection - 04/09/2019 - A/MH1X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
2	2	04/09/19		Not Specified	No Rain Or Snow	Y	A/MH1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
RR/MD	FJ17 ZDS	Flexi	Not Specified	Not Specified	Not Specified

Town or Village:	London	**Inspection Direction:**	Upstream	**Upstream Node:**	A/MH1
Road:	18A Frognal Gardens	**Inspected Length:**	7.50 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	7.50 m	**Downstream Node:**	MH1
Surface Type:		**Joint Length:**	0.00 m	**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Year Constructed:		**Pipe Material:**	Cast iron
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:		**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:66	Position [m]		Code	Observation	MPEG	Photo	Grade
	0.00		MH	Start node type, manhole, reference number: MH1	00:00:00		
	0.00		WL	Water level, 5% of the vertical dimension	00:00:01		
	0.10	S01	DEE	Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, start: RUST / CORROSION	00:00:03		
	7.40	F01	DEE	Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, finish: RUST / CORROSION	00:01:22		2
	7.50		MHF	Finish node type, manhole, reference number: A/MH1	00:01:22		

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	1.0	1.1	8.0	2.0

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Section Pictures - 04/09/2019 - A/MH1X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Upstream	A/MH1X		

A_MH1X_7069cf84-8557-4d21-aaf6-a844871a4e0a_20190906_100331_033.jpg, 00:00:03, 0.10 m
Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, start

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Section Inspection - 04/09/2019 - MH2X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
3	3	04/09/19		Not Specified	No Rain Or Snow	Y	MH2X

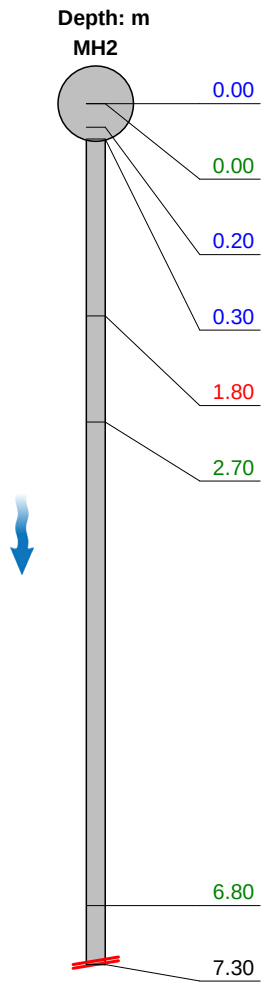
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
RR/MD	FJ17 ZDS	Flexi	Not Specified	Not Specified	Not Specified

Town or Village:	London	**Inspection Direction:**	Downstream	**Upstream Node:**	MH2
Road:	18A Frognal Gardens	**Inspected Length:**	7.30 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	7.30 m	**Downstream Node:**	D/S MH2
Surface Type:		**Joint Length:**	0.00 m	**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:		**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:64



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node type, manhole, reference number: MH2: SURVEY THROUGH TOP ACCESS HOLE OF TRAP	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
0.20	JN	Junction at 6 o'clock, diameter: 100mm: BOTTOM OUTLET OF TRAP	00:00:09		
0.30	SC	Size changes, new size(s), 150mm high	00:00:15		
1.80	CCJ	Crack, circumferential at joint from 8 o'clock to 3 o'clock	00:00:33		2
2.70	LD	Line deviates down	00:00:41		
6.80	LR	Line deviates right	00:01:23		
7.30	SA	Survey abandoned: JOINS MAIN BLIND	00:01:28		

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	10.0	1.4	10.0	2.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 04/09/2019 - MH2X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
3	Downstream	MH2X		

MH2X_99a95e93-e9bd-4658-b633-a5a8b0b76c35_20190906_101510_209.jpg, 00:00:33, 1.80 m
Crack, circumferential at joint from 8 o'clock to 3 o'clock

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Section Inspection - 04/09/2019 - JUNCTIONX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
4	4	04/09/19		Not Specified	No Rain Or Snow	N	JUNCTIONX

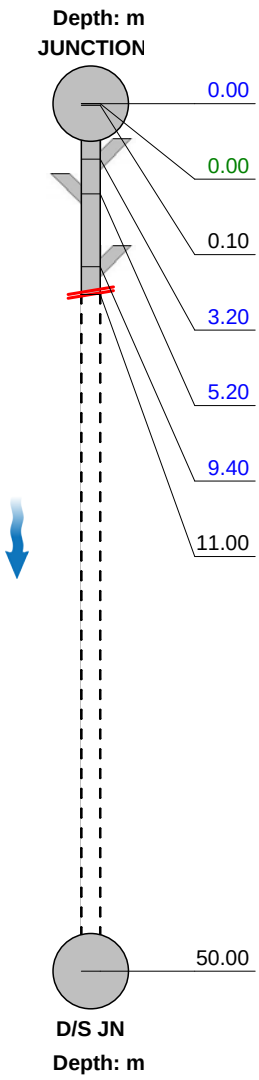
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
RR/MD	FJ17 ZDS	Flexi	Not Specified	Not Specified	Not Specified

Town or Village:	London	**Inspection Direction:**	Downstream	**Upstream Node:**	JUNCTION
Road:	18A Frognal Gardens	**Inspected Length:**	11.00 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	50.00 m	**Downstream Node:**	D/S JN
Surface Type:		**Joint Length:**	0.00 m	**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	300 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:		**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:435



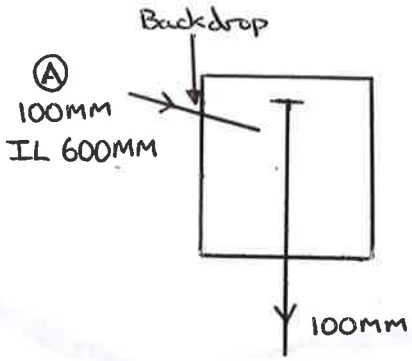
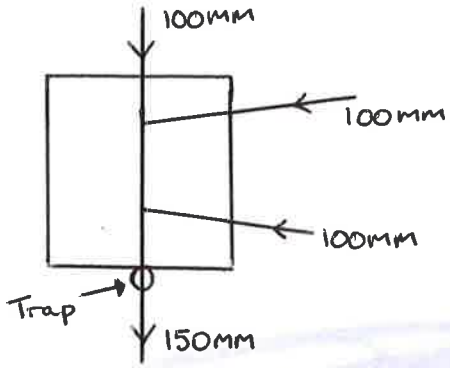
Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node type, manhole, reference number: JUNCTION	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
0.10	REM	General remark: POOR VIEW OF PIPE DUE TO SIZE	00:00:07		
3.20	JN	Junction at 9 o'clock, diameter: 150mm	00:00:31		
5.20	JN	Junction at 3 o'clock, diameter: 150mm	00:00:42		
9.40	CN	Connection other than junction at 10 o'clock, diameter: 150mm	00:01:07		
11.00	SA	Survey abandoned: LIMIT OF SURVEY	00:01:17		
50.00		End of pipe			

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Aqua-Jet

Drainage Specialists

Manhole Information

REFERENCE: MH 1	DUTY: CB	REFERENCE: MH2	DUTY: CB
DIAGRAM: 		DIAGRAM: 	
DEPTH AT OUTLET: 1740MM		DEPTH AT OUTLET: 1400MM	
MH SIZE 900MM x 500MM		MH SIZE 950MM x 600MM	
MH MATERIAL Brick / Render		MH MATERIAL Brick	
OBSERVATIONS/ COMMENTS:		OBSERVATIONS/ COMMENTS:	
REFERENCE:	DUTY:	REFERENCE:	DUTY:
DIAGRAM:		DIAGRAM:	
DEPTH AT OUTLET:		DEPTH AT OUTLET:	
MH SIZE		MH SIZE	
MH MATERIAL		MH MATERIAL	
OBSERVATIONS/ COMMENTS:		OBSERVATIONS/ COMMENTS:	

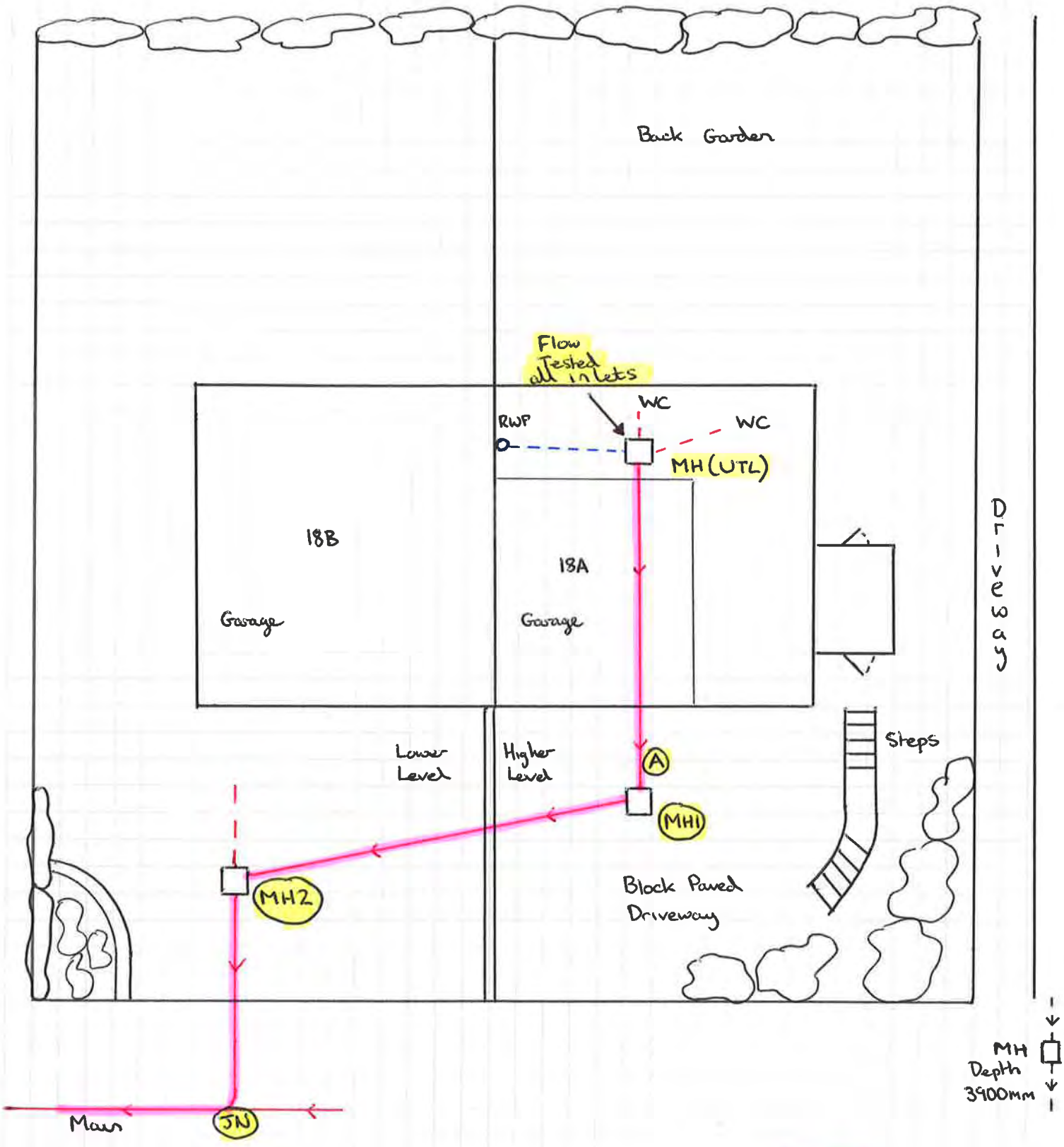
Jetting • Vacuumation • Camera Inspection • Excavation & Repairs • Septic Tanks

Tel 01283 730333 Fax 01283 730444 www.aquajetltd.co.uk aquajetltd@aol.com

Aqua-Jet Specialist Drainage Contractors Ltd, Yard 21, Hilton Industrial Estate, Sutton Lane, Hilton, Derbyshire, DE65 5FE

Aqua-Jet

Drainage Specialists



Sketch not to scale

Jetting • Vacuumation • Camera Inspection • Excavation & Repairs • Septic Tanks

Tel: 01283 730333 Fax: 01283 730444 www.aquajetltd.co.uk aquajetltd@aol.com

Aqua-Jet Specialist Drainage Contractors Ltd, Yard 21, Hilton Industrial Estate, Hilton, Derbyshire, DE65 5FE

APPENDIX ñ CCTV SURVEY REPORT

Aqua-Jet Specialist Drainage Contractors Ltd
Yard 21 Hilton Ind Est, Sutton Lane, Hilton, Derbyshire, DE65 5FE
Tel. 01283 730333
aquajetltd@aol.com

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Project Name	Project Number	Project Date
04.09.19 18A Frognal Gardens, London		04/09/2019

Aqua-Jet Specialist Drainage Contractors Ltd
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Project Information

Project Name	Project Number	Project Date
04.09.19 18A Frognal Gardens, London		04/09/2019

Client

Company: Environmental Engineering Partnership
Street: The Chapel House, High Street
Town or City: West Wycombe, HP14 3AG

Site

Company: EEP
Street: 18A Frognal Gardens
Town or City: London, NW3 6XA

Contractor

Company: Aqua-Jet Specialist Drainage Contractors Ltd
Contact: Rob Wilkinson
Street: Yard 21 Hilton Ind Est, Sutton Lane
Town or City: Hilton, Derbyshire, DE65 5FE
Phone: 01283 730333
Email: aquajetltd@aol.com

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Section Inspection - 04/09/2019 - MH1X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	1	04/09/19		Not Specified	No Rain Or Snow	Y	MH1X

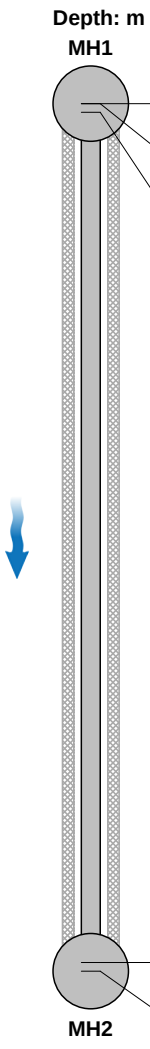
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
RR/MD	FJ17 ZDS	Flexi	Not Specified	Not Specified	Not Specified

Town or Village:	London	**Inspection Direction:**	Downstream	**Upstream Node:**	MH1
Road:	18A Frognal Gardens	**Inspected Length:**	10.00 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	10.00 m	**Downstream Node:**	MH2
Surface Type:		**Joint Length:**	0.00 m	**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Year Constructed:		**Pipe Material:**	Cast iron
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:		**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:87



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node type, manhole, reference number: MH1	00:00:00		
0.00		WL	Water level, 0% of the vertical dimension	00:00:01		
0.10	S01	DEE	Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, start: RUST / CORROSION	00:00:06		
9.90	F01	DEE	Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, finish: RUST / CORROSION	00:01:22		2
10.00		MHF	Finish node type, manhole, reference number: MH2	00:01:23		

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	1.0	1.0	10.0	2.0

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Section Pictures - 04/09/2019 - MH1X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Downstream	MH1X		

MH1X_697d6ba7-1a86-43ea-9b00-4985f68a1723_20190906_095824_558.jpg, 00:00:06, 0.10 m
Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, start

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Section Inspection - 04/09/2019 - A/MH1X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
2	2	04/09/19		Not Specified	No Rain Or Snow	Y	A/MH1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
RR/MD	FJ17 ZDS	Flexi	Not Specified	Not Specified	Not Specified

Town or Village:	London	**Inspection Direction:**	Upstream	**Upstream Node:**	A/MH1
Road:	18A Frognal Gardens	**Inspected Length:**	7.50 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	7.50 m	**Downstream Node:**	MH1
Surface Type:		**Joint Length:**	0.00 m	**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Year Constructed:		**Pipe Material:**	Cast iron
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:		**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:66	Position [m]		Code	Observation	MPEG	Photo	Grade
	0.00		MH	Start node type, manhole, reference number: MH1	00:00:00		
	0.00		WL	Water level, 5% of the vertical dimension	00:00:01		
	0.10	S01	DEE	Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, start: RUST / CORROSION	00:00:03		
	7.40	F01	DEE	Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, finish: RUST / CORROSION	00:01:22		2
	7.50		MHF	Finish node type, manhole, reference number: A/MH1	00:01:22		

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	1.0	1.1	8.0	2.0

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Section Pictures - 04/09/2019 - A/MH1X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Upstream	A/MH1X		

A_MH1X_7069cf84-8557-4d21-aaf6-a844871a4e0a_20190906_100331_033.jpg, 00:00:03, 0.10 m
Attached deposits, encrustation from 12 o'clock to 12 o'clock, 5% cross-sectional area loss, start

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Section Inspection - 04/09/2019 - MH2X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
3	3	04/09/19		Not Specified	No Rain Or Snow	Y	MH2X

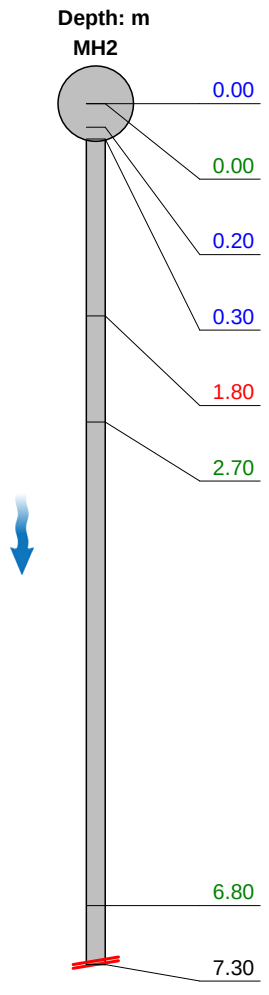
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
RR/MD	FJ17 ZDS	Flexi	Not Specified	Not Specified	Not Specified

Town or Village:	London	**Inspection Direction:**	Downstream	**Upstream Node:**	MH2
Road:	18A Frognal Gardens	**Inspected Length:**	7.30 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	7.30 m	**Downstream Node:**	D/S MH2
Surface Type:		**Joint Length:**	0.00 m	**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:		**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:64



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node type, manhole, reference number: MH2: SURVEY THROUGH TOP ACCESS HOLE OF TRAP	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
0.20	JN	Junction at 6 o'clock, diameter: 100mm: BOTTOM OUTLET OF TRAP	00:00:09		
0.30	SC	Size changes, new size(s), 150mm high	00:00:15		
1.80	CCJ	Crack, circumferential at joint from 8 o'clock to 3 o'clock	00:00:33		2
2.70	LD	Line deviates down	00:00:41		
6.80	LR	Line deviates right	00:01:23		
7.30	SA	Survey abandoned: JOINS MAIN BLIND	00:01:28		

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	10.0	1.4	10.0	2.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 04/09/2019 - MH2X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
3	Downstream	MH2X		

MH2X_99a95e93-e9bd-4658-b633-a5a8b0b76c35_20190906_101510_209.jpg, 00:00:33, 1.80 m
Crack, circumferential at joint from 8 o'clock to 3 o'clock

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Section Inspection - 04/09/2019 - JUNCTIONX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
4	4	04/09/19		Not Specified	No Rain Or Snow	N	JUNCTIONX

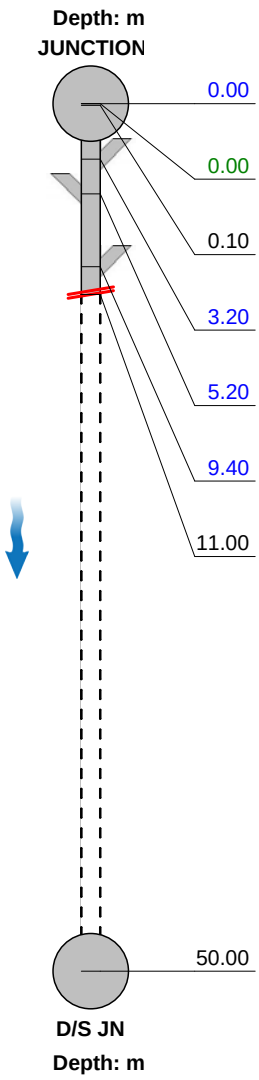
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
RR/MD	FJ17 ZDS	Flexi	Not Specified	Not Specified	Not Specified

Town or Village:	London	**Inspection Direction:**	Downstream	**Upstream Node:**	JUNCTION
Road:	18A Frognal Gardens	**Inspected Length:**	11.00 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	50.00 m	**Downstream Node:**	D/S JN
Surface Type:		**Joint Length:**	0.00 m	**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	300 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)
Flow Control:	No flow control	**Lining Type:**	No Lining
Inspection Purpose:		**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:435



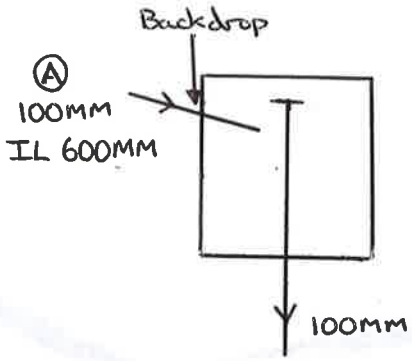
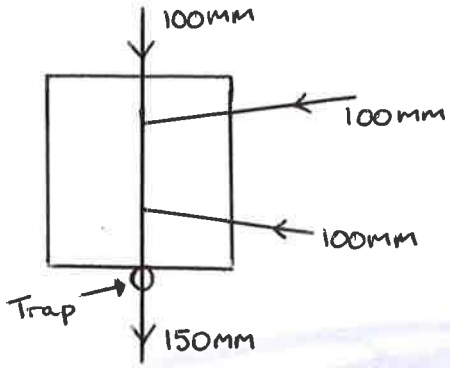
Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node type, manhole, reference number: JUNCTION	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
0.10	REM	General remark: POOR VIEW OF PIPE DUE TO SIZE	00:00:07		
3.20	JN	Junction at 9 o'clock, diameter: 150mm	00:00:31		
5.20	JN	Junction at 3 o'clock, diameter: 150mm	00:00:42		
9.40	CN	Connection other than junction at 10 o'clock, diameter: 150mm	00:01:07		
11.00	SA	Survey abandoned: LIMIT OF SURVEY	00:01:17		
50.00		End of pipe			

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Aqua-Jet

Drainage Specialists

Manhole Information

REFERENCE: MH 1	DUTY: CB	REFERENCE: MH2	DUTY: CB
DIAGRAM: 		DIAGRAM: 	
DEPTH AT OUTLET: 1740MM		DEPTH AT OUTLET: 1400MM	
MH SIZE 900MM x 500MM		MH SIZE 950MM x 600MM	
MH MATERIAL Brick / Render		MH MATERIAL Brick	
OBSERVATIONS/ COMMENTS:		OBSERVATIONS/ COMMENTS:	
REFERENCE:	DUTY:	REFERENCE:	DUTY:
DIAGRAM:		DIAGRAM:	
DEPTH AT OUTLET:		DEPTH AT OUTLET:	
MH SIZE		MH SIZE	
MH MATERIAL		MH MATERIAL	
OBSERVATIONS/ COMMENTS:		OBSERVATIONS/ COMMENTS:	

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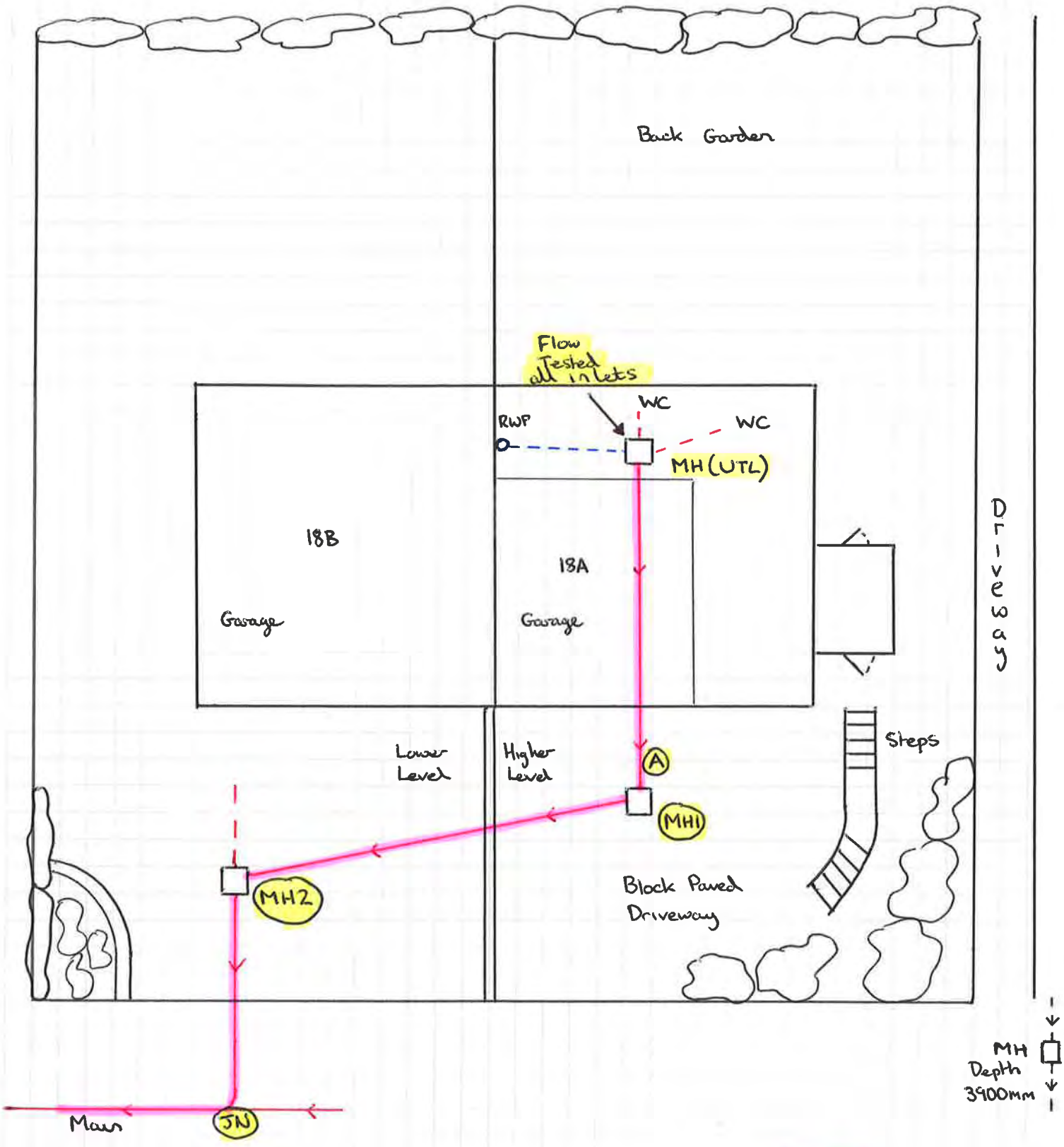

Sketch not to scale

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A-squared Studio

18A Frognal Gardens

Ground Movement Assessment Report

July 2020

1125-A2S-XX-XX-RP-Y-0001-01

Project Name	18A Frognal Gardens
Project Number	1125
Client	Soil Consultants Ltd
Document Name	Ground Movement Assessment Report

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Graduate Engineer	Engineer	Director

Document Reference	Status	Revision	Issued by	Date
1125-A2S-XX-XX-RP-Y-0001-00	First Issue	00	SB	15.10.2019
1125-A2S-XX-XX-RP-Y-0001-01	Revised based on feedback from project team	01	HS	17.07.2020

Contents

Appendices

1. Introduction

A-squared Studio Engineers Ltd (A-squared) has been appointed Soil Consultants Ltd (SCL) to undertake a Ground Movement Assessment (GMA) for the 18A Frognal Gardens development in London.

The A-squared scope comprises an assessment of the potential impact of the proposed redevelopment works on the various neighbouring properties.

1.1. Study Aims & Objectives

A ground movement and impact assessment has been carried out in order to estimate the potential damage induced by the proposed redevelopment at 18A Frognal Gardens on the neighbouring properties.

The scheme involves the demolition of the existing two- to three-storey property, excavation of an extended basement, and construction of a proposed four-storey residential structure. The depth of excavation ranges from 1.0m to 6.275m due to sloping ground from the northeast to the southwest and a localised deepening for a pool. Secant piled walls have been selected as the ground retention system for the northern and eastern sides of the excavation while mass concrete underpins have been selected for the north-western side.

The assessment encompasses properties located within the zone of influence of the proposed scheme. The GMA assessment is based on *greenfield* ground movements which are unlikely to be exceeded. The adopted assessment methodology provides a robust and conservative assessment representative of current industry best practice, as detailed in Section 0.

The assessment carried out and described herein aims to:

- Assess the impact of ground movements induced by the proposed works on properties adjacent to the development under consideration.
- Inform Party Wall awards.
- Provide performance criteria and inform aspects of substructure construction and design.

This report provides a detailed description of the:

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

2. The Site & Development

2.1. Site Location and Proposed Development

The proposed development is located at 18A Frognal Gardens, Hampstead, London, NW3 6XA, as shown in Figure 2.1. The site is approximately located at British National Grid coordinates 526168E,185768N, falling within administrative boundaries of the London Borough of Camden. Hampstead Underground Station is located approximately 220m east of the site.

The site is gently sloping, with elevations ranging from approximately +108.7mOD in the southwest to +112.5mOD in the northeast.

Figure 2.1 18A Frognal Gardens site location

The existing structure occupying the site is a two- to three-storey residence with a lowest level that cuts into the natural topography. This structure will be demolished, and a two- to four-storey residence will be constructed in its place. The proposed development involves several excavations over a large portion of the site footprint to create the lower ground floor and pool area.

The excavation will be supported by secant piled walls on the northern and eastern sides and mass concrete underpins installed sequentially in a hit-and-miss fashion on the north-western side. The lower ground floor excavation will extend from a minimum depth of 1.0m on the southern side and maximum depth of 6.275m, representing the pool area in the northern section of the property. In this area, trench sheeting will be used to reach the required formation level beneath the underpins founded at a 3.9m depth.

The locations of each of the retention systems are shown in Figure 2.2. Scheme drawings (current at the time of writing) are presented in Appendix A.

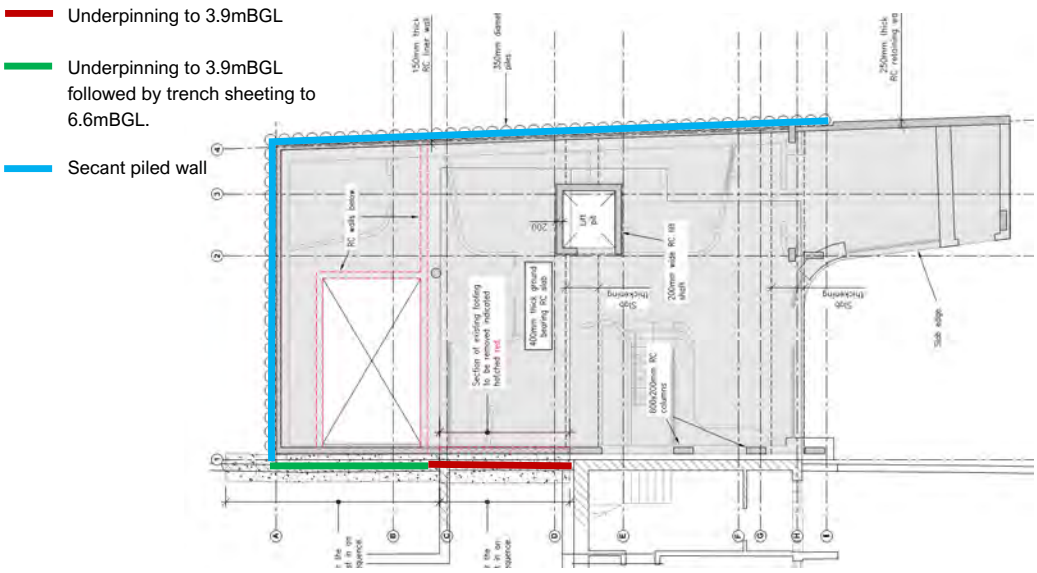


Figure 2.2 Sketch showing the locations of each proposed excavation retention system

3. Geology

Site-specific ground investigation works were carried out on the project site by Soil Consultants Ltd in August 2019. The ground conditions were found to comprise the following (in order of increasing depth):

- Made Ground – anthropogenic deposits of undifferentiated silty clays, sands and gravels.
- Bagshot Formation – loose brown slightly clayey SILT/SAND with occasional clay lenses
- Claygate Beds – firm grey mottled brown sandy silty CLAY with sand horizons
- London Clay Formation – stiff to very stiff fissured brown CLAY with occasional rare bands of silty sand.

The above include the strata of engineering interest and significance, taking cognisance of the scale of the proposed development and zone of influence. The ground model adopted for this assessment is presented in Table 3.1.

Table 3.1 Ground model and geotechncial parameters adopted for analysis purposes

Stratum	Depth (mBGL)	Thickness (m)	Undrained Young's Modulus, E_u [2] (MPa)	Drained Young's Modulus, E' [2] (MPa)
Made Ground	0.0	1.0	-	10.0
Bagshot Formation	1.0	6.0	-	18.0
Claygate Beds + London Clay[3]	7.0	27.0[4]	14.4 + 3.2z[5]	11.5 + 2.5z[5]

1. Ground model based on previous site-specific ground investigation undertaken by Soil Consultants Ltd. This data has been interpreted specifically for the scope of the GMA presented herein.
2. Stiffness data (E_u and E') has been evaluated empirically from in-situ testing data taking into consideration the nature of the geotechnical/soil-structure interaction mechanisms and level of anticipated strain within the soil mass.
3. Claygate Beds and London Clay are assumed to follow a continuous stiffness profile.
4. *Rigid boundary* assumed at 34.0mBGL for analytical purposes.
5. z refers to the depth in metres below the top of the Claygate Beds + London Clay formation.

4. Impact Assessment Methodology

4.1. Assessment Details

The assessment 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 excavation works.

Ground movements will arise as a result of various mechanisms which are mobilised as part of the construction works for the proposed scheme. The demolition of the existing building and lower ground floor excavation process will induce ground movements arising from the overburden removal and installation of the proposed retention systems. The permanent condition loading will partially reinstate a portion of the removed overburden, yielding settlements across the foundation system. The induced ground movements will extend over a given zone of influence surrounding the building/excavation footprint

A series of three-dimensional models of the proposed scheme have been developed in Oasys Xdisp / Pdisp and combined by means of superposition in order to enable ground movement assessments to be carried out representing the various construction stages. The ground movement displacement fields were separated in two groups (A & B) based on the approach followed, as detailed below:

Group A – Unloading/loading ground movements

A1. Building demolition (short term).
A2. Building demolition and basement excavation (short term).
A3. Building demolition, basement excavation, and application of the proposed building loading (long term).

Group B – CIRIA-based ground movements

B1. Secant wall and underpin installation and basement excavation.
B2. Secant wall and underpin installation, basement excavation, and application of the proposed building loading (long term)

The Group A assessments are based on *greenfield* ground movements evaluated from linear half-space (Pdisp) analyses and focus on vertical ground movements induced by the overburden removal unloading and reloading processes.

Demolition unloading pressures of 30kPa and 45kPa have been applied over the footprint of the existing building on site, as shown in Figure 4.1 (approximately 15kPa per storey).

Excavation unloading pressures have been modelled at the basement formation level representing the removal of approximately 1.0m (20kPa) and 4.2m (85kPa) of overburden to create the lower ground floor. A further unloading pressure of 126kPa (6.275m overburden), representing the excavation of the pool area, was also modelled at formation level in the northern section of the property.

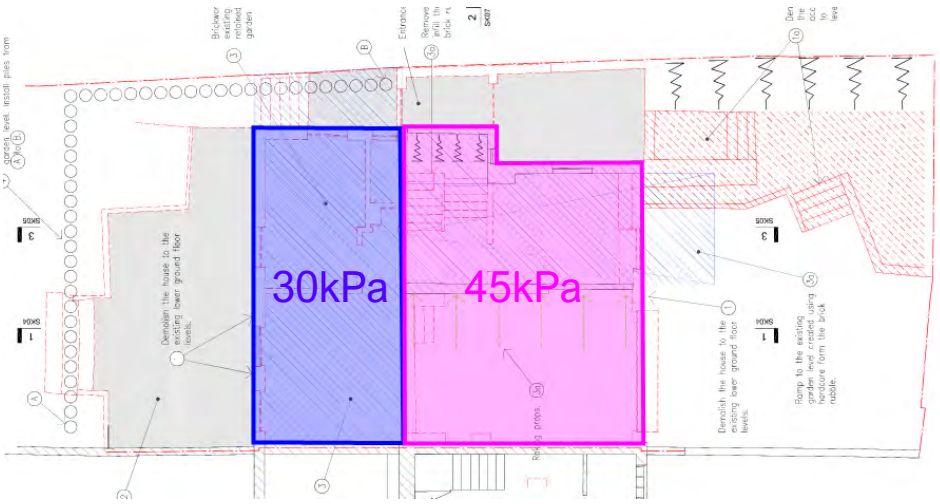


Figure 4.1 Modelled demolition area in Pdisp

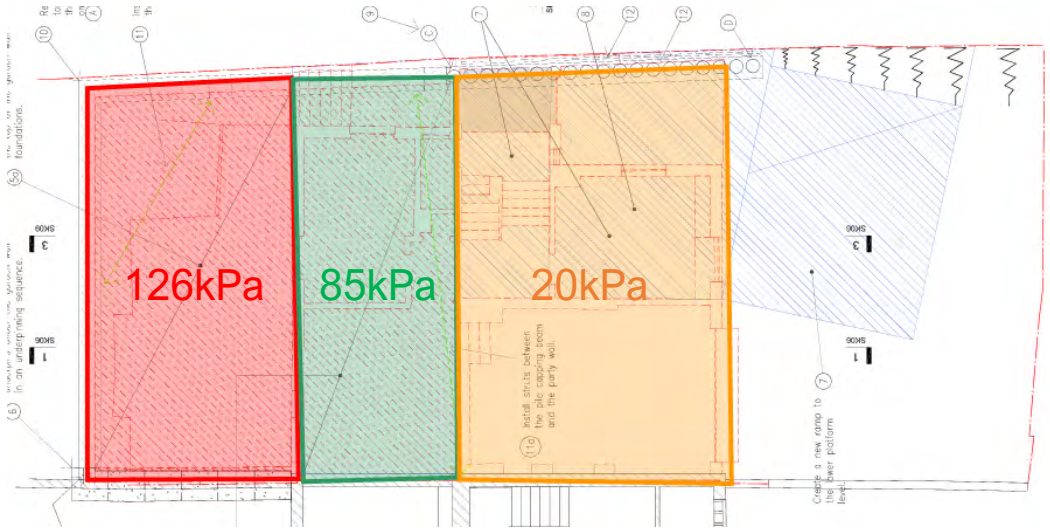


Figure 4.2 Modelled excavation area in Pdisp

The proposed residential structure will have two to four storeys. Based on an assumed surcharge of ~10kPa per storey, four uniformly distributed loading zones have been modelled at basement formation level, as shown in Figure 4.3.

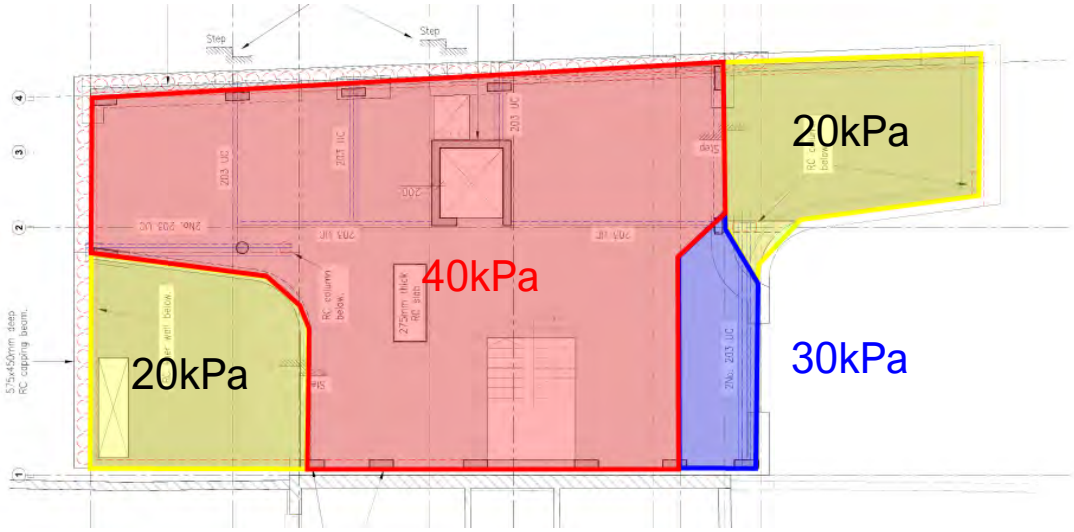


Figure 4.3 Proposed building loading areas

The Group B assessments adopt the normalised ground displacement curves reported in CIRIA C760. In addition to the effects arising from the excavation, the ground movement effects associated with the installation of the secant wall and underpinning have been considered. The following CIRIA C760 normalised ground movement curves were adopted to assess ground movements due to retention system installation and excavation works:

- *Underpin installation*: Installation of planar diaphragm wall in stiff clay.
- *Secant wall and trench sheeting*: Installation of contiguous bored pile wall in stiff clay.
- *Excavation to formation*: Excavation in front of a high stiffness wall in stiff clay.

The empirical data set for diaphragm wall installation is not strictly compatible with the construction technologies adopted in underpinning. However, it is assessed that the ground movement mechanisms are reasonably well-matched and, in lieu of better empirical relationships, the diaphragm wall curves are considered to provide a satisfactory and conservative approximation.

The “Installation of contiguous bored pile wall in stiff clay” CIRIA C760 curve has been adopted for all embedded wall installations (including trench sheeting) as it provides a more representative ground movement field for this assessment. It is widely accepted in

industry that the “Installation of secant bored pile wall in stiff clay” dataset is an upper bound for the movements induced by embedded pile wall installations – based on data measured in the field – and the contiguous curve presents a better fit to the empirical data set. For this reason, the contiguous pile wall curve has been adopted for the analysis presented herein.

As part of the underpin installation process, the load redistribution from the existing shallow foundations supporting the Party Wall to the new underpins on the west boundary has been modelled as a pressure acting at the base of the new underpins, assumed to be 1m wide. The weight of the adjacent structure acting on the underpins has been modelled as 114kPa, equivalent to the tributary area of the Party Wall supporting a 30kPa surcharge (approximately 10kPa per storey for 18B Frognal Gardens). This represents the redistribution of the stress bulb induced by the building loading on the Party Wall / underpins to lower strata.

In the B2 assessment, the CIRIA ground movements are combined with the long-term settlements induced by the proposed building loading (evaluated in Pdisp).

The two sets of analyses enabled the production of an envelope of damage classification results, with the worst-case results presented herein. A representative geometry has been adopted for defining the excavation/installation geometry implemented in the 3D modelling efforts.

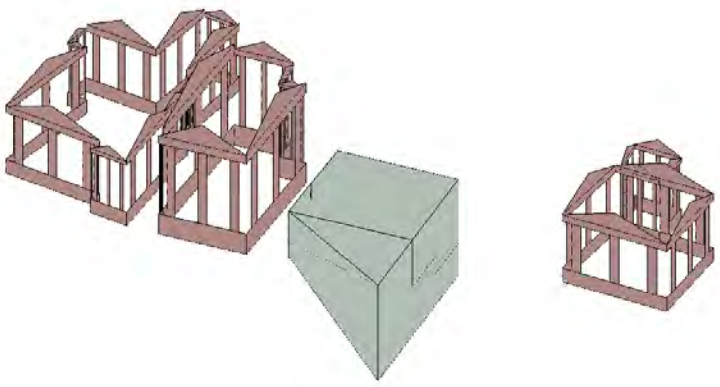


Figure 4.4 Indicative plot of the three-dimensional analytical model using the Oasys Xdisp software suite

4.2. Impact Assessment

4.2.1. General

The potential impact / damage induced on primary façade / wall elements of the buildings around the proposed scheme (including retained party walls forming part of the proposed development) have been evaluated on the basis of the calculated ground movement fields. The masonry walls of concern are shown in Figure 4.5, including the wall nomenclature / reference system adopted. The arrangement is based on the currently available survey information and presents an array of masonry façades running both perpendicular and parallel to the proposed lower ground floor (covering the key deformation mechanisms). In total, 31 façades of the neighbouring buildings were considered for the current study and these are grouped in the following manner:

- 18B.01 – 18B.07: 18B Frognal Gardens
- 20FG.01 – 20FG.16: 20 Frognal Gardens
- 17HW.A01 – 17HW.A04: 17 Holly Walk house
- 17HW.B01 – 17HW.B04: 17 Holly Walk shed

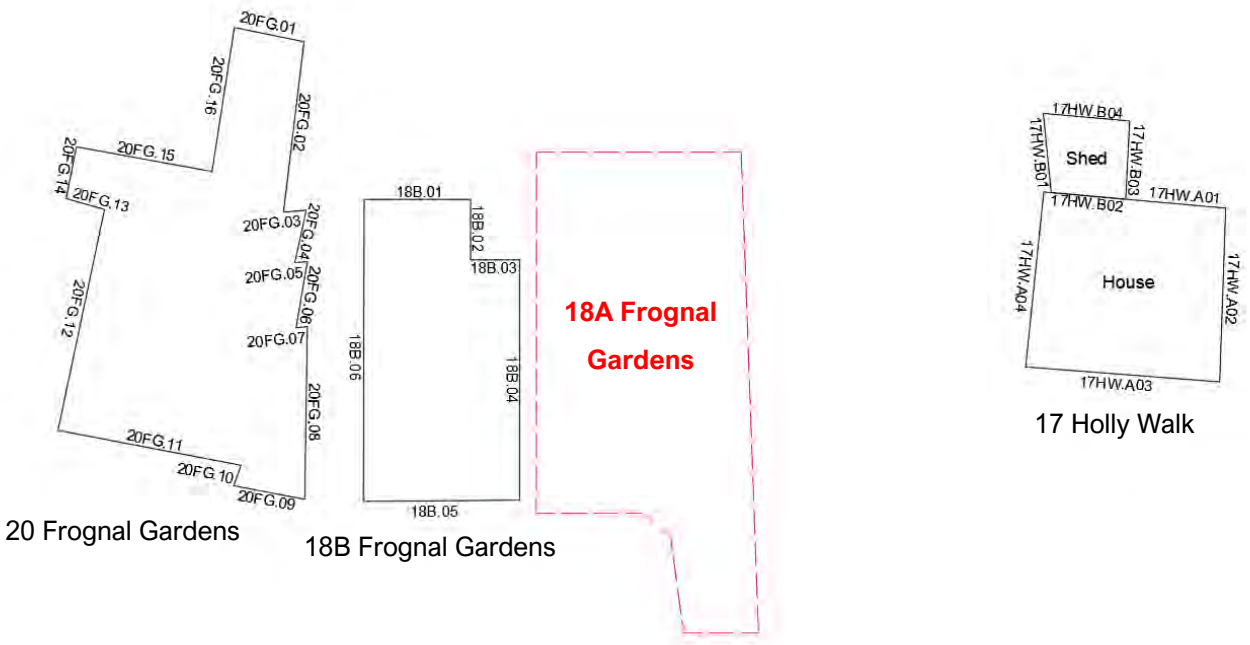


Figure 4.5 Simplfied scheme and nomenclature for each building façade/masonry wall element

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.

Tensile strains induced within the building masonry walls have been evaluated based on the deflection ratios Δ/L and horizontal extension mechanisms estimated from the analyses. The assessment considers the well-established Burland (1997) damage classification method, as presented and summarised in Figure 4.6 and Figure 4.7. This method involves a relatively 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.

Potential damage categories are directly related to the tensile strains induced by the proposed construction stages, arising from a combination of direct tension and bending induced tension mechanisms. The evaluated damage categories correspond to an unlikely to be exceeded scenario (on the basis of the data sets adopted and greenfield assumptions).

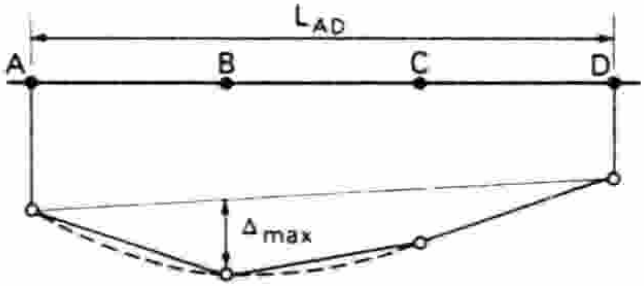


Figure 4.6 Definition of relative deflection Δ and deflection ratio Δ/L

Category of damage	Description of typical damage (ease of repair is underlined)	Approximate crack width (mm)	Limiting tensile strain ε_{lim} (per cent)
0 Negligible	Hairline cracks of less than about 0.1 mm are classed 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 weathertightness. 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. Weathertightness 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, floor 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 shoring. Windows broken with distortion. Danger of instability.	usually > 25 but depends on number of cracks.	

After Burland et al. 1977, Boscardin and Cording 1989, and Burland 2001.

Figure 4.7 Building damage classification – relationship between category of damage and limiting strain ε_{lim}

4.2.2. Results

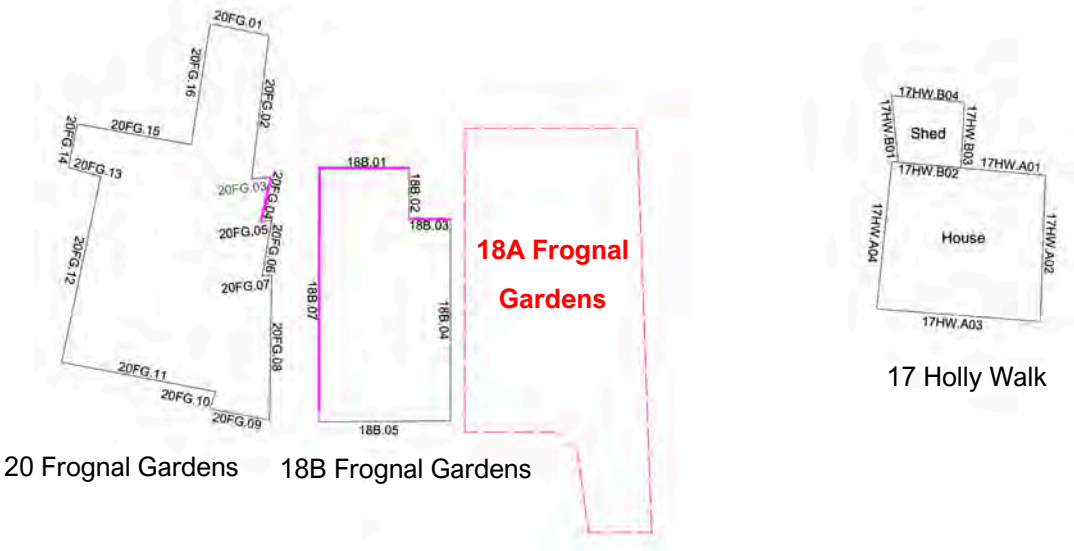
The results of the assessment are presented in Table 4.1. Note that the results presented in this table represent the worst-case output arising from all analysis runs. Damage category results are presented in Figure 4.8 for the affected façades. Figure 4.9 and Figure 4.10 depict the vertical and horizontal displacements, respectively, induced by the secant wall and underpin/trench sheet installation and excavation calculated as per CIRIA C760 datasets (assessment B1).

Table 4.1 Evaluated damage categories extracted from Xdisp

Façade Reference	Analysis Scenario				
	A1	A2	A3	B1	B2
18B.01	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 1 – Very Slight	Category 1 – Very Slight
18B.02	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible

Façade Reference	Analysis Scenario				
	A1	A2	A3	B1	B2
18B.03	Category 0 – Negligible	Category 1 – Very Slight	Category 1 – Very Slight	Category 1 – Very Slight	Category 1 – Very Slight
18B.04	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
18B.05	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
18B.06	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
18B.07	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 1 – Very Slight	Category 1 – Very Slight
20FG.01	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
20FG.02	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
20FG.03	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
20FG.04	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 1 – Very Slight	Category 1 – Very Slight
20FG.05	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
20FG.06	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
20FG.07	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
20FG.08	Category 0 – Negligible	Category 0 - Negligible	Category 0 - Negligible	Category 0 - Negligible	Category 0 - Negligible
20FG.09	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
20FG.10	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
20FG.11	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
20FG.12	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
20FG.13	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible

Façade Reference	Analysis Scenario				
	A1	A2	A3	B1	B2
20FG.14	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
20FG.15	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
20FG.16	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
17HW.A01	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 1 – Very Slight
17HW.A02	Category 0 – Negligible	Category 0 - Negligible	Category 0 - Negligible	Category 0 - Negligible	Category 0 - Negligible
17HW.A03	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
17HW.A04	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
17HW.B01	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
17HW.B02	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
17HW.B03	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible
17HW.B04	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible	Category 0 – Negligible



Purple – Category 1 (Very Slight)

Figure 4.8 Damage category results after analyses A3 and B2

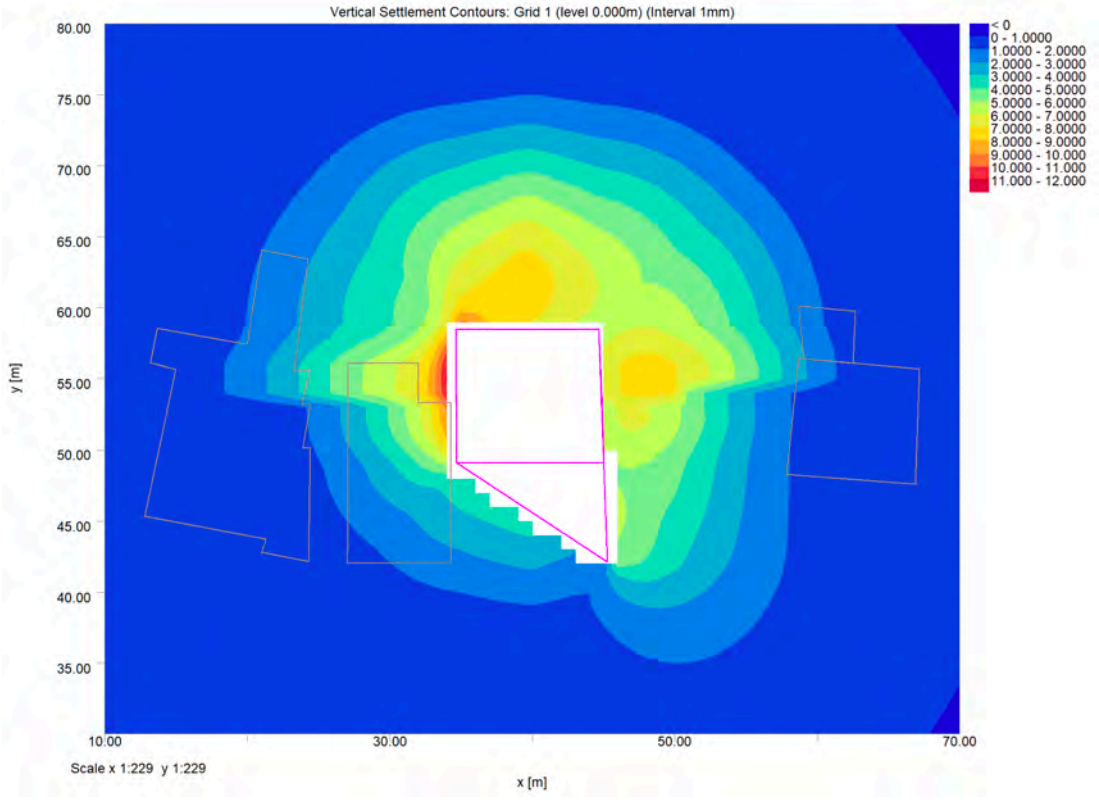


Figure 4.9 **Resultant Xdisp vertical displacement contours for scenario B1 – units in mm – secant wall and underpin/trench sheet installation and excavation (CIRIA C760)**

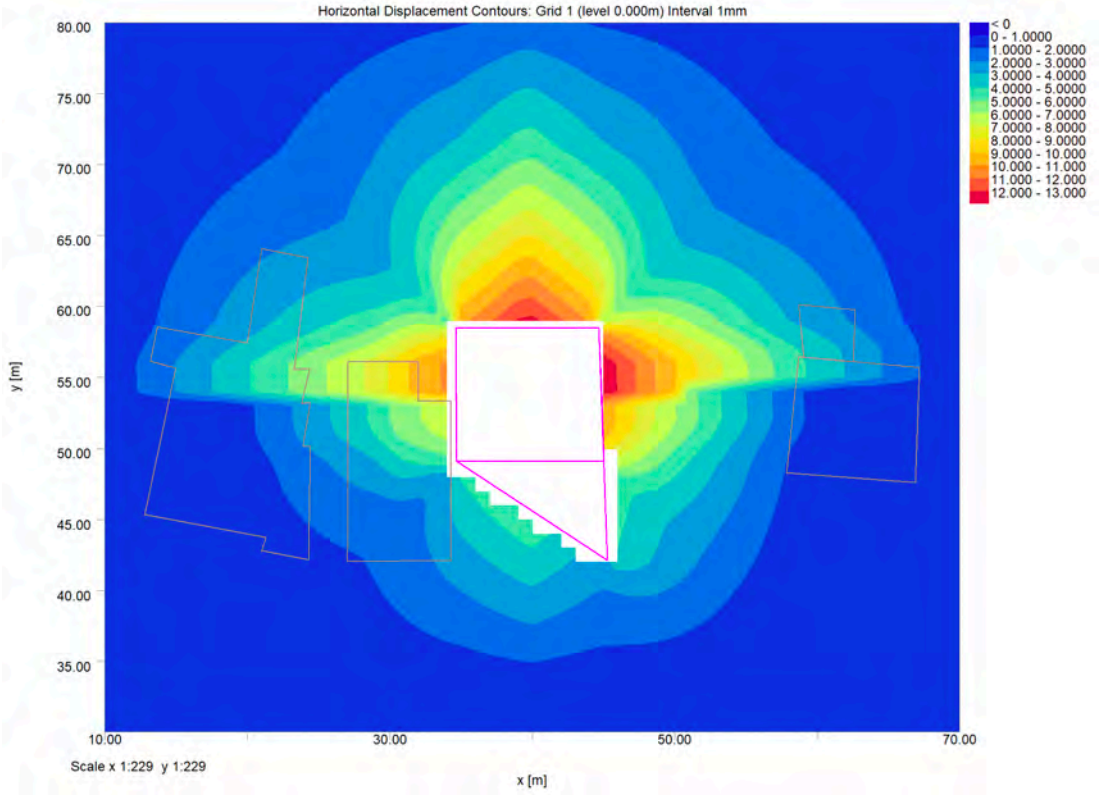


Figure 4.10 **Resultant Xdisp horizontal displacement contours for scenario B1 – units in mm – secant wall and underpin/ trench sheet installation and excavation (CIRIA C760)**

4.2.3. Basement Excavation Criteria

The results of this analysis show that all buildings fall within the acceptable damage classification if the ground movements caused by the site development are limited to the values presented in Table 4.2. The ground movements below present the maximum movements directly adjacent to the secant piled wall and underpins. Specific wall/façade deflection limits and trigger levels may be developed as part of the proposed monitoring regime, on the basis of the ground movement field presented herein.

Table 4.2 Limiting ground movement values at various construction stages

Stage	Maximum Cumulative Ground Movement (mm)	
	Vertical	Horizontal
Secant Wall Installation	4	4
Underpin/Trench Sheet Installation	8	2
Excavation	12	13
Long-Term Condition	20	13

5. Conclusions & Closing Remarks

The interaction between the proposed 18A Frognal Gardens development and the neighbouring properties within the zone of influence of the scheme has been reviewed as part of the GMA study presented herein.

The proposed development construction operations comprise three stages: demolition of the existing property, installation of the secant wall and underpinning/trench sheeting, and bulk excavation. The impact of the construction stages has been reviewed on the basis of two alternative methods, i.e. evaluating the effects of unloading/overburden removal using Pdisp and simulating the excavation induced ground movements using empirical CIRIA curves in Xdisp. In the latter case, a propped retaining wall solution (during the temporary works stage) has been considered, utilising the CIRIA C760 ground movement curves for high stiffness walls in stiff clay.

These two different scenarios have been considered in order to bind the potential ground movements arising from excavation operations (i.e. maximum potential heave and settlement respectively). This strategy ensures a robust evaluation of potential impact in light of the bespoke, intricate and workmanship-dependent construction methodology. Both short-term (undrained) and long-term (drained) conditions have been assessed by adopting the relevant soil stiffness parameters for each case.

In order to best limit ground movements in proximity to movement sensitive neighbouring buildings, due consideration may be given to suitable means and methods of construction. For example, reducing the extent of temporary excavations during earth removal operations in close proximity to buildings considered to be at most risk of damage.

The results from the GMA analyses are presented in Table 4.1 (denoting the evaluated damage categorisation in accordance with the Burland criteria described herein). It is observed that the maximum damage classification for the neighbouring properties is Category 1 – Very Slight. Specific wall / façade deflection limits / trigger levels may be developed as part of the proposed monitoring regime (based on the findings presented herein).

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

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, trigger levels in accordance with those presented in this GMA 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.

In particular, the ultimate and serviceability limit state performance of the proposed underpins supporting the building loading in the temporary and long-term conditions should be assessed and monitored by an experienced engineer.

It is recommended that this report is reviewed and understood in full by the project team and major stakeholders. Where significant changes are made to items such as construction sequencing, temporary propping arrangements and scheme design the engineer should thoroughly review the discrepancy and evaluate any potential impacts on ground movement and building damage. If necessary, the building damage categories should be re-evaluated.

It is critical that the permanent and temporary works designs are carried out in a coordinated manner between performance specified elements and substructure contractors, with the aim to ensure that such design elements are in alignment with the assumptions/findings of the GMA and overall design intent.

Appendix A: Selected Supporting Information

Soils Consultants Limited - Site investigation Report and the appendices
Akera Engineers - Proposed Construction sequence and Proposed drawings

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Technical Note

1125-A2S-XX-XX-TN-Y-0001-00

Project	18A Frognal Gardens
Project No.	1125
Subject	Ground Movement Assessment Report - Addendum
Client	Soil Consultants Ltd

Document Reference	Status	Revision	Issued	Checked	Approved	Date
1125-A2S-XX-XX-TN-Y-0001-00	First Issue – to be read in conjunction with 1125-A2S-XX-XX-RP-Y-0001-01	00	HS	PS	AN	14.10.2020

1. Introduction

This document is an addendum to 1125-A2S-XX-XX-RP-Y-0001-01 *Ground Movement Assessment Report* prepared by A-squared Studio Engineers Ltd (A-squared) on 17 July 2020. This addendum includes the supplementary information to the *Ground Movement Assessment Report* requested by Campbell Reith Hill Limited (Campbell Reith) on behalf of the London Borough of Camden.

2. Campbell Reith Comments

The following comments with regards to the *Ground Movement Assessment Report* were received from Campbell Reith by the project team on 1 September 2020:

1. *Can the full input and output data be provided for the PDisp and XDisp analysis please?*
2. *Regarding the use of the CIRIA C760 curve for "Installation of secant bored pile wall in stiff clay", while we appreciate that, as stated in the BIA, this curve represents an upper bound for the data set, it is a requirement by LBC that the ground movement assessment adopts a moderately conservative approach. As such, the XDisp analysis should be amended to use the ground movement curve for a secant pile wall for the embedded retaining walls using this method of installation.*

3. Information Provided

Based on the comments above, the following information has been appended to this document:

- **Appendix A**: Pdisp input and output data for all modelled construction stages.
- **Appendix B**: Xdisp input and output data for all modelled construction stages.
- **Appendix C**: Plots showing discontinuity and peak smoothing of selected façades.

It is noted that the Xdisp input and output data for construction stages B01 and B02 incorporate the CIRIA C760 curve for "Installation of secant bored pile wall in stiff clay" instead of the curve for "Installation of contiguous bored pile wall in stiff clay" adopted in the *Ground Movement Assessment Report*. Sensitivity checks comparing the ground movements associated with each curve indicate that there is no significant additional impact on surrounding façades related to the adoption of the secant bored pile installation curve, as shown in the output data in Appendix B.

Appendix A: Pdisp Input and Output Data

Titles

Job No.: 1125
Job Title: 18A Frognal Gardens
Sub-title: Building GMA
Calculation Heading: PDisp A01 - Demolition
Initials: SB
Checker:
Date Saved:
Date Checked:
Notes:
File Name: PDisp A01.pdd
File Path: \\Mac\Dropbox for Business\A2-projects\1125 - 18a Frognal Gardens\03 - Calculations\Issue 01\Pdisp

History

Date	Time	By	Notes
14-Oct-2020	14:15	hamed	<history cleared>
14-Oct-2020	14:18	hamed	

Analysis Options

General
Global Poisson's ratio: 0.50
Maximum allowable ratio between values of E: 1.5
Horizontal rigid boundary level: -34.00 [m OD]
Displacements at load centroids: Yes
GSA piled raft data : No

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

Consolidation
Consolidation : No

Soil ProfilesSoil Profile 1

Layer ref.	Name	Level at top [mOD]	Number of intermediate displacement levels	Youngs Modulus : Top [kN/m²]	Youngs Modulus : Btm. [kN/m²]	Poissons ratio	Non-linear curve
1	Made Ground	0.0	5	10000.	10000.	0.20000	None
2	Bagshot Formation	-1.0000	5	18000.	18000.	0.20000	None
3	London Clay	-7.0000	5	14400.	99450.	0.50000	None

Soil Zones

Zone	Name	X min [m]	X max [m]	Y min [m]	Y max [m]	Profile
1	1	0.0	80.000	0.0	100.00	Soil Profile 1

Polygonal Load Data

Load ref.	Name	Position : Level [m]	Position : Polygon : Coords. [m]		Position : Polygon : Rect. tolerance [%]	No. of Rectangles	Value : Normal (local z) [kN/m²]
1	Demo - 3F	-2.75000	(34.7,49.1)	(43.8,49.1)	10.000	2	-45.000
			(43.8,46.4)	(42.8,46.4)			
			(42.8,42.3)	(34.9,42.3)			
			(34.7,42.3)	(34.7,49.1)			
2	Demo - 2F	0.00000	(34.7,53.3)	(43.8,53.3)	10.000	1	-30.000
			(43.7,49.1)	(34.7,49.1)			
			(34.7,53.3)				

Polygonal Loads' Rectangles

No.	Centre x [m]	Centre y [m]	Angle of local x from global X [Degrees]	Width x [m]	Depth y [m]
Load 1 : Demo - 3F					
(Edge 7 optimal)					
1	38.75214	44.36162	90.266	4.0939	8.0366
2	39.27445	47.75430	90.266	2.6865	9.0839
Load 2 : Demo - 2F					
(Edge 4 optimal)					
1	39.23550	51.18897	179.84	8.9951	4.1869

Displacement Lines

Name	X1 [m]	Y1 [m]	Z1 [m]	X2 [m]	Y2 [m]	Z2 [m]	Intervals [No.]	Calculate	Detailed Results
18B.01	27.06970	56.10310	0.00000	32.02050	56.10310	0.00000	10	Yes	Yes
18B.02	32.02050	56.10310	0.00000	32.02020	53.28900	0.00000	6	Yes	Yes
18B.03	32.02020	53.28900	0.00000	34.29880	53.28910	0.00000	6	Yes	Yes
18B.04	34.29880	53.28910	0.00000	34.29900	42.12610	0.00000	24	Yes	Yes
18B.05	34.29900	42.12610	0.00000	27.03130	42.06780	0.00000	16	Yes	Yes
18B.06	27.03130	42.06780	0.00000	27.03130	42.81150	0.00000	2	Yes	Yes
18B.07	27.03130	42.81150	0.00000	27.06970	56.10310	0.00000	28	Yes	Yes
20FG.01	21.02660	64.09150	0.00000	24.26740	63.42960	0.00000	8	Yes	Yes
20FG.02	24.26740	63.42960	0.00000	23.31400	55.50790	0.00000	16	Yes	Yes
20FG.03	23.31400	55.50790	0.00000	24.37380	55.60010	0.00000	4	Yes	Yes
20FG.04	24.37380	55.60010	0.00000	23.83670	53.15770	0.00000	6	Yes	Yes
20FG.05	23.83670	53.15770	0.00000	24.42370	53.20880	0.00000	2	Yes	Yes
20FG.06	24.42370	53.20880	0.00000	23.90190	50.14280	0.00000	8	Yes	Yes
20FG.07	23.90190	50.14280	0.00000	24.42370	50.18820	0.00000	2	Yes	Yes
20FG.08	24.42370	50.18820	0.00000	24.30050	42.16640	0.00000	18	Yes	Yes
20FG.09	24.30050	42.16640	0.00000	20.99250	42.79780	0.00000	8	Yes	Yes
20FG.10	20.99250	42.79780	0.00000	21.33710	43.74710	0.00000	4	Yes	Yes
20FG.11	21.33710	43.74710	0.00000	12.81700	45.36940	0.00000	18	Yes	Yes
20FG.12	12.81700	45.36940	0.00000	14.97910	55.63720	0.00000	22	Yes	Yes
20FG.13	14.97910	55.63720	0.00000	13.19400	56.13840	0.00000	4	Yes	Yes
20FG.14	13.19400	56.13840	0.00000	13.67460	58.54420	0.00000	6	Yes	Yes
20FG.15	13.67460	58.54420	0.00000	19.98620	57.39750	0.00000	14	Yes	Yes
20FG.16	19.98620	57.39750	0.00000	21.02660	64.09150	0.00000	14	Yes	Yes
17HW.A01	58.70070	56.44780	0.00000	67.17010	55.69590	0.00000	18	Yes	Yes
17HW.A02	67.17010	55.69590	0.00000	66.89130	47.62280	0.00000	18	Yes	Yes
17HW.A03	66.89130	47.62280	0.00000	57.85650	48.31820	0.00000	20	Yes	Yes
17HW.A04	57.85650	48.31820	0.00000	58.70070	56.44780	0.00000	18	Yes	Yes

Name	X1 [m]	Y1 [m]	Z1 [m]	X2 [m]	Y2 [m]	Z2 [m]	Intervals [No.]	Calculate	Detailed Results
17HW.B01	58.67890	60.09730	0.00000	59.04640	56.41710	0.00000	8	Yes	Yes
17HW.B02	59.04640	56.41710	0.00000	62.51490	56.10130	0.00000	8	Yes	Yes
17HW.B03	62.51490	56.10130	0.00000	62.69950	59.74720	0.00000	8	Yes	Yes
17HW.B04	62.69950	59.74720	0.00000	58.67890	60.09730	0.00000	10	Yes	Yes

Results : Immediate : Load Centres : Polygonal

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
1	Demo - 3F	38.97665	45.80077	-2.75000	-14.37462	-3.2813	-46.738	-124.19	-0.0017360
2	Demo - 2F	39.23031	51.19083	0.00000	-11.46353	-0.083333	-29.999	-87.486	-0.0018502

Results : Consolidation : Load Centres : Polygonal

None

Results : Total : Load Centres : Polygonal

None

Results : Immediate : Displacement Data : Lines

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
1	18B.01	27.06970	56.10310	0.00000	-0.20141	-0.083333	-1.3325E-6	-0.024271	485.26E-9
1	18B.01	27.56478	56.10310	0.00000	-0.23635	-0.083333	-1.6448E-6	-0.027342	546.65E-9
1	18B.01	28.05986	56.10310	0.00000	-0.27546	-0.083333	-2.0472E-6	-0.030933	618.42E-9
1	18B.01	28.55494	56.10310	0.00000	-0.31917	-0.083333	-2.5706E-6	-0.035151	702.72E-9
1	18B.01	29.05002	56.10310	0.00000	-0.36796	-0.083333	-3.2579E-6	-0.040129	802.19E-9
1	18B.01	29.54510	56.10310	0.00000	-0.42233	-0.083333	-4.1693E-6	-0.046031	920.13E-9
1	18B.01	30.04018	56.10310	0.00000	-0.48278	-0.083333	-5.3903E-6	-0.053060	1.060SE-6
1	18B.01	30.53526	56.10310	0.00000	-0.54979	-0.083333	-7.0417E-6	-0.061460	1.2284E-6
1	18B.01	31.03034	56.10310	0.00000	-0.62380	-0.083333	-9.2947E-6	-0.071530	1.4295E-6
1	18B.01	31.52542	56.10310	0.00000	-0.70515	-0.083333	-12.389E-6	-0.083617	1.6708E-6
1	18B.01	32.02050	56.10310	0.00000	-0.79401	-0.083333	-16.652E-6	-0.098104	1.9601E-6
2	18B.02	32.02050	56.10310	0.00000	-0.79401	-0.083333	-16.652E-6	-0.098104	1.9601E-6
2	18B.02	32.02045	55.63408	0.00000	-0.88967	-0.083333	-22.091E-6	-0.11322	2.2617E-6
2	18B.02	32.02040	55.16507	0.00000	-0.99318	-0.083333	-29.412E-6	-0.13079	2.6122E-6
2	18B.02	32.02035	54.69605	0.00000	-1.10406	-0.083333	-39.050E-6	-0.15087	3.0128E-6
2	18B.02	32.02030	54.22703	0.00000	-1.22131	-0.083333	-51.220E-6	-0.17319	3.4576E-6
2	18B.02	32.02025	53.75802	0.00000	-1.34329	-0.083333	-65.601E-6	-0.19691	3.9303E-6
2	18B.02	32.02020	53.28900	0.00000	-1.46782	-0.083333	-81.101E-6	-0.22063	4.4029E-6
3	18B.03	32.02020	53.28900	0.00000	-1.46782	-0.083333	-81.101E-6	-0.22063	4.4029E-6
3	18B.03	32.39997	53.28902	0.00000	-1.65016	-0.083333	-131.63E-6	-0.28045	5.5933E-6
3	18B.03	32.77973	53.28903	0.00000	-1.85857	-0.083333	-230.31E-6	-0.36707	7.3137E-6
3	18B.03	33.15950	53.28905	0.00000	-2.09934	-0.083333	-449.16E-6	-0.50027	9.9516E-6
3	18B.03	33.53927	53.28907	0.00000	-2.38239	-0.083333	-0.0010388	-0.72476	14.371E-6
3	18B.03	33.91903	53.28908	0.00000	-2.72600	-0.083333	-0.0032586	-1.1669	22.948E-6
3	18B.03	34.29880	53.28910	0.00000	-3.17392	-0.083333	-0.020383	-2.3752	45.059E-6
4	18B.04	34.29880	53.28910	0.00000	-3.17392	-0.083333	-0.020383	-2.3752	45.059E-6
4	18B.04	34.29881	52.82397	0.00000	-3.64751	-0.083333	-0.036036	-3.4689	65.054E-6
4	18B.04	34.29882	52.35885	0.00000	-4.04851	-0.083333	-0.039582	-3.9774	74.798E-6
4	18B.04	34.29883	51.89372	0.00000	-4.38699	-0.083333	-0.040638	-4.2068	79.259E-6
4	18B.04	34.29000	51.42860	0.00000	-4.68105	-0.083333	-0.041185	-4.3062	81.182E-6
4	18B.04	34.29884	50.96347	0.00000	-4.94391	-0.083333	-0.041548	-4.3204	81.423E-6
4	18B.04	34.29885	50.49835	0.00000	-5.18566	-0.083333	-0.041722	-4.2486	79.964E-6
4	18B.04	34.29886	50.03323	0.00000	-5.41506	-0.083333	-0.041357	-4.0425	75.888E-6
4	18B.04	34.29887	49.56810	0.00000	-5.64189	-0.083333	-0.038253	-3.5412	66.234E-6
4	18B.04	34.29888	49.10298	0.00000	-5.87198	-0.083333	-0.021310	-2.4054	45.550E-6
4	18B.04	34.29888	48.63785	0.00000	-6.08406	-0.083333	-0.0045358	-1.2696	24.847E-6
4	18B.04	34.29889	48.17272	0.00000	-6.24137	-0.083333	-0.0011775	-0.74456	14.750E-6
4	18B.04	34.29890	47.70760	0.00000	-6.34222	-0.083333	-437.41E-6	-0.49264	9.8002E-6
4	18B.04	34.29891	47.24247	0.00000	-6.39518	-0.083333	-203.20E-6	-0.35175	7.0106E-6
4	18B.04	34.29892	46.77735	0.00000	-6.40587	-0.083333	-108.78E-6	-0.26402	5.2673E-6
4	18B.04	34.29892	46.31222	0.00000	-6.37782	-0.083333	-64.105E-6	-0.20524	4.0970E-6
4	18B.04	34.29893	45.84710	0.00000	-6.30599	-0.083333	-40.472E-6	-0.16374	3.2699E-6
4	18B.04	34.29894	45.38197	0.00000	-6.18633	-0.083333	-26.907E-6	-0.13328	2.6624E-6
4	18B.04	34.29895	44.91685	0.00000	-6.01817	-0.083333	-18.621E-6	-0.11025	2.2027E-6
4	18B.04	34.29896	44.45172	0.00000	-5.79787	-0.083333	-13.306E-6	-0.092403	1.8465E-6
4	18B.04	34.29897	43.98660	0.00000	-5.51860	-0.083333	-9.7596E-6	-0.078309	1.5650E-6
4	18B.04	34.29897	43.52148	0.00000	-5.16982	-0.083333	-7.3164E-6	-0.066996	1.3390E-6
4	18B.04	34.29898	43.05635	0.00000	-4.73504	-0.083333	-5.5870E-6	-0.057790	1.1551E-6
4	18B.04	34.29899	42.59123	0.00000	-4.19096	-0.083333	-4.3345E-6	-0.050211	1.0037E-6
4	18B.04	34.29900	42.12610	0.00000	-3.56190	-0.083333	-3.4095E-6	-0.043908	877.75E-9
5	18B.05	34.29900	42.12610	0.00000	-3.56190	-0.083333	-3.4095E-6	-0.043908	877.75E-9
5	18B.05	33.84477	42.12246	0.00000	-2.95241	-0.083333	-3.1128E-6	-0.041492	829.46E-9
5	18B.05	33.39054	42.11881	0.00000	-2.48791	-0.083333	-2.8225E-6	-0.039068	781.02E-9
5	18B.05	32.93631	42.11517	0.00000	-2.11384	-0.083333	-2.5433E-6	-0.036667	733.02E-9
5	18B.05	32.48208	42.11153	0.00000	-1.80501	-0.083333	-2.2790E-6	-0.034316	686.04E-9
5	18B.05	32.02784	42.10788	0.00000	-1.54662	-0.083333	-2.0324E-6	-0.032037	640.50E-9
5	18B.05	31.57361	42.10424	0.00000	-1.32856	-0.083333	-1.8050E-6	-0.029850	596.78E-9
5	18B.05	31.11938	42.10059	0.00000	-1.14339	-0.083333	-1.5976E-6	-0.027766	555.12E-9
5	18B.05	30.66515	42.09695	0.00000	-0.98540	-0.083333	-1.4103E-6	-0.025794	515.71E-9
5	18B.05	30.21092	42.09331	0.00000	-0.85008	-0.083333	-1.2424E-6	-0.023940	478.64E-9
5	18B.05	29.75669	42.08966	0.00000	-0.73378	-0.083333	-1.0930E-6	-0.022204	443.95E-9
5	18B.05	29.30246	42.08602	0.00000	-0.63348	-0.083333	-960.65E-9	-0.020586	411.61E-9
5	18B.05	28.84822	42.08237	0.00000	-0.54673	-0.083333	-843.98E-9	-0.019084	381.57E-9
5	18B.05	28.39399	42.07873	0.00000	-0.47147	-0.083333	-741.47E-9	-0.017692	353.75E-9
5	18B.05	27.93976	42.07509	0.00000	-0.40600	-0.083333	-651.63E-9	-0.016406	328.04E-9
5	18B.05	27.48553	42.07144	0.00000	-0.34888	-0.083333	-573.03E-9	-0.015219	304.32E-9
5	18B.05	27.03130	42.06780	0.00000	-0.29892	-0.083333	-504.36E-9	-0.014126	282.46E-9
6	18B.06	27.03130	42.06780	0.00000	-0.29892	-0.083333	-504.36E-9	-0.014126	282.46E-9
6	18B.06	27.03130	42.43965	0.00000	-0.31445	-0.083333	-551.38E-9	-0.014854	297.01E-9
6	18B.06	27.03130	42.81150	0.00000	-0.32956	-0.083333	-602.64E-9	-0.015615	312.23E-9
7	18B.07	27.03130	42.81150	0.00000	-0.32956	-0.083333	-602.64E-9	-0.015615	312.23E-9
7	18B.07	27.03267	43.28620	0.00000	-0.34824	-0.083333	-674.92E-9	-0.016639	332.71E-9
7	18B.07	27.03404	43.76090	0.00000	-0.36582	-0.083333	-755.07E-9	-0.017717	354.24E-9
7	18B.07	27.03541	44.23560	0.00000	-0.38209	-0.083333	-843.43E-9	-0.018844	376.77E-9
7	18B.07	27.03679	44.71030	0.00000	-0.39685	-0.083333	-940.17E-9	-0.020016	400.20E-9
7	18B.07	27.03816	45.18500	0.00000	-0.40988	-0.083333	-1.0452E-6	-0.021225	424.38E-9
7	18B.07	27.03953	45.65970	0.00000	-0.42104	-0.083333	-1.1579E-6	-0.022462	449.11E-9
7	18B.07	27.04090	46.13440	0.00000	-0.43018	-0.083333	-1.2776E-6	-0.023715	474.14E-9
7	18B.07	27.04227	46.60910	0.00000	-0.43719	-0.083333	-1.4026E-6	-0.024966	499.15E-9
7	18B.07	27.04364	47.08380	0.00000	-0.44200	-0.083333	-1.5310E-6	-0.026199	523.79E-9
7	18B.07	27.04501	47.55850	0.00000	-0.44455	-0.083333	-1.6600E-6	-0.027390	547.61E-9
7	18B.07	27.04639	48.03320	0.00000	-0.44483	-0.083333	-1.7865E-6	-0.028518	570.14E-9
7	18B.07	27.04776	48.50790	0.00000	-0.44284	-0.083333	-1.9066E-6	-0.029556	590.90E-9
7	18B.07	27.04913	48.98260	0.00000	-0.43862	-0.083333	-2.0164E-6	-0.030480	609.35E-9
7	18B.07	27.05050	49.45730	0.00000	-0.43224	-0.083333	-2.1117E-6	-0.031264	625.02E-9
7	18B.07	27.05187	49.93200	0.00000	-0.42379	-0.083333	-2.1887E-6	-0.031886	637.46E-9
7	18B.07	27.05324	50.40670	0.00000	-0.41338	-0.083333	-2.2441E-6	-0.032328	646.29E-9
7	18B.07	27.05461	50.88140	0.00000	-0.40115	-0.083333	-2.2754E-6	-0.032575	651.24E-9
7	18B.07	27.05599	51.35610	0.00000	-0.38727	-0.083333	-2.2811E-6	-0.032621	652.14E-9
7	18B.07	27.05736	51.83080	0.00000	-0.37192	-0.083333	-2.2611E-6	-0.032462	648.98E-9
7	18B.07	27.05873	52.30550	0.00000	-0.35528	-0.083333	-2.2161E-6	-0.032105	641.84E-9
7	18B.07	27.06010	52.78020	0.00000	-0.33758	-0.083333	-2.1483E-6	-0.031561	630.96E-9
7	18B.07	27.06147	53.25490	0.00000	-0.31901	-0.083333	-2.0607E-6	-0.030846	616.68E-9
7	18B.07	27.06284	53.72960	0.00000	-0.29980	-0.083333	-1.9568E-6	-0.029982	599.40E-9

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
7	18B.07	27.06421	54.20430	0.00000	-0.28018	-0.083333	-1.8408E-6	-0.028991	579.60E-9
7	18B.07	27.06559	54.67900	0.00000	-0.26033	-0.083333	-1.7166E-6	-0.027900	557.79E-9
7	18B.07	27.06696	55.15370	0.00000	-0.24047	-0.083333	-1.5883E-6	-0.026734	534.48E-9
7	18B.07	27.06833	55.62840	0.00000	-0.22078	-0.083333	-1.4593E-6	-0.025516	510.15E-9
7	18B.07	27.06970	56.10310	0.00000	-0.20141	-0.083333	-1.3325E-6	-0.024271	485.26E-9
8	20FG.01	21.02660	64.09150	0.00000	0.05550	-0.083333	-64.576E-9	-0.0042561	85.115E-9
8	20FG.01	21.43170	64.00876	0.00000	0.05364	-0.083333	-70.567E-9	-0.0044851	89.694E-9
8	20FG.01	21.83680	63.92602	0.00000	0.05156	-0.083333	-77.211E-9	-0.0047298	94.587E-9
8	20FG.01	22.24190	63.84329	0.00000	0.04923	-0.083333	-84.588E-9	-0.0049916	99.822E-9
8	20FG.01	22.64700	63.76055	0.00000	0.04664	-0.083333	-92.791E-9	-0.0052718	105.42E-9
8	20FG.01	23.05210	63.67781	0.00000	0.04376	-0.083333	-101.92E-9	-0.0055719	111.43E-9
8	20FG.01	23.45720	63.59508	0.00000	0.04058	-0.083333	-112.10E-9	-0.0058937	117.86E-9
8	20FG.01	23.86230	63.51234	0.00000	0.03707	-0.083333	-123.46E-9	-0.0062387	124.76E-9
8	20FG.01	24.26740	63.42960	0.00000	0.03322	-0.083333	-136.15E-9	-0.0066091	132.17E-9
9	20FG.02	24.26740	63.42960	0.00000	0.03322	-0.083333	-136.15E-9	-0.0066091	132.17E-9
9	20FG.02	24.20781	62.93449	0.00000	0.02960	-0.083333	-147.27E-9	-0.0069144	138.27E-9
9	20FG.02	24.14823	62.43939	0.00000	0.02575	-0.083333	-159.12E-9	-0.0072281	144.54E-9
9	20FG.02	24.08864	61.94428	0.00000	0.02169	-0.083333	-171.68E-9	-0.0075494	150.97E-9
9	20FG.02	24.02905	61.44917	0.00000	0.01741	-0.083333	-184.94E-9	-0.0078769	157.52E-9
9	20FG.02	23.96946	60.95407	0.00000	0.01294	-0.083333	-198.84E-9	-0.0082091	164.16E-9
9	20FG.02	23.90987	60.45896	0.00000	0.00829	-0.083333	-213.33E-9	-0.0085441	170.86E-9
9	20FG.02	23.85029	59.96386	0.00000	0.00348	-0.083333	-228.33E-9	-0.0088799	177.57E-9
9	20FG.02	23.79070	59.46875	0.00000	-0.00147	-0.083333	-243.73E-9	-0.0092140	184.25E-9
9	20FG.02	23.73111	58.97364	0.00000	-0.00654	-0.083333	-259.38E-9	-0.0095437	190.84E-9
9	20FG.02	23.67152	58.47854	0.00000	-0.01168	-0.083333	-275.12E-9	-0.0098660	197.29E-9
9	20FG.02	23.61194	57.98343	0.00000	-0.01686	-0.083333	-290.76E-9	-0.010178	203.52E-9
9	20FG.02	23.55235	57.48833	0.00000	-0.02204	-0.083333	-306.07E-9	-0.010475	209.46E-9
9	20FG.02	23.49276	56.99322	0.00000	-0.02719	-0.083333	-320.82E-9	-0.010755	215.06E-9
9	20FG.02	23.43317	56.49811	0.00000	-0.03224	-0.083333	-334.74E-9	-0.011013	220.23E-9
9	20FG.02	23.37359	56.00301	0.00000	-0.03717	-0.083333	-347.58E-9	-0.011247	224.90E-9
9	20FG.02	23.31400	55.50790	0.00000	-0.04191	-0.083333	-359.07E-9	-0.011452	229.00E-9
10	20FG.03	23.31400	55.50790	0.00000	-0.04191	-0.083333	-359.07E-9	-0.011452	229.00E-9
10	20FG.03	23.57895	55.53095	0.00000	-0.04982	-0.083333	-391.29E-9	-0.012034	240.63E-9
10	20FG.03	23.84390	55.55400	0.00000	-0.05823	-0.083333	-426.98E-9	-0.012654	253.03E-9
10	20FG.03	24.10885	55.57705	0.00000	-0.06715	-0.083333	-466.60E-9	-0.013317	266.29E-9
10	20FG.03	24.37380	55.60010	0.00000	-0.07662	-0.083333	-510.65E-9	-0.014026	280.46E-9
11	20FG.04	24.37380	55.60010	0.00000	-0.07662	-0.083333	-510.65E-9	-0.014026	280.46E-9
11	20FG.04	24.28428	55.19303	0.00000	-0.08033	-0.083333	-518.04E-9	-0.014133	282.60E-9
11	20FG.04	24.19477	54.78597	0.00000	-0.08370	-0.083333	-523.11E-9	-0.014204	284.03E-9
11	20FG.04	24.10525	54.37890	0.00000	-0.08669	-0.083333	-525.75E-9	-0.014239	284.71E-9
11	20FG.04	24.01573	53.97183	0.00000	-0.08928	-0.083333	-525.91E-9	-0.014235	284.64E-9
11	20FG.04	23.92622	53.56477	0.00000	-0.09145	-0.083333	-523.59E-9	-0.014194	283.81E-9
11	20FG.04	23.83670	53.15770	0.00000	-0.09317	-0.083333	-518.81E-9	-0.014115	282.25E-9
12	20FG.05	23.83670	53.15770	0.00000	-0.09317	-0.083333	-518.81E-9	-0.014115	282.25E-9
12	20FG.05	24.13020	53.18325	0.00000	-0.10653	-0.083333	-578.47E-9	-0.015023	300.38E-9
12	20FG.05	24.42370	53.20880	0.00000	-0.12090	-0.083333	-646.63E-9	-0.016010	320.12E-9
13	20FG.06	24.42370	53.20880	0.00000	-0.12090	-0.083333	-646.63E-9	-0.016010	320.12E-9
13	20FG.06	24.35847	52.82555	0.00000	-0.12360	-0.083333	-643.66E-9	-0.015964	319.20E-9
13	20FG.06	24.29325	52.44230	0.00000	-0.12584	-0.083333	-637.84E-9	-0.015878	317.49E-9
13	20FG.06	24.22803	52.05905	0.00000	-0.12760	-0.083333	-629.28E-9	-0.015754	315.01E-9
13	20FG.06	24.16280	51.67580	0.00000	-0.12887	-0.083333	-618.13E-9	-0.015593	311.78E-9
13	20FG.06	24.09757	51.29255	0.00000	-0.12964	-0.083333	-604.60E-9	-0.015396	307.86E-9
13	20FG.06	24.03235	50.90930	0.00000	-0.12991	-0.083333	-588.93E-9	-0.015167	303.28E-9
13	20FG.06	23.96712	50.52605	0.00000	-0.12967	-0.083333	-571.36E-9	-0.014908	298.10E-9
13	20FG.06	23.90190	50.14280	0.00000	-0.12893	-0.083333	-552.20E-9	-0.014622	292.37E-9
14	20FG.07	23.90190	50.14280	0.00000	-0.12893	-0.083333	-552.20E-9	-0.014622	292.37E-9
14	20FG.07	24.16280	50.16550	0.00000	-0.14411	-0.083333	-610.73E-9	-0.015488	309.69E-9
14	20FG.07	24.42370	50.18820	0.00000	-0.16041	-0.083333	-677.02E-9	-0.016426	328.45E-9
15	20FG.08	24.42370	50.18820	0.00000	-0.16041	-0.083333	-677.02E-9	-0.016426	328.45E-9
15	20FG.08	24.41686	49.74254	0.00000	-0.16346	-0.083333	-664.08E-9	-0.016250	324.92E-9
15	20FG.08	24.41001	49.29689	0.00000	-0.16576	-0.083333	-647.63E-9	-0.016024	320.40E-9
15	20FG.08	24.40317	48.85123	0.00000	-0.16729	-0.083333	-628.07E-9	-0.015751	314.95E-9
15	20FG.08	24.39632	48.40558	0.00000	-0.16804	-0.083333	-605.83E-9	-0.015437	308.66E-9
15	20FG.08	24.38948	47.95992	0.00000	-0.16800	-0.083333	-581.40E-9	-0.015085	301.63E-9
15	20FG.08	24.38263	47.51427	0.00000	-0.16716	-0.083333	-555.26E-9	-0.014702	293.97E-9
15	20FG.08	24.37579	47.06861	0.00000	-0.16553	-0.083333	-527.90E-9	-0.014291	285.76E-9
15	20FG.08	24.36894	46.62296	0.00000	-0.16312	-0.083333	-499.78E-9	-0.013859	277.12E-9
15	20FG.08	24.36210	46.17730	0.00000	-0.15997	-0.083333	-471.31E-9	-0.013410	268.15E-9
15	20FG.08	24.35526	45.73164	0.00000	-0.15610	-0.083333	-442.89E-9	-0.012950	258.94E-9
15	20FG.08	24.34841	45.28599	0.00000	-0.15155	-0.083333	-414.83E-9	-0.012481	249.58E-9
15	20FG.08	24.34157	44.84033	0.00000	-0.14636	-0.083333	-387.43E-9	-0.012010	240.15E-9
15	20FG.08	24.33472	44.39468	0.00000	-0.14059	-0.083333	-360.89E-9	-0.011538	230.72E-9
15	20FG.08	24.32788	43.94902	0.00000	-0.13428	-0.083333	-335.40E-9	-0.011070	221.36E-9
15	20FG.08	24.32103	43.50337	0.00000	-0.12751	-0.083333	-311.09E-9	-0.010608	212.13E-9
15	20FG.08	24.31419	43.05771	0.00000	-0.12033	-0.083333	-288.04E-9	-0.010155	203.06E-9
15	20FG.08	24.30734	42.61206	0.00000	-0.11280	-0.083333	-266.29E-9	-0.0097117	194.20E-9
15	20FG.08	24.30050	42.16640	0.00000	-0.10500	-0.083333	-245.88E-9	-0.0092805	185.58E-9
16	20FG.09	24.30050	42.16640	0.00000	-0.10500	-0.083333	-245.88E-9	-0.0092805	185.58E-9
16	20FG.09	23.88700	42.24533	0.00000	-0.08710	-0.083333	-223.80E-9	-0.0087818	175.61E-9
16	20FG.09	23.47350	42.32425	0.00000	-0.07089	-0.083333	-203.74E-9	-0.0083111	166.20E-9
16	20FG.09	23.06000	42.40318	0.00000	-0.05621	-0.083333	-185.55E-9	-0.0078672	157.32E-9
16	20FG.09	22.64650	42.48210	0.00000	-0.04293	-0.083333	-169.06E-9	-0.0074489	148.96E-9
16	20FG.09	22.23300	42.56103	0.00000	-0.03091	-0.083333	-154.11E-9	-0.0070550	141.08E-9
16	20FG.09	21.81950	42.63995	0.00000	-0.02003	-0.083333	-140.57E-9	-0.0066843	133.67E-9
16	20FG.09	21.40600	42.71888	0.00000	-0.01020	-0.083333	-128.30E-9	-0.0063354	126.69E-9
16	20FG.09	20.99250	42.79780	0.00000	-0.00131	-0.083333	-117.19E-9	-0.0060071	120.13E-9
17	20FG.10	20.99250	42.79780	0.00000	-0.00131	-0.083333	-117.19E-9	-0.0060071	120.13E-9
17	20FG.10	21.07865	43.03513	0.00000	-0.00457	-0.083333	-123.13E-9	-0.0061816	123.62E-9
17	20FG.10	21.16480	43.27245	0.00000	-0.00790	-0.083333	-129.39E-9	-0.0063614	127.21E-9
17	20FG.10	21.25095	43.50978	0.00000	-0.01131	-0.083333	-135.97E-9	-0.0065467	130.92E-9
17	20FG.10	21.33710	43.74710	0.00000	-0.01478	-0.083333	-142.90E-9	-0.0067374	134.73E-9
18	20FG.11	21.33710	43.74710	0.00000	-0.01478	-0.083333	-142.90E-9	-0.0067374	134.73E-9
18	20FG.11	20.86376	43.83723	0.00000	-0.00396	-0.083333	-127.99E-9	-0.0063163	126.31E-9
18	20FG.11	20.39042	43.92736	0.00000	0.00564	-0.083333	-114.79E-9	-0.0059262	118.51E-9
18	20FG.11	19.91708	44.01748	0.00000	0.01414	-0.083333	-103.11E-9	-0.0055647	111.28E-9
18	20FG.11	19.44374	44.10761	0.00000	0.02167	-0.083333	-92.748E-9	-0.0052296	104.58E-9
18	20FG.11	18.97041	44.19774	0.00000	0.02831	-0.083333	-83.552E-9	-0.0049188	98.365E-9
18	20FG.11	18.49707	44.28787	0.00000	0.03417	-0.083333	-75.379E-9	-0.0046303	92.596E-9
18	20FG.11	18.02373	44.37799	0.00000	0.03932	-0.083333	-68.106E-9	-0.0043623	87.238E-9
18	20FG.11	17.55039	44.46812	0.00000	0.04384	-0.083333	-61.625E-9	-0.0041133	82.258E-9
18	20FG.11	17.07705	44.55825	0.00000	0.04779	-0.083333	-55.841E-9	-0.0038817	77.627E-9
18	20FG.11	16.60371	44.64838	0.00000	0.05123	-0.083333	-50.674E-9	-0.0036661	73.316E-9
18	20FG.11	16.13037	44.73851	0.00000	0.05421	-0.083333	-46.050E-9	-0.0034653	69.301E-9
18	20FG.11	15.65703	44.82863	0.00000	0.05677	-0.083333	-41.907E-9	-0.0032782	65.558E-9
18	20FG.11	15.18369	44.91876	0.00000	0.05896	-0.083333	-38.190E-9	-0.0031036	62.067E-9
18	20FG.11	14.71036	45.00889	0.00000	0.06082	-0.083333	-34.850E-9	-0.0029406	58.807E-9
18	20FG.11	14.23702	45.09902	0.00000	0.06238	-0.083333	-31.845E-9	-0.0027883	55.761E-9
18	20FG.11	13.76368	45.18914	0.00000	0.06366	-0.083333	-29.137E-9	-0.0026458	52.913E-9
18	20FG.11	13.29034	45.27927	0.00000	0.06470	-0.083333	-26.694E-9	-0.0025125	50.247E-9
18	20FG.11	12.81700	45.36940	0.00000	0.06552	-0.083333	-24.486E-9	-0.0023877	47.751E-9
19	20FG.12	12.81700	45.36940	0.00000	0.06552	-0.083333	-24.486E-9	-0.0023877	47.751E-9
19	20FG.12	12.91528	45.83612	0.00000	0.06525	-0.083333	-25.447E-9	-0.0024422	48.840E-9
19	20FG.12	13.01355	46.30284	0.00000	0.06498	-0.083333	-26.415E-9	-0.0024962	49.922E-9
19	20FG.12	13.11183	46.76955	0.00000	0.06470	-0.083333	-27.387E-9	-0.0025497	50.990E-9
19	20FG.12	13.21011	47.23627	0.00000	0.06442	-0.083333	-28.359E-9	-0.0026023	52.043E-9
19	20FG.12	13.30839	47.70299	0.00000	0.06415	-0.083333	-29.326E-9	-0.0026540	53.077E-9
19	20FG.12	13.40666	48.16971	0.00000	0.06388	-0.083333	-30.284E-9	-0.0027045	54.086E-9
19	20FG.12	13.50494	48.63643	0.00000	0.06361	-0.083333	-31.227E-9	-0.0027536	55.068E-9
19	20FG.12	13.60322	49.10315	0.00000	0.06336	-0.083333	-32.151E-9	-0.0028011	56.018E-9
19	20FG.12	13.70150	49.56986	0.00000	0.06311	-0.083333	-33.050E-9	-0.0028468	56.931E-9
19	20FG.12	13.79977	50.03658	0.00000	0.06288	-0.083333	-33.919E-9	-0.0028904	57.804E-9
19	20FG.12	13.89805	50.50330	0.00000	0.06267	-0.083333	-34.751E-9	-0.0029318	58.633E-9
19	20FG.12	13.99633	50.97002	0.00000	0.06248	-0.083333	-35.541E-9	-0.0029708	59.412E-9
19	20FG.12	14.09460	51.43674	0.00000	0.06230	-0.083333	-36.283E-9	-0.0030072	60.139E-9
19	20FG.12	14.19288	51.90345	0.00000	0.06215	-0.083333	-36.972E-9	-0.0030407	60.809E-9
19	20FG.12	14.29116	52.37017	0.00000	0.06202	-0.083333	-37.603E-9	-0.0030711	61.418E-9
19	20FG.12	14.38944	52.83689	0.00000	0.06191	-0.083333	-38.170E-9	-0.0030984	61.964E-9
19	20FG.12	14.48771	53.30361	0.00000	0.06183	-0.083333	-38.669E-9	-0.0031224	62.443E-9
19	20FG.12	14.58599	53.77033	0.00000	0.06177	-0.083333	-39.096E-9	-0.0031428	62.852E-9
19	20FG.12	14.68427	54.23705	0.00000	0.06174	-0.083333	-39.447E-9	-0.0031597	63.189E-9

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
19	20FG.12	14.78255	54.70376	0.00000	0.06174	-0.083333	-39.719E-9	-0.0031728	63.452E-9
19	20FG.12	14.88082	55.17048	0.00000	0.06175	-0.083333	-39.911E-9	-0.0031822	63.640E-9
19	20FG.12	14.97910	55.63720	0.00000	0.06179	-0.083333	-40.019E-9	-0.0031878	63.750E-9
20	20FG.13	14.97910	55.63720	0.00000	0.06179	-0.083333	-40.019E-9	-0.0031878	63.750E-9
20	20FG.13	14.53283	55.76250	0.00000	0.06299	-0.083333	-36.264E-9	-0.0030083	60.162E-9
20	20FG.13	14.08655	55.88780	0.00000	0.06396	-0.083333	-32.927E-9	-0.0028422	56.840E-9
20	20FG.13	13.64028	56.01310	0.00000	0.06471	-0.083333	-29.953E-9	-0.0026881	53.759E-9
20	20FG.13	13.19400	56.13840	0.00000	0.06528	-0.083333	-27.299E-9	-0.0025451	50.899E-9
21	20FG.14	13.19400	56.13840	0.00000	0.06528	-0.083333	-27.299E-9	-0.0025451	50.899E-9
21	20FG.14	13.27410	56.53937	0.00000	0.06527	-0.083333	-27.282E-9	-0.0025445	50.886E-9
21	20FG.14	13.35420	56.94033	0.00000	0.06527	-0.083333	-27.229E-9	-0.0025419	50.834E-9
21	20FG.14	13.43430	57.34130	0.00000	0.06527	-0.083333	-27.141E-9	-0.0025374	50.744E-9
21	20FG.14	13.51440	57.74227	0.00000	0.06528	-0.083333	-27.018E-9	-0.0025309	50.615E-9
21	20FG.14	13.59450	58.14323	0.00000	0.06528	-0.083333	-26.860E-9	-0.0025226	50.449E-9
21	20FG.14	13.67460	58.54420	0.00000	0.06529	-0.083333	-26.670E-9	-0.0025124	50.245E-9
22	20FG.15	13.67460	58.54420	0.00000	0.06529	-0.083333	-26.670E-9	-0.0025124	50.245E-9
22	20FG.15	14.12543	58.46229	0.00000	0.06486	-0.083333	-29.207E-9	-0.0026508	53.012E-9
22	20FG.15	14.57626	58.38039	0.00000	0.06425	-0.083333	-32.040E-9	-0.0027995	55.986E-9
22	20FG.15	15.02709	58.29848	0.00000	0.06347	-0.083333	-35.212E-9	-0.0029596	59.188E-9
22	20FG.15	15.47791	58.21657	0.00000	0.06249	-0.083333	-38.771E-9	-0.0031323	62.641E-9
22	20FG.15	15.92874	58.13466	0.00000	0.06128	-0.083333	-42.773E-9	-0.0033187	66.368E-9
22	20FG.15	16.37957	58.05276	0.00000	0.05983	-0.083333	-47.285E-9	-0.0035202	70.399E-9
22	20FG.15	16.83040	57.97085	0.00000	0.05810	-0.083333	-52.383E-9	-0.0037386	74.765E-9
22	20FG.15	17.28123	57.88894	0.00000	0.05606	-0.083333	-58.161E-9	-0.0039755	79.502E-9
22	20FG.15	17.73206	57.80704	0.00000	0.05369	-0.083333	-64.725E-9	-0.0042329	84.650E-9
22	20FG.15	18.18289	57.72513	0.00000	0.05094	-0.083333	-72.206E-9	-0.0045132	90.256E-9
22	20FG.15	18.63371	57.64322	0.00000	0.04777	-0.083333	-80.757E-9	-0.0048190	96.370E-9
22	20FG.15	19.08454	57.56131	0.00000	0.04414	-0.083333	-90.562E-9	-0.0051532	103.05E-9
22	20FG.15	19.53537	57.47941	0.00000	0.03998	-0.083333	-101.84E-9	-0.0055193	110.37E-9
22	20FG.15	19.98620	57.39750	0.00000	0.03525	-0.083333	-114.86E-9	-0.0059211	118.41E-9
23	20FG.16	19.98620	57.39750	0.00000	0.03525	-0.083333	-114.86E-9	-0.0059211	118.41E-9
23	20FG.16	20.06051	57.87564	0.00000	0.03671	-0.083333	-112.02E-9	-0.0058377	116.74E-9
23	20FG.16	20.13483	58.35379	0.00000	0.03821	-0.083333	-108.92E-9	-0.0057456	114.90E-9
23	20FG.16	20.20914	58.83193	0.00000	0.03975	-0.083333	-105.61E-9	-0.0056455	112.90E-9
23	20FG.16	20.28346	59.31007	0.00000	0.04129	-0.083333	-102.11E-9	-0.0055384	110.76E-9
23	20FG.16	20.35777	59.78821	0.00000	0.04285	-0.083333	-98.471E-9	-0.0054250	108.49E-9
23	20FG.16	20.43209	60.26636	0.00000	0.04440	-0.083333	-94.727E-9	-0.0053061	106.11E-9
23	20FG.16	20.50640	60.74450	0.00000	0.04594	-0.083333	-90.912E-9	-0.0051828	103.64E-9
23	20FG.16	20.58071	61.22264	0.00000	0.04744	-0.083333	-87.058E-9	-0.0050557	101.10E-9
23	20FG.16	20.65503	61.70079	0.00000	0.04892	-0.083333	-83.194E-9	-0.0049257	98.503E-9
23	20FG.16	20.72934	62.17893	0.00000	0.05035	-0.083333	-79.348E-9	-0.0047934	95.859E-9
23	20FG.16	20.80366	62.65707	0.00000	0.05173	-0.083333	-75.544E-9	-0.0046597	93.186E-9
23	20FG.16	20.87797	63.13521	0.00000	0.05305	-0.083333	-71.802E-9	-0.0045252	90.496E-9
23	20FG.16	20.95229	63.61336	0.00000	0.05430	-0.083333	-68.141E-9	-0.0043905	87.802E-9
23	20FG.16	21.02660	64.09150	0.00000	0.05550	-0.083333	-64.576E-9	-0.0042561	85.115E-9
24	17HW.A01	58.70070	56.44780	0.00000	0.03459	-0.083333	-117.44E-9	-0.0059937	119.86E-9
24	17HW.A01	59.17122	56.40603	0.00000	0.03918	-0.083333	-104.39E-9	-0.0055951	111.89E-9
24	17HW.A01	59.64174	56.36426	0.00000	0.04325	-0.083333	-93.021E-9	-0.0052303	104.60E-9
24	17HW.A01	60.11227	56.32248	0.00000	0.04684	-0.083333	-83.092E-9	-0.0048959	97.908E-9
24	17HW.A01	60.58279	56.28071	0.00000	0.05000	-0.083333	-74.395E-9	-0.0045889	91.769E-9
24	17HW.A01	61.05331	56.23894	0.00000	0.05277	-0.083333	-66.758E-9	-0.0043065	86.123E-9
24	17HW.A01	61.52383	56.19717	0.00000	0.05519	-0.083333	-60.034E-9	-0.0040465	80.923E-9
24	17HW.A01	61.99436	56.15539	0.00000	0.05728	-0.083333	-54.100E-9	-0.0038066	76.126E-9
24	17HW.A01	62.46488	56.11362	0.00000	0.05907	-0.083333	-48.850E-9	-0.0035850	71.695E-9
24	17HW.A01	62.93540	56.07185	0.00000	0.06060	-0.083333	-44.196E-9	-0.0033801	67.597E-9
24	17HW.A01	63.40592	56.03008	0.00000	0.06188	-0.083333	-40.060E-9	-0.0031903	63.800E-9
24	17HW.A01	63.87644	55.98831	0.00000	0.06294	-0.083333	-36.377E-9	-0.0030142	60.279E-9
24	17HW.A01	64.34697	55.94653	0.00000	0.06381	-0.083333	-33.090E-9	-0.0028507	57.009E-9
24	17HW.A01	64.81749	55.90476	0.00000	0.06449	-0.083333	-30.151E-9	-0.0026986	53.969E-9
24	17HW.A01	65.28801	55.86299	0.00000	0.06500	-0.083333	-27.519E-9	-0.0025571	51.139E-9
24	17HW.A01	65.75853	55.82122	0.00000	0.06537	-0.083333	-25.156E-9	-0.0024252	48.500E-9
24	17HW.A01	66.22906	55.77944	0.00000	0.06560	-0.083333	-23.031E-9	-0.0023021	46.039E-9
24	17HW.A01	66.69958	55.73767	0.00000	0.06571	-0.083333	-21.117E-9	-0.0021871	43.739E-9
24	17HW.A01	67.17010	55.69590	0.00000	0.06571	-0.083333	-19.389E-9	-0.0020796	41.589E-9
25	17HW.A02	67.17010	55.69590	0.00000	0.06571	-0.083333	-19.389E-9	-0.0020796	41.589E-9
25	17HW.A02	67.15461	55.24739	0.00000	0.06577	-0.083333	-19.702E-9	-0.0020991	41.980E-9
25	17HW.A02	67.13912	54.79889	0.00000	0.06583	-0.083333	-19.994E-9	-0.0021173	42.343E-9
25	17HW.A02	67.12363	54.35038	0.00000	0.06588	-0.083333	-20.264E-9	-0.0021340	42.677E-9
25	17HW.A02	67.10814	53.90188	0.00000	0.06593	-0.083333	-20.510E-9	-0.0021491	42.980E-9
25	17HW.A02	67.09266	53.45337	0.00000	0.06597	-0.083333	-20.731E-9	-0.0021626	43.250E-9
25	17HW.A02	67.07717	53.00487	0.00000	0.06601	-0.083333	-20.926E-9	-0.0021745	43.488E-9
25	17HW.A02	67.06168	52.55636	0.00000	0.06604	-0.083333	-21.093E-9	-0.0021847	43.691E-9
25	17HW.A02	67.04619	52.10786	0.00000	0.06607	-0.083333	-21.232E-9	-0.0021931	43.860E-9
25	17HW.A02	67.03070	51.65935	0.00000	0.06611	-0.083333	-21.342E-9	-0.0021997	43.992E-9
25	17HW.A02	67.01521	51.21084	0.00000	0.06614	-0.083333	-21.421E-9	-0.0022046	44.089E-9
25	17HW.A02	66.99972	50.76234	0.00000	0.06617	-0.083333	-21.471E-9	-0.0022076	44.149E-9
25	17HW.A02	66.98423	50.31383	0.00000	0.06620	-0.083333	-21.489E-9	-0.0022087	44.172E-9
25	17HW.A02	66.96874	49.86533	0.00000	0.06624	-0.083333	-21.477E-9	-0.0022080	44.158E-9
25	17HW.A02	66.95326	49.41682	0.00000	0.06627	-0.083333	-21.434E-9	-0.0022055	44.107E-9
25	17HW.A02	66.93777	48.96832	0.00000	0.06631	-0.083333	-21.360E-9	-0.0022011	44.019E-9
25	17HW.A02	66.92228	48.51981	0.00000	0.06635	-0.083333	-21.257E-9	-0.0021949	43.895E-9
25	17HW.A02	66.90679	48.07131	0.00000	0.06639	-0.083333	-21.124E-9	-0.0021869	43.735E-9
25	17HW.A02	66.89130	47.62280	0.00000	0.06644	-0.083333	-20.962E-9	-0.0021772	43.541E-9
26	17HW.A03	66.89130	47.62280	0.00000	0.06644	-0.083333	-20.962E-9	-0.0021772	43.541E-9
26	17HW.A03	66.43956	47.65757	0.00000	0.06614	-0.083333	-22.843E-9	-0.0022904	45.805E-9
26	17HW.A03	65.98782	47.69234	0.00000	0.06570	-0.083333	-24.931E-9	-0.0024117	48.231E-9
26	17HW.A03	65.53608	47.72711	0.00000	0.06508	-0.083333	-27.254E-9	-0.0025418	50.832E-9
26	17HW.A03	65.08434	47.76188	0.00000	0.06427	-0.083333	-29.845E-9	-0.0026815	53.626E-9
26	17HW.A03	64.63260	47.79665	0.00000	0.06326	-0.083333	-32.739E-9	-0.0028317	56.629E-9
26	17HW.A03	64.18086	47.83142	0.00000	0.06201	-0.083333	-35.979E-9	-0.0029934	59.864E-9
26	17HW.A03	63.72912	47.86619	0.00000	0.06051	-0.083333	-39.615E-9	-0.0031678	63.351E-9
26	17HW.A03	63.27738	47.90096	0.00000	0.05871	-0.083333	-43.706E-9	-0.0033561	67.118E-9
26	17HW.A03	62.82564	47.93573	0.00000	0.05659	-0.083333	-48.319E-9	-0.0035599	71.191E-9
26	17HW.A03	62.37390	47.97050	0.00000	0.05412	-0.083333	-53.534E-9	-0.0037806	75.605E-9
26	17HW.A03	61.92216	48.00527	0.00000	0.05124	-0.083333	-59.447E-9	-0.0040201	80.395E-9
26	17HW.A03	61.47042	48.04004	0.00000	0.04791	-0.083333	-66.169E-9	-0.0042805	85.603E-9
26	17HW.A03	61.01868	48.07481	0.00000	0.04409	-0.083333	-73.835E-9	-0.0045642	91.275E-9
26	17HW.A03	60.56694	48.10958	0.00000	0.03971	-0.083333	-82.604E-9	-0.0048738	97.466E-9
26	17HW.A03	60.11520	48.14435	0.00000	0.03471	-0.083333	-92.668E-9	-0.0052124	104.24E-9
26	17HW.A03	59.66346	48.17912	0.00000	0.02901	-0.083333	-104.26E-9	-0.0055835	111.66E-9
26	17HW.A03	59.21172	48.21389	0.00000	0.02252	-0.083333	-117.65E-9	-0.0059911	119.81E-9
26	17HW.A03	58.75998	48.24866	0.00000	0.01516	-0.083333	-133.20E-9	-0.0064400	128.78E-9
26	17HW.A03	58.30824	48.28343	0.00000	0.00682	-0.083333	-151.30E-9	-0.0069355	138.69E-9
26	17HW.A03	57.85650	48.31820	0.00000	-0.00264	-0.083333	-172.49E-9	-0.0074839	149.66E-9
27	17HW.A04	57.85650	48.31820	0.00000	-0.00264	-0.083333	-172.49E-9	-0.0074839	149.66E-9
27	17HW.A04	57.90340	48.76984	0.00000	-0.00160	-0.083333	-173.64E-9	-0.0075114	150.21E-9
27	17HW.A04	57.95030	49.22149	0.00000	-0.00036	-0.083333	-174.20E-9	-0.0075239	150.46E-9
27	17HW.A04	57.99720	49.67313	0.00000	0.00107	-0.083333	-174.14E-9	-0.0075213	150.41E-9
27	17HW.A04	58.04410	50.12478	0.00000	0.00268	-0.083333	-173.47E-9	-0.0075037	150.05E-9
27	17HW.A04	58.09100	50.57642	0.00000	0.00445	-0.083333	-172.19E-9	-0.0074711	149.40E-9
27	17HW.A04	58.13790	51.02807	0.00000	0.00637	-0.083333	-170.33E-9	-0.0074240	148.46E-9
27	17HW.A04	58.18480	51.47971	0.00000	0.00841	-0.083333	-167.92E-9	-0.0073628	147.24E-9
27	17HW.A04	58.23170	51.93136	0.00000	0.01057	-0.083333	-164.98E-9	-0.0072880	145.74E-9
27	17HW.A04	58.27860	52.38300	0.00000	0.01283	-0.083333	-161.55E-9	-0.0072005	143.99E-9
27	17HW.A04	58.32550	52.83464	0.00000	0.01516	-0.083333	-157.70E-9	-0.0071010	142.00E-9
27	17HW.A04	58.37240	53.28629	0.00000	0.01755	-0.083333	-153.46E-9	-0.0069905	139.79E-9
27	17HW.A04	58.41930	53.73793	0.00000	0.01999	-0.083333	-148.88E-9	-0.0068700	137.38E-9
27	17HW.A04	58.46620	54.18958	0.00000	0.02245	-0.083333	-144.03E-9	-0.0067404	134.79E-9
27	17HW.A04	58.51310	54.64122	0.00000	0.02492	-0.083333	-138.95E-9	-0.0066028	132.04E-9
27	17HW.A04	58.56000	55.09287	0.00000	0.02738	-0.083333	-133.71E-9	-0.0064583	129.15E-9
27	17HW.A04	58.60690	55.54451	0.00000	0.02982	-0.083333	-128.34E-9	-0.0063079	126.14E-9
27	17HW.A04	58.65380	55.99616	0.00000	0.03223	-0.083333	-122.90E-9	-0.0061527	123.04E-9
27	17HW.A04	58.70070	56.44780	0.00000	0.03459	-0.083333	-117.44E-9	-0.0059937	119.86E-9
28	17HW.B01	58.67890	60.09730	0.00000	0.04849	-0.083333	-83.468E-9	-0.0049256	98.502E-9
28	17HW.B01	58.72484	59.63727	0.00000	0.04718	-0.083333	-86.851E-9	-0.0050392	100.77E-9
28	17HW.B01	58.77078	59.17725	0.00000	0.04585	-0.083333	-90.188E-9	-0.0051493	102.98E-9
28	17HW.B01	58.81671	58.71722	0.00000	0.04451	-0.083333	-93.452E-9	-0.0052552	105.09E-9
28	17HW.B01	58.86265	58.25720	0.00000	0.04317	-0.083333	-96.615E-9	-0.0053562	107.11E-9
28	17HW.B01	58.90859	57.79717	0.00000	0.04184	-0.083333	-99.648E-9	-0.0054516	109.02E-9
28	17HW.B01	58.95452	57.33715	0.00000	0.04053	-0.083333	-102.52E-9	-0.0055407	110.80E-9

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
28	17HW.B01	59.00046	56.87712	0.00000	0.03925	-0.083333	-105.21E-9	-0.0056228	112.44E-9
28	17HW.B01	59.04640	56.41710	0.00000	0.03801	-0.083333	-107.67E-9	-0.0056974	113.93E-9
29	17HW.B02	59.04640	56.41710	0.00000	0.03801	-0.083333	-107.67E-9	-0.0056974	113.93E-9
29	17HW.B02	59.47996	56.37762	0.00000	0.04190	-0.083333	-96.762E-9	-0.0053524	107.04E-9
29	17HW.B02	59.91352	56.33815	0.00000	0.04537	-0.083333	-87.136E-9	-0.0050340	100.67E-9
29	17HW.B02	60.34709	56.29868	0.00000	0.04846	-0.083333	-78.624E-9	-0.0047400	94.790E-9
29	17HW.B02	60.78065	56.25920	0.00000	0.05120	-0.083333	-71.080E-9	-0.0044679	89.349E-9
29	17HW.B02	61.21421	56.21972	0.00000	0.05363	-0.083333	-64.380E-9	-0.0042159	84.310E-9
29	17HW.B02	61.64777	56.18025	0.00000	0.05576	-0.083333	-58.417E-9	-0.0039822	79.636E-9
29	17HW.B02	62.08134	56.14078	0.00000	0.05762	-0.083333	-53.099E-9	-0.0037651	75.296E-9
29	17HW.B02	62.51490	56.10130	0.00000	0.05924	-0.083333	-48.347E-9	-0.0035633	71.260E-9
30	17HW.B03	62.51490	56.10130	0.00000	0.05924	-0.083333	-48.347E-9	-0.0035633	71.260E-9
30	17HW.B03	62.53797	56.55704	0.00000	0.05976	-0.083333	-47.000E-9	-0.0035053	70.100E-9
30	17HW.B03	62.56105	57.01278	0.00000	0.06027	-0.083333	-45.613E-9	-0.0034449	68.892E-9
30	17HW.B03	62.58413	57.46851	0.00000	0.06077	-0.083333	-44.196E-9	-0.0033822	67.640E-9
30	17HW.B03	62.60720	57.92425	0.00000	0.06125	-0.083333	-42.756E-9	-0.0033177	66.350E-9
30	17HW.B03	62.63027	58.37999	0.00000	0.06170	-0.083333	-41.302E-9	-0.0032517	65.028E-9
30	17HW.B03	62.65335	58.83573	0.00000	0.06213	-0.083333	-39.842E-9	-0.0031842	63.680E-9
30	17HW.B03	62.67643	59.29146	0.00000	0.06253	-0.083333	-38.381E-9	-0.0031158	62.311E-9
30	17HW.B03	62.69950	59.74720	0.00000	0.06290	-0.083333	-36.928E-9	-0.0030465	60.925E-9
31	17HW.B04	62.69950	59.74720	0.00000	0.06290	-0.083333	-36.928E-9	-0.0030465	60.925E-9
31	17HW.B04	62.29744	59.78221	0.00000	0.06215	-0.083333	-39.889E-9	-0.0031884	63.762E-9
31	17HW.B04	61.89538	59.81722	0.00000	0.06128	-0.083333	-43.129E-9	-0.0033387	66.768E-9
31	17HW.B04	61.49332	59.85223	0.00000	0.06026	-0.083333	-46.677E-9	-0.0034980	69.955E-9
31	17HW.B04	61.09126	59.88724	0.00000	0.05911	-0.083333	-50.567E-9	-0.0036670	73.334E-9
31	17HW.B04	60.68920	59.92225	0.00000	0.05779	-0.083333	-54.834E-9	-0.0038463	76.920E-9
31	17HW.B04	60.28714	59.95726	0.00000	0.05631	-0.083333	-59.521E-9	-0.0040367	80.728E-9
31	17HW.B04	59.88508	59.99227	0.00000	0.05466	-0.083333	-64.673E-9	-0.0042390	84.772E-9
31	17HW.B04	59.48302	60.02728	0.00000	0.05281	-0.083333	-70.342E-9	-0.0044539	89.070E-9
31	17HW.B04	59.08096	60.06229	0.00000	0.05076	-0.083333	-76.586E-9	-0.0046825	93.640E-9
31	17HW.B04	58.67890	60.09730	0.00000	0.04849	-0.083333	-83.468E-9	-0.0049256	98.502E-9

Results : Consolidation : Displacement Data : Lines

None

Results : Total : Displacement Data : Lines

None

Titles

Job No.: 1125
Job Title: 18A Frognal Gardens
Sub-title: Building GMA
Calculation Heading: PDisp A02 - Demolition and Excavation
Initials: SB
Checker:
Date Saved:
Date Checked:
Notes:
File Name: PDisp A02 new.pdd
File Path: \\Mac\Dropbox for Business\A2-projects\1125 - 18a Frognal Gardens\03 - Calculations\Issue 01\Pdisp

History

Date	Time	By	Notes
14-Oct-2020	14:19	hamed	<history cleared>
14-Oct-2020	14:19	hamed	<history cleared>

Analysis Options

General
Global Poisson's ratio: 0.50
Maximum allowable ratio between values of E: 1.5
Horizontal rigid boundary level: -34.00 [m OD]
Displacements at load centroids: Yes
GSA piled raft data : No

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

Consolidation
Consolidation : No

Soil ProfilesSoil Profile 1

Layer ref.	Name	Level at top [mOD]	Number of intermediate displacement levels	Youngs Modulus : Top [kN/m²]	Youngs Modulus : Btm. [kN/m²]	Poissons ratio	Non-linear curve
1	Made Ground	0.0	5	10000.	10000.	0.20000	None
2	Bagshot Formation	-1.0000	5	18000.	18000.	0.20000	None
3	London Clay	-7.0000	5	14400.	99450.	0.50000	None

Soil Zones

Zone	Name	X min [m]	X max [m]	Y min [m]	Y max [m]	Profile
1	1	0.0	80.000	0.0	100.00	Soil Profile 1

Polygonal Load Data

Load ref.	Name	Position : Level [m]	Position : Polygon : Coords. [m]	Position : Polygon : Rect. tolerance [%]	No. of Rectangles	Value : Normal (local z) [kN/m²]
1	Demo - 3F	-2.75000	(34.7,49.1) (43.8,49.1) (43.8,46.4) (42.8,46.4) (42.8,42.3) (34.9,42.3) (34.7,42.3) (34.7,49.1)	10.000	2	-45.000
2	Demo - 2F	0.00000	(34.7,53.3) (43.8,53.3) (43.7,49.1) (34.7,49.1) (34.7,53.3)	10.000	1	-30.000
3	Excav - Pool	-6.27500	(34.6,58.5) (44.7,58.5) (44.9,53.8) (34.7,53.8) (34.6,58.5)	10.000	1	-126.00
4	Excav A	-4.21000	(44.9,53.8) (45,49.1) (34.7,49.1) (34.7,53.8) (44.9,53.8)	10.000	5	-84.200
5	Excav B	-4.21000	(45,49.1) (45.3,42.1) (34.7,42.2) (34.7,49.1) (45,49.1)	10.000	2	-20.200

Polygonal Loads' Rectangles

No.	Centre : Centre : Angle of local x from global X	Width x	Depth y
	x [m] / y [m] / [Degrees]	[m]	[m]
Load 1 : Demo - 3F			
(Edge 7 optimal)			
1	38.75214 44.36162 90.266	4.0939	8.0366
2	39.27445 47.75430 90.266	2.6865	9.0839
Load 2 : Demo - 2F			
(Edge 4 optimal)			
1	39.23550 51.18897 179.84	8.9951	4.1869
Load 3 : Excav - Pool			
(Edge 3 optimal)			
1	39.70473 56.14037 -89.757	4.6515	10.116
Load 4 : Excav A			
(Edge 1 optimal)			
1	34.69186 52.61612 0.11868	0.065647	2.3542
2	39.79234 51.44430 0.11868	10.130	4.6978
3	44.88383 51.05898 0.11868	0.050930	3.9061
4	44.93638 50.27787 0.11868	0.050930	2.3437
5	44.98893 49.49676 0.11868	0.050930	0.78122
Load 5 : Excav B			
(Edge 2 optimal)			
1	39.93896 45.64899 -89.978	6.8759	10.411
2	42.64040 42.16538 -89.978	0.093440	5.2693

Displacement Lines

Name	X1 [m]	Y1 [m]	Z1 [m]	X2 [m]	Y2 [m]	Z2 [m]	Intervals [No.]	Calculate	Detailed Results
18B.01	27.06970	56.10310	0.00000	32.02050	56.10310	0.00000	10	Yes	Yes
18B.02	32.02050	56.10310	0.00000	32.02020	53.28900	0.00000	6	Yes	Yes
18B.03	32.02020	53.28900	0.00000	34.29880	53.28910	0.00000	6	Yes	Yes

Name	X1 [m]	Y1 [m]	Z1 [m]	X2 [m]	Y2 [m]	Z2 [m]	Intervals [No.]	Calculate	Detailed Results
18B.04	34.29880	53.28910	0.00000	34.29900	42.12610	0.00000	24	Yes	Yes
18B.05	34.29900	42.12610	0.00000	27.03130	42.06780	0.00000	16	Yes	Yes
18B.06	27.03130	42.06780	0.00000	27.03130	42.81150	0.00000	2	Yes	Yes
18B.07	27.03130	42.81150	0.00000	27.06970	56.10310	0.00000	28	Yes	Yes
20FG.01	21.02660	64.09150	0.00000	24.26740	63.42960	0.00000	8	Yes	Yes
20FG.02	24.26740	63.42960	0.00000	23.31400	55.50790	0.00000	16	Yes	Yes
20FG.03	23.31400	55.50790	0.00000	24.37380	55.60010	0.00000	4	Yes	Yes
20FG.04	24.37380	55.60010	0.00000	23.83670	53.15770	0.00000	6	Yes	Yes
20FG.05	23.83670	53.15770	0.00000	24.42370	53.20880	0.00000	2	Yes	Yes
20FG.06	24.42370	53.20880	0.00000	23.90190	50.14280	0.00000	8	Yes	Yes
20FG.07	23.90190	50.14280	0.00000	24.42370	50.18820	0.00000	2	Yes	Yes
20FG.08	24.42370	50.18820	0.00000	24.30050	42.16640	0.00000	18	Yes	Yes
20FG.09	24.30050	42.16640	0.00000	20.99250	42.79780	0.00000	8	Yes	Yes
20FG.10	20.99250	42.79780	0.00000	21.33710	43.74710	0.00000	4	Yes	Yes
20FG.11	21.33710	43.74710	0.00000	12.81700	45.36940	0.00000	18	Yes	Yes
20FG.12	12.81700	45.36940	0.00000	14.97910	55.63720	0.00000	22	Yes	Yes
20FG.13	14.97910	55.63720	0.00000	13.19400	56.13840	0.00000	4	Yes	Yes
20FG.14	13.19400	56.13840	0.00000	13.67460	58.54420	0.00000	6	Yes	Yes
20FG.15	13.67460	58.54420	0.00000	19.98620	57.39750	0.00000	14	Yes	Yes
20FG.16	19.98620	57.39750	0.00000	21.02660	64.09150	0.00000	14	Yes	Yes
17HW.A01	58.70070	56.44780	0.00000	67.17010	55.69590	0.00000	18	Yes	Yes
17HW.A02	67.17010	55.69590	0.00000	66.89130	47.62280	0.00000	18	Yes	Yes
17HW.A03	66.89130	47.62280	0.00000	57.85650	48.31820	0.00000	20	Yes	Yes
17HW.A04	57.85650	48.31820	0.00000	58.70070	56.44780	0.00000	18	Yes	Yes
17HW.B01	58.67890	60.09730	0.00000	59.04640	56.41710	0.00000	8	Yes	Yes
17HW.B02	59.04640	56.41710	0.00000	62.51490	56.10130	0.00000	8	Yes	Yes
17HW.B03	62.51490	56.10130	0.00000	62.69950	59.74720	0.00000	8	Yes	Yes
17HW.B04	62.69950	59.74720	0.00000	58.67890	60.09730	0.00000	10	Yes	Yes

Results : Immediate : Load Centres : Polygonal

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
1	Demo - 3F	38.97665	45.80077	-2.75000	-22.92773	-3.2813	-46.738	-124.19	-0.0017360
2	Demo - 2F	39.23031	51.19083	0.00000	-35.98943	-0.083333	-29.999	-87.486	-0.0018502
3	Excav - Pool	39.70523	56.13408	-6.27500	-29.74068	-6.6375	-136.81	-375.72	-0.0049463
4	Excav A	39.81036	51.44102	-4.21000	-30.09516	-4.6750	-99.376	-250.24	-0.0038446
5	Excav B	39.95369	45.61566	-4.21000	-19.61963	-4.6750	-63.716	-141.38	-0.0026768

Results : Consolidation : Load Centres : Polygonal

None

Results : Total : Load Centres : Polygonal

None

Results : Immediate : Displacement Data : Lines

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
1	18B.01	27.06970	56.10310	0.00000	-0.57436	-0.083333	-1.3325E-6	-0.024271	485.26E-9
1	18B.01	27.56478	56.10310	0.00000	-0.70943	-0.083333	-1.6448E-6	-0.027342	546.65E-9
1	18B.01	28.05986	56.10310	0.00000	-0.86597	-0.083333	-2.0472E-6	-0.030933	618.42E-9
1	18B.01	28.55494	56.10310	0.00000	-1.04804	-0.083333	-2.5706E-6	-0.035151	702.72E-9
1	18B.01	29.05002	56.10310	0.00000	-1.26079	-0.083333	-3.2579E-6	-0.040129	802.19E-9
1	18B.01	29.54510	56.10310	0.00000	-1.51087	-0.083333	-4.1693E-6	-0.046031	920.13E-9
1	18B.01	30.04018	56.10310	0.00000	-1.80715	-0.083333	-5.3903E-6	-0.053060	1.0605E-6
1	18B.01	30.53526	56.10310	0.00000	-2.16199	-0.083333	-7.0417E-6	-0.061460	1.2284E-6
1	18B.01	31.03034	56.10310	0.00000	-2.59366	-0.083333	-9.2947E-6	-0.071530	1.4295E-6
1	18B.01	31.52542	56.10310	0.00000	-3.13086	-0.083333	-12.389E-6	-0.083617	1.6708E-6
1	18B.01	32.02050	56.10310	0.00000	-3.82093	-0.083333	-16.652E-6	-0.098104	1.9601E-6
2	18B.02	32.02050	56.10310	0.00000	-3.82093	-0.083333	-16.652E-6	-0.098104	1.9601E-6
2	18B.02	32.02045	55.63408	0.00000	-4.04559	-0.083333	-22.091E-6	-0.11322	2.2617E-6
2	18B.02	32.02040	55.16507	0.00000	-4.25554	-0.083333	-29.412E-6	-0.13079	2.6122E-6
2	18B.02	32.02035	54.69605	0.00000	-4.44996	-0.083333	-39.050E-6	-0.15087	3.0128E-6
2	18B.02	32.02030	54.22703	0.00000	-4.62783	-0.083333	-51.220E-6	-0.17319	3.4576E-6
2	18B.02	32.02025	53.75802	0.00000	-4.78800	-0.083333	-65.601E-6	-0.19691	3.9303E-6
2	18B.02	32.02020	53.28900	0.00000	-4.92899	-0.083333	-81.101E-6	-0.22063	4.4029E-6
3	18B.03	32.02020	53.28900	0.00000	-4.92899	-0.083333	-81.101E-6	-0.22063	4.4029E-6
3	18B.03	32.39997	53.28902	0.00000	-5.75205	-0.083333	-131.63E-6	-0.28045	5.5933E-6
3	18B.03	32.77973	53.28903	0.00000	-6.75313	-0.083333	-230.31E-6	-0.36707	7.3137E-6
3	18B.03	33.15950	53.28905	0.00000	-7.98599	-0.083333	-449.16E-6	-0.50027	9.9516E-6
3	18B.03	33.53927	53.28907	0.00000	-9.52089	-0.083333	-0.0010388	-0.72476	14.371E-6
3	18B.03	33.91903	53.28908	0.00000	-11.44505	-0.083333	-0.0032586	-1.1669	22.948E-6
3	18B.03	34.29880	53.28910	0.00000	-13.93770	-0.083333	-0.020383	-2.3752	45.059E-6
4	18B.04	34.29880	53.28910	0.00000	-13.93770	-0.083333	-0.020383	-2.3752	45.059E-6
4	18B.04	34.29881	52.82397	0.00000	-14.16517	-0.083333	-0.036036	-3.4689	65.054E-6
4	18B.04	34.29882	52.35885	0.00000	-14.30914	-0.083333	-0.039582	-3.9774	74.798E-6
4	18B.04	34.29883	51.89372	0.00000	-14.38870	-0.083333	-0.040638	-4.2068	79.259E-6
4	18B.04	34.29883	51.42860	0.00000	-14.37495	-0.083333	-0.041185	-4.3062	81.182E-6
4	18B.04	34.29884	50.96347	0.00000	-14.28484	-0.083333	-0.041548	-4.3204	81.423E-6
4	18B.04	34.29885	50.49835	0.00000	-14.13006	-0.083333	-0.041722	-4.2486	79.964E-6
4	18B.04	34.29886	50.03323	0.00000	-13.87122	-0.083333	-0.041357	-4.0425	75.888E-6
4	18B.04	34.29887	49.56810	0.00000	-13.49095	-0.083333	-0.038253	-3.5412	66.234E-6
4	18B.04	34.29888	49.10298	0.00000	-12.99391	-0.083333	-0.021310	-2.4054	45.550E-6
4	18B.04	34.29888	48.63785	0.00000	-12.46341	-0.083333	-0.0045358	-1.2696	24.847E-6
4	18B.04	34.29889	48.17272	0.00000	-11.97752	-0.083333	-0.0011775	-0.74456	14.750E-6
4	18B.04	34.29890	47.70760	0.00000	-11.53998	-0.083333	-437.41E-6	-0.49264	9.8002E-6
4	18B.04	34.29891	47.24247	0.00000	-11.14161	-0.083333	-203.20E-6	-0.35175	7.0106E-6
4	18B.04	34.29892	46.77735	0.00000	-10.76850	-0.083333	-108.78E-6	-0.26402	5.2673E-6
4	18B.04	34.29892	46.31222	0.00000	-10.40832	-0.083333	-64.105E-6	-0.20524	4.0970E-6
4	18B.04	34.29893	45.84710	0.00000	-10.04319	-0.083333	-40.472E-6	-0.16374	3.2699E-6
4	18B.04	34.29894	45.38197	0.00000	-9.65818	-0.083333	-26.907E-6	-0.13328	2.6624E-6
4	18B.04	34.29895	44.91685	0.00000	-9.24295	-0.083333	-18.621E-6	-0.11025	2.2027E-6
4	18B.04	34.29896	44.45172	0.00000	-8.78501	-0.083333	-13.306E-6	-0.092403	1.8465E-6
4	18B.04	34.29897	43.98660	0.00000	-8.26902	-0.083333	-9.7596E-6	-0.078309	1.5650E-6
4	18B.04	34.29897	43.52148	0.00000	-7.67572	-0.083333	-7.3164E-6	-0.066996	1.3390E-6
4	18B.04	34.29898	43.05635	0.00000	-6.97944	-0.083333	-5.5870E-6	-0.057790	1.1551E-6
4	18B.04	34.29899	42.59123	0.00000	-6.14948	-0.083333	-4.3345E-6	-0.050211	1.0037E-6
4	18B.04	34.29900	42.12610	0.00000	-5.21278	-0.083333	-3.4095E-6	-0.043908	877.75E-9
5	18B.05	34.29900	42.12610	0.00000	-5.21278	-0.083333	-3.4095E-6	-0.043908	877.75E-9
5	18B.05	33.84477	42.12246	0.00000	-4.32171	-0.083333	-3.1128E-6	-0.041492	829.46E-9
5	18B.05	33.39054	42.11881	0.00000	-3.63222	-0.083333	-2.8225E-6	-0.039068	781.02E-9
5	18B.05	32.93631	42.11517	0.00000	-3.07368	-0.083333	-2.5433E-6	-0.036667	733.02E-9
5	18B.05	32.48208	42.11153	0.00000	-2.61083	-0.083333	-2.2790E-6	-0.034316	686.04E-9
5	18B.05	32.02784	42.10788	0.00000	-2.22211	-0.083333	-2.0324E-6	-0.032037	640.50E-9
5	18B.05	31.57361	42.10424	0.00000	-1.89274	-0.083333	-1.8050E-6	-0.029850	596.78E-9
5	18B.05	31.11938	42.10059	0.00000	-1.61182	-0.083333	-1.5976E-6	-0.027766	555.12E-9
5	18B.05	30.66515	42.09695	0.00000	-1.37095	-0.083333	-1.4103E-6	-0.025794	515.71E-9
5	18B.05	30.21092	42.09331	0.00000	-1.16347	-0.083333	-1.2424E-6	-0.023940	478.64E-9
5	18B.05	29.75669	42.08966	0.00000	-0.98400	-0.083333	-1.0930E-6	-0.022204	443.95E-9
5	18B.05	29.30246	42.08602	0.00000	-0.82817	-0.083333	-960.65E-9	-0.020586	411.61E-9
5	18B.05	28.84822	42.08237	0.00000	-0.69241	-0.083333	-843.98E-9	-0.019084	381.57E-9
5	18B.05	28.39399	42.07873	0.00000	-0.57375	-0.083333	-741.47E-9	-0.017692	353.75E-9
5	18B.05	27.93976	42.07509	0.00000	-0.46976	-0.083333	-651.63E-9	-0.016406	328.04E-9
5	18B.05	27.48553	42.07144	0.00000	-0.37839	-0.083333	-573.03E-9	-0.015219	304.32E-9
5	18B.05	27.03130	42.06780	0.00000	-0.29794	-0.083333	-504.36E-9	-0.014126	282.46E-9

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
6	18B.06	27.03130	42.06780	0.00000	-0.29794	-0.083333	-504.36E-9	-0.014126	282.46E-9
6	18B.06	27.03130	42.43965	0.00000	-0.32885	-0.083333	-551.38E-9	-0.014854	297.01E-9
6	18B.06	27.03130	42.81150	0.00000	-0.35987	-0.083333	-602.64E-9	-0.015615	312.23E-9
7	18B.07	27.03130	42.81150	0.00000	-0.35987	-0.083333	-602.64E-9	-0.015615	312.23E-9
7	18B.07	27.03267	43.28620	0.00000	-0.39968	-0.083333	-674.92E-9	-0.016639	332.71E-9
7	18B.07	27.03404	43.76090	0.00000	-0.43917	-0.083333	-755.07E-9	-0.017717	354.24E-9
7	18B.07	27.03541	44.23560	0.00000	-0.47803	-0.083333	-843.43E-9	-0.018844	376.77E-9
7	18B.07	27.03679	44.71030	0.00000	-0.51597	-0.083333	-940.17E-9	-0.020016	400.20E-9
7	18B.07	27.03816	45.18500	0.00000	-0.55268	-0.083333	-1.0452E-6	-0.021225	424.38E-9
7	18B.07	27.03953	45.65970	0.00000	-0.58787	-0.083333	-1.1579E-6	-0.022462	449.11E-9
7	18B.07	27.04090	46.13440	0.00000	-0.62126	-0.083333	-1.2776E-6	-0.023715	474.14E-9
7	18B.07	27.04227	46.60910	0.00000	-0.65258	-0.083333	-1.4026E-6	-0.024966	499.15E-9
7	18B.07	27.04364	47.08380	0.00000	-0.68157	-0.083333	-1.5310E-6	-0.026199	523.79E-9
7	18B.07	27.04501	47.55850	0.00000	-0.70795	-0.083333	-1.6600E-6	-0.027390	547.61E-9
7	18B.07	27.04639	48.03320	0.00000	-0.73148	-0.083333	-1.7865E-6	-0.028518	570.14E-9
7	18B.07	27.04776	48.50790	0.00000	-0.75190	-0.083333	-1.9066E-6	-0.029556	590.90E-9
7	18B.07	27.04913	48.98260	0.00000	-0.76901	-0.083333	-2.0164E-6	-0.030480	609.35E-9
7	18B.07	27.05050	49.45730	0.00000	-0.78257	-0.083333	-2.1117E-6	-0.031264	625.02E-9
7	18B.07	27.05187	49.93200	0.00000	-0.79241	-0.083333	-2.1887E-6	-0.031886	637.46E-9
7	18B.07	27.05324	50.40670	0.00000	-0.79837	-0.083333	-2.2441E-6	-0.032328	646.29E-9
7	18B.07	27.05461	50.88140	0.00000	-0.80035	-0.083333	-2.2754E-6	-0.032575	651.24E-9
7	18B.07	27.05599	51.35610	0.00000	-0.79827	-0.083333	-2.2811E-6	-0.032621	652.14E-9
7	18B.07	27.05736	51.83080	0.00000	-0.79211	-0.083333	-2.2611E-6	-0.032462	648.98E-9
7	18B.07	27.05873	52.30550	0.00000	-0.78190	-0.083333	-2.2161E-6	-0.032105	641.84E-9
7	18B.07	27.06010	52.78020	0.00000	-0.76774	-0.083333	-2.1483E-6	-0.031561	630.96E-9
7	18B.07	27.06147	53.25490	0.00000	-0.74976	-0.083333	-2.0607E-6	-0.030846	616.68E-9
7	18B.07	27.06284	53.72960	0.00000	-0.72813	-0.083333	-1.9568E-6	-0.029982	599.40E-9
7	18B.07	27.06421	54.20430	0.00000	-0.70308	-0.083333	-1.8408E-6	-0.028991	579.60E-9
7	18B.07	27.06559	54.67900	0.00000	-0.67488	-0.083333	-1.7166E-6	-0.027900	557.79E-9
7	18B.07	27.06696	55.15370	0.00000	-0.64381	-0.083333	-1.5883E-6	-0.026734	534.48E-9
7	18B.07	27.06833	55.62840	0.00000	-0.61019	-0.083333	-1.4593E-6	-0.025516	510.15E-9
7	18B.07	27.06970	56.10310	0.00000	-0.57436	-0.083333	-1.3325E-6	-0.024271	485.26E-9
8	20FG.01	21.02660	64.09150	0.00000	0.25349	-0.083333	-64.576E-9	-0.0042561	85.115E-9
8	20FG.01	21.43170	64.00876	0.00000	0.24664	-0.083333	-70.567E-9	-0.0044851	89.694E-9
8	20FG.01	21.83680	63.92602	0.00000	0.23870	-0.083333	-77.211E-9	-0.0047298	94.587E-9
8	20FG.01	22.24190	63.84329	0.00000	0.22957	-0.083333	-84.588E-9	-0.0049916	99.822E-9
8	20FG.01	22.64700	63.76055	0.00000	0.21914	-0.083333	-92.791E-9	-0.0052718	105.42E-9
8	20FG.01	23.05210	63.67781	0.00000	0.20728	-0.083333	-101.92E-9	-0.0055719	111.43E-9
8	20FG.01	23.45720	63.59508	0.00000	0.19386	-0.083333	-112.10E-9	-0.0058937	117.86E-9
8	20FG.01	23.86230	63.51234	0.00000	0.17872	-0.083333	-123.46E-9	-0.0062387	124.76E-9
8	20FG.01	24.26740	63.42960	0.00000	0.16170	-0.083333	-136.15E-9	-0.0066091	132.17E-9
9	20FG.02	24.26740	63.42960	0.00000	0.16170	-0.083333	-136.15E-9	-0.0066091	132.17E-9
9	20FG.02	24.20781	62.93449	0.00000	0.15025	-0.083333	-147.27E-9	-0.0069144	138.27E-9
9	20FG.02	24.14823	62.43939	0.00000	0.13851	-0.083333	-159.12E-9	-0.0072281	144.54E-9
9	20FG.02	24.08864	61.94428	0.00000	0.12658	-0.083333	-171.68E-9	-0.0075494	150.97E-9
9	20FG.02	24.02905	61.44917	0.00000	0.11453	-0.083333	-184.94E-9	-0.0078769	157.52E-9
9	20FG.02	23.96946	60.95407	0.00000	0.10247	-0.083333	-198.84E-9	-0.0082091	164.16E-9
9	20FG.02	23.90987	60.45896	0.00000	0.09049	-0.083333	-213.33E-9	-0.0085441	170.86E-9
9	20FG.02	23.85029	59.96386	0.00000	0.07870	-0.083333	-228.33E-9	-0.0088799	177.57E-9
9	20FG.02	23.79070	59.46875	0.00000	0.06722	-0.083333	-243.73E-9	-0.0092140	184.25E-9
9	20FG.02	23.73111	58.97364	0.00000	0.05614	-0.083333	-259.38E-9	-0.0095437	190.84E-9
9	20FG.02	23.67152	58.47854	0.00000	0.04558	-0.083333	-275.12E-9	-0.0098660	197.29E-9
9	20FG.02	23.61194	57.98343	0.00000	0.03564	-0.083333	-290.76E-9	-0.010178	203.52E-9
9	20FG.02	23.55235	57.48833	0.00000	0.02641	-0.083333	-306.07E-9	-0.010475	209.46E-9
9	20FG.02	23.49276	56.99322	0.00000	0.01800	-0.083333	-320.82E-9	-0.010755	215.06E-9
9	20FG.02	23.43317	56.49811	0.00000	0.01047	-0.083333	-334.74E-9	-0.011013	220.23E-9
9	20FG.02	23.37359	56.00301	0.00000	0.00391	-0.083333	-347.58E-9	-0.011247	224.90E-9
9	20FG.02	23.31400	55.50790	0.00000	-0.00162	-0.083333	-359.07E-9	-0.011452	229.00E-9
10	20FG.03	23.31400	55.50790	0.00000	-0.00162	-0.083333	-359.07E-9	-0.011452	229.00E-9
10	20FG.03	23.57895	55.53095	0.00000	-0.02655	-0.083333	-391.29E-9	-0.012034	240.63E-9
10	20FG.03	23.84390	55.55400	0.00000	-0.05334	-0.083333	-426.98E-9	-0.012654	253.03E-9
10	20FG.03	24.10885	55.57705	0.00000	-0.08212	-0.083333	-466.60E-9	-0.013317	266.29E-9
10	20FG.03	24.37380	55.60010	0.00000	-0.11305	-0.083333	-510.65E-9	-0.014026	280.46E-9
11	20FG.04	24.37380	55.60010	0.00000	-0.11305	-0.083333	-510.65E-9	-0.014026	280.46E-9
11	20FG.04	24.28428	55.19303	0.00000	-0.11373	-0.083333	-518.04E-9	-0.014133	282.60E-9
11	20FG.04	24.19477	54.78597	0.00000	-0.11328	-0.083333	-523.11E-9	-0.014204	284.03E-9
11	20FG.04	24.10525	54.37890	0.00000	-0.11171	-0.083333	-525.75E-9	-0.014239	284.71E-9
11	20FG.04	24.01573	53.97183	0.00000	-0.10904	-0.083333	-525.91E-9	-0.014235	284.64E-9
11	20FG.04	23.92622	53.56477	0.00000	-0.10532	-0.083333	-523.59E-9	-0.014194	283.81E-9
11	20FG.04	23.83670	53.15770	0.00000	-0.10059	-0.083333	-518.81E-9	-0.014115	282.25E-9
12	20FG.05	23.83670	53.15770	0.00000	-0.10059	-0.083333	-518.81E-9	-0.014115	282.25E-9
12	20FG.05	24.13020	53.18325	0.00000	-0.13761	-0.083333	-578.47E-9	-0.015023	300.38E-9
12	20FG.05	24.42370	53.20880	0.00000	-0.17783	-0.083333	-646.63E-9	-0.016010	320.12E-9
13	20FG.06	24.42370	53.20880	0.00000	-0.17783	-0.083333	-646.63E-9	-0.016010	320.12E-9
13	20FG.06	24.35847	52.82555	0.00000	-0.17451	-0.083333	-643.66E-9	-0.015964	319.20E-9
13	20FG.06	24.29325	52.44230	0.00000	-0.17014	-0.083333	-637.84E-9	-0.015878	317.49E-9
13	20FG.06	24.22803	52.05905	0.00000	-0.16476	-0.083333	-629.28E-9	-0.015754	315.01E-9
13	20FG.06	24.16280	51.67580	0.00000	-0.15841	-0.083333	-618.13E-9	-0.015593	311.78E-9
13	20FG.06	24.09757	51.29255	0.00000	-0.15115	-0.083333	-604.60E-9	-0.015396	307.86E-9
13	20FG.06	24.03235	50.90930	0.00000	-0.14304	-0.083333	-588.93E-9	-0.015167	303.28E-9
13	20FG.06	23.96712	50.52605	0.00000	-0.13414	-0.083333	-571.36E-9	-0.014908	298.10E-9
13	20FG.06	23.90190	50.14280	0.00000	-0.12450	-0.083333	-552.20E-9	-0.014622	292.37E-9
14	20FG.07	23.90190	50.14280	0.00000	-0.12450	-0.083333	-552.20E-9	-0.014622	292.37E-9
14	20FG.07	24.16280	50.16550	0.00000	-0.15965	-0.083333	-610.73E-9	-0.015488	309.69E-9
14	20FG.07	24.42370	50.18820	0.00000	-0.19757	-0.083333	-677.02E-9	-0.016426	328.45E-9
15	20FG.08	24.42370	50.18820	0.00000	-0.19757	-0.083333	-677.02E-9	-0.016426	328.45E-9
15	20FG.08	24.41686	49.74254	0.00000	-0.19381	-0.083333	-664.08E-9	-0.016250	324.92E-9
15	20FG.08	24.41001	49.29689	0.00000	-0.18868	-0.083333	-647.63E-9	-0.016024	320.40E-9
15	20FG.08	24.40317	48.85123	0.00000	-0.18221	-0.083333	-628.07E-9	-0.015751	314.95E-9
15	20FG.08	24.39632	48.40558	0.00000	-0.17447	-0.083333	-605.83E-9	-0.015437	308.66E-9
15	20FG.08	24.38948	47.95992	0.00000	-0.16553	-0.083333	-581.40E-9	-0.015085	301.63E-9
15	20FG.08	24.38263	47.51427	0.00000	-0.15547	-0.083333	-555.26E-9	-0.014702	293.97E-9
15	20FG.08	24.37579	47.06861	0.00000	-0.14437	-0.083333	-527.90E-9	-0.014291	285.76E-9
15	20FG.08	24.36894	46.62296	0.00000	-0.13233	-0.083333	-499.78E-9	-0.013859	277.12E-9
15	20FG.08	24.36210	46.17730	0.00000	-0.11943	-0.083333	-471.31E-9	-0.013410	268.15E-9
15	20FG.08	24.35526	45.73164	0.00000	-0.10579	-0.083333	-442.89E-9	-0.012950	258.94E-9
15	20FG.08	24.34841	45.28599	0.00000	-0.09149	-0.083333	-414.83E-9	-0.012481	249.58E-9
15	20FG.08	24.34157	44.84033	0.00000	-0.07663	-0.083333	-387.43E-9	-0.012010	240.15E-9
15	20FG.08	24.33472	44.39468	0.00000	-0.06133	-0.083333	-360.89E-9	-0.011538	230.72E-9
15	20FG.08	24.32788	43.94902	0.00000	-0.04569	-0.083333	-335.40E-9	-0.011070	221.36E-9
15	20FG.08	24.32103	43.50337	0.00000	-0.02980	-0.083333	-311.09E-9	-0.010608	212.13E-9
15	20FG.08	24.31419	43.05771	0.00000	-0.01377	-0.083333	-288.04E-9	-0.010155	203.06E-9
15	20FG.08	24.30734	42.61206	0.00000	0.00231	-0.083333	-266.29E-9	-0.0097117	194.20E-9
15	20FG.08	24.30050	42.16640	0.00000	0.01833	-0.083333	-245.88E-9	-0.0092805	185.58E-9
16	20FG.09	24.30050	42.16640	0.00000	0.01833	-0.083333	-245.88E-9	-0.0092805	185.58E-9
16	20FG.09	23.88700	42.24533	0.00000	0.04747	-0.083333	-223.80E-9	-0.0087818	175.61E-9
16	20FG.09	23.47350	42.32425	0.00000	0.07390	-0.083333	-203.74E-9	-0.0083111	166.20E-9
16	20FG.09	23.06000	42.40318	0.00000	0.09783	-0.083333	-185.55E-9	-0.0078672	157.32E-9
16	20FG.09	22.64650	42.48210	0.00000	0.11948	-0.083333	-169.06E-9	-0.0074489	148.96E-9
16	20FG.09	22.23300	42.56103	0.00000	0.13903	-0.083333	-154.11E-9	-0.0070550	141.08E-9
16	20FG.09	21.81950	42.63995	0.00000	0.15665	-0.083333	-140.57E-9	-0.0066843	133.67E-9
16	20FG.09	21.40600	42.71888	0.00000	0.17251	-0.083333	-128.30E-9	-0.0063354	126.69E-9
16	20FG.09	20.99250	42.79780	0.00000	0.18673	-0.083333	-117.19E-9	-0.0060071	120.13E-9
17	20FG.10	20.99250	42.79780	0.00000	0.18673	-0.083333	-117.19E-9	-0.0060071	120.13E-9
17	20FG.10	21.07865	43.03513	0.00000	0.18093	-0.083333	-123.13E-9	-0.0061816	123.62E-9
17	20FG.10	21.16480	43.27245	0.00000	0.17488	-0.083333	-129.39E-9	-0.0063614	127.21E-9
17	20FG.10	21.25095	43.50978	0.00000	0.16860	-0.083333	-135.97E-9	-0.0065467	130.92E-9
17	20FG.10	21.33710	43.74710	0.00000	0.16206	-0.083333	-142.90E-9	-0.0067374	134.73E-9
18	20FG.11	21.33710	43.74710	0.00000	0.16206	-0.083333	-142.90E-9	-0.0067374	134.73E-9
18	20FG.11	20.86376	43.83723	0.00000	0.17998	-0.083333	-127.99E-9	-0.0063163	126.31E-9
18	20FG.11	20.39042	43.92736	0.00000	0.19572	-0.083333	-114.79E-9	-0.0059262	118.51E-9
18	20FG.11	19.91708	44.01748	0.00000	0.20947	-0.083333	-103.11E-9	-0.0055647	111.28E-9
18	20FG.11	19.44374	44.10761	0.00000	0.22145	-0.083333	-92.748E-9	-0.0052296	104.58E-9
18	20FG.11	18.97041	44.19774	0.00000	0.23180	-0.083333	-83.552E-9	-0.0049188	98.365E-9
18	20FG.11	18.49707	44.28787	0.00000	0.24069	-0.083333	-75.379E-9	-0.0046303	92.596E-9
18	20FG.11	18.02373	44.37799	0.00000	0.24825	-0.083333	-68.106E-9	-0.0043623	87.238E-9
18	20FG.11	17.55039	44.46812	0.00000	0.25462	-0.083333	-61.625E-9	-0.0041133	82.258E-9
18	20FG.11	17.07705	44.55825	0.00000	0.25990	-0.083333	-55.841E-9	-0.0038817	77.627E-9
18	20FG.11	16.60371	44.64838	0.00000	0.26420	-0.083333	-50.674E-9	-0.0036661	73.316E-9
18	20FG.11	16.13037	44.73851	0.00000	0.26761	-0.083333	-46.050E-9	-0.0034653	69.301E-9

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
18	20FG.11	15.65703	44.82863	0.00000	0.27021	-0.083333	-41.907E-9	-0.0032782	65.558E-9
18	20FG.11	15.18369	44.91876	0.00000	0.27210	-0.083333	-38.190E-9	-0.0031036	62.067E-9
18	20FG.11	14.71036	45.00889	0.00000	0.27333	-0.083333	-34.850E-9	-0.0029406	58.807E-9
18	20FG.11	14.23702	45.09902	0.00000	0.27397	-0.083333	-31.845E-9	-0.0027883	55.761E-9
18	20FG.11	13.76368	45.18914	0.00000	0.27408	-0.083333	-29.137E-9	-0.0026458	52.913E-9
18	20FG.11	13.29034	45.27927	0.00000	0.27371	-0.083333	-26.694E-9	-0.0025125	50.247E-9
18	20FG.11	12.81700	45.36940	0.00000	0.27292	-0.083333	-24.486E-9	-0.0023877	47.751E-9
19	20FG.12	12.81700	45.36940	0.00000	0.27292	-0.083333	-24.486E-9	-0.0023877	47.751E-9
19	20FG.12	12.91528	45.83612	0.00000	0.27358	-0.083333	-25.447E-9	-0.0024422	48.840E-9
19	20FG.12	13.01355	46.30284	0.00000	0.27416	-0.083333	-26.415E-9	-0.0024962	49.922E-9
19	20FG.12	13.11183	46.76955	0.00000	0.27468	-0.083333	-27.387E-9	-0.0025497	50.990E-9
19	20FG.12	13.21011	47.23627	0.00000	0.27513	-0.083333	-28.359E-9	-0.0026023	52.043E-9
19	20FG.12	13.30839	47.70299	0.00000	0.27551	-0.083333	-29.326E-9	-0.0026540	53.077E-9
19	20FG.12	13.40666	48.16971	0.00000	0.27584	-0.083333	-30.284E-9	-0.0027045	54.086E-9
19	20FG.12	13.50494	48.63643	0.00000	0.27612	-0.083333	-31.227E-9	-0.0027536	55.068E-9
19	20FG.12	13.60322	49.10315	0.00000	0.27634	-0.083333	-32.151E-9	-0.0028011	56.018E-9
19	20FG.12	13.70150	49.56986	0.00000	0.27652	-0.083333	-33.050E-9	-0.0028468	56.931E-9
19	20FG.12	13.79977	50.03658	0.00000	0.27667	-0.083333	-33.919E-9	-0.0028904	57.804E-9
19	20FG.12	13.89805	50.50330	0.00000	0.27678	-0.083333	-34.751E-9	-0.0029318	58.633E-9
19	20FG.12	13.99633	50.97002	0.00000	0.27686	-0.083333	-35.541E-9	-0.0029708	59.412E-9
19	20FG.12	14.09460	51.43674	0.00000	0.27691	-0.083333	-36.283E-9	-0.0030072	60.139E-9
19	20FG.12	14.19288	51.90345	0.00000	0.27695	-0.083333	-36.972E-9	-0.0030407	60.809E-9
19	20FG.12	14.29116	52.37017	0.00000	0.27697	-0.083333	-37.603E-9	-0.0030711	61.418E-9
19	20FG.12	14.38944	52.83689	0.00000	0.27699	-0.083333	-38.170E-9	-0.0030984	61.964E-9
19	20FG.12	14.48771	53.30361	0.00000	0.27700	-0.083333	-38.669E-9	-0.0031224	62.443E-9
19	20FG.12	14.58599	53.77033	0.00000	0.27702	-0.083333	-39.096E-9	-0.0031428	62.852E-9
19	20FG.12	14.68427	54.23705	0.00000	0.27703	-0.083333	-39.447E-9	-0.0031597	63.189E-9
19	20FG.12	14.78255	54.70376	0.00000	0.27706	-0.083333	-39.719E-9	-0.0031728	63.452E-9
19	20FG.12	14.88082	55.17048	0.00000	0.27709	-0.083333	-39.911E-9	-0.0031822	63.640E-9
19	20FG.12	14.97910	55.63720	0.00000	0.27714	-0.083333	-40.019E-9	-0.0031878	63.750E-9
20	20FG.13	14.97910	55.63720	0.00000	0.27714	-0.083333	-40.019E-9	-0.0031878	63.750E-9
20	20FG.13	14.53283	55.76250	0.00000	0.27828	-0.083333	-36.264E-9	-0.0030083	60.162E-9
20	20FG.13	14.08655	55.88780	0.00000	0.27877	-0.083333	-32.927E-9	-0.0028422	56.840E-9
20	20FG.13	13.64028	56.01310	0.00000	0.27871	-0.083333	-29.953E-9	-0.0026881	53.759E-9
20	20FG.13	13.19400	56.13840	0.00000	0.27815	-0.083333	-27.299E-9	-0.0025451	50.899E-9
21	20FG.14	13.19400	56.13840	0.00000	0.27815	-0.083333	-27.299E-9	-0.0025451	50.899E-9
21	20FG.14	13.27410	56.53937	0.00000	0.27824	-0.083333	-27.282E-9	-0.0025445	50.886E-9
21	20FG.14	13.35420	56.94033	0.00000	0.27833	-0.083333	-27.229E-9	-0.0025419	50.834E-9
21	20FG.14	13.43430	57.34130	0.00000	0.27839	-0.083333	-27.141E-9	-0.0025374	50.744E-9
21	20FG.14	13.51440	57.74227	0.00000	0.27844	-0.083333	-27.018E-9	-0.0025309	50.615E-9
21	20FG.14	13.59450	58.14323	0.00000	0.27848	-0.083333	-26.860E-9	-0.0025226	50.449E-9
21	20FG.14	13.67460	58.54420	0.00000	0.27850	-0.083333	-26.670E-9	-0.0025124	50.245E-9
22	20FG.15	13.67460	58.54420	0.00000	0.27850	-0.083333	-26.670E-9	-0.0025124	50.245E-9
22	20FG.15	14.12543	58.46229	0.00000	0.27912	-0.083333	-29.207E-9	-0.0026508	53.012E-9
22	20FG.15	14.57626	58.38039	0.00000	0.27927	-0.083333	-32.040E-9	-0.0027995	55.986E-9
22	20FG.15	15.02709	58.29848	0.00000	0.27886	-0.083333	-35.212E-9	-0.0029596	59.188E-9
22	20FG.15	15.47791	58.21657	0.00000	0.27785	-0.083333	-38.771E-9	-0.0031323	62.641E-9
22	20FG.15	15.92874	58.13466	0.00000	0.27614	-0.083333	-42.773E-9	-0.0033187	66.368E-9
22	20FG.15	16.37957	58.05276	0.00000	0.27366	-0.083333	-47.285E-9	-0.0035202	70.399E-9
22	20FG.15	16.83040	57.97085	0.00000	0.27032	-0.083333	-52.383E-9	-0.0037386	74.765E-9
22	20FG.15	17.28123	57.88894	0.00000	0.26601	-0.083333	-58.161E-9	-0.0039755	79.502E-9
22	20FG.15	17.73206	57.80704	0.00000	0.26061	-0.083333	-64.725E-9	-0.0042329	84.650E-9
22	20FG.15	18.18289	57.72513	0.00000	0.25400	-0.083333	-72.206E-9	-0.0045132	90.256E-9
22	20FG.15	18.63371	57.64322	0.00000	0.24602	-0.083333	-80.757E-9	-0.0048190	96.370E-9
22	20FG.15	19.08454	57.56131	0.00000	0.23653	-0.083333	-90.562E-9	-0.0051532	103.05E-9
22	20FG.15	19.53537	57.47941	0.00000	0.22532	-0.083333	-101.84E-9	-0.0055193	110.37E-9
22	20FG.15	19.98620	57.39750	0.00000	0.21221	-0.083333	-114.86E-9	-0.0059211	118.41E-9
23	20FG.16	19.98620	57.39750	0.00000	0.21221	-0.083333	-114.86E-9	-0.0059211	118.41E-9
23	20FG.16	20.06051	57.87564	0.00000	0.21421	-0.083333	-112.02E-9	-0.0058377	116.74E-9
23	20FG.16	20.13483	58.35379	0.00000	0.21646	-0.083333	-108.92E-9	-0.0057456	114.90E-9
23	20FG.16	20.20914	58.83193	0.00000	0.21894	-0.083333	-105.61E-9	-0.0056455	112.90E-9
23	20FG.16	20.28346	59.31007	0.00000	0.22162	-0.083333	-102.11E-9	-0.0055384	110.76E-9
23	20FG.16	20.35777	59.78821	0.00000	0.22448	-0.083333	-98.471E-9	-0.0054250	108.49E-9
23	20FG.16	20.43209	60.26636	0.00000	0.22749	-0.083333	-94.727E-9	-0.0053061	106.11E-9
23	20FG.16	20.50640	60.74450	0.00000	0.23062	-0.083333	-90.912E-9	-0.0051828	103.64E-9
23	20FG.16	20.58071	61.22264	0.00000	0.23384	-0.083333	-87.058E-9	-0.0050557	101.10E-9
23	20FG.16	20.65503	61.70079	0.00000	0.23713	-0.083333	-83.194E-9	-0.0049257	98.503E-9
23	20FG.16	20.72934	62.17893	0.00000	0.24045	-0.083333	-79.348E-9	-0.0047934	95.859E-9
23	20FG.16	20.80366	62.65707	0.00000	0.24378	-0.083333	-75.544E-9	-0.0046597	93.186E-9
23	20FG.16	20.87797	63.13521	0.00000	0.24708	-0.083333	-71.802E-9	-0.0045252	90.496E-9
23	20FG.16	20.95229	63.61336	0.00000	0.25032	-0.083333	-68.141E-9	-0.0043905	87.802E-9
23	20FG.16	21.02660	64.09150	0.00000	0.25349	-0.083333	-64.576E-9	-0.0042561	85.115E-9
24	17HW.A01	58.70070	56.44780	0.00000	0.18788	-0.083333	-117.44E-9	-0.0059937	119.86E-9
24	17HW.A01	59.17122	56.40603	0.00000	0.20433	-0.083333	-104.39E-9	-0.0055951	111.89E-9
24	17HW.A01	59.64174	56.36426	0.00000	0.21856	-0.083333	-93.021E-9	-0.0052303	104.60E-9
24	17HW.A01	60.11227	56.32248	0.00000	0.23078	-0.083333	-83.092E-9	-0.0048959	97.908E-9
24	17HW.A01	60.58279	56.28071	0.00000	0.24122	-0.083333	-74.395E-9	-0.0045889	91.769E-9
24	17HW.A01	61.05331	56.23894	0.00000	0.25006	-0.083333	-66.758E-9	-0.0043065	86.123E-9
24	17HW.A01	61.52383	56.19717	0.00000	0.25747	-0.083333	-60.034E-9	-0.0040465	80.923E-9
24	17HW.A01	61.99436	56.15539	0.00000	0.26358	-0.083333	-54.100E-9	-0.0038066	76.126E-9
24	17HW.A01	62.46488	56.11362	0.00000	0.26855	-0.083333	-48.850E-9	-0.0035850	71.695E-9
24	17HW.A01	62.93540	56.07185	0.00000	0.27248	-0.083333	-44.196E-9	-0.0033801	67.597E-9
24	17HW.A01	63.40592	56.03008	0.00000	0.27548	-0.083333	-40.060E-9	-0.0031903	63.800E-9
24	17HW.A01	63.87644	55.98831	0.00000	0.27766	-0.083333	-36.377E-9	-0.0030142	60.279E-9
24	17HW.A01	64.34697	55.94653	0.00000	0.27909	-0.083333	-33.090E-9	-0.0028507	57.009E-9
24	17HW.A01	64.81749	55.90476	0.00000	0.27986	-0.083333	-30.151E-9	-0.0026986	53.969E-9
24	17HW.A01	65.28801	55.86299	0.00000	0.28004	-0.083333	-27.519E-9	-0.0025571	51.139E-9
24	17HW.A01	65.75853	55.82122	0.00000	0.27969	-0.083333	-25.156E-9	-0.0024252	48.500E-9
24	17HW.A01	66.22906	55.77944	0.00000	0.27888	-0.083333	-23.031E-9	-0.0023021	46.039E-9
24	17HW.A01	66.69958	55.73767	0.00000	0.27764	-0.083333	-21.117E-9	-0.0021871	43.739E-9
24	17HW.A01	67.17010	55.69590	0.00000	0.27604	-0.083333	-19.389E-9	-0.0020796	41.589E-9
25	17HW.A02	67.17010	55.69590	0.00000	0.27604	-0.083333	-19.389E-9	-0.0020796	41.589E-9
25	17HW.A02	67.15461	55.24739	0.00000	0.27628	-0.083333	-19.702E-9	-0.0020991	41.980E-9
25	17HW.A02	67.13912	54.79889	0.00000	0.27647	-0.083333	-19.994E-9	-0.0021173	42.343E-9
25	17HW.A02	67.12363	54.35038	0.00000	0.27663	-0.083333	-20.264E-9	-0.0021340	42.677E-9
25	17HW.A02	67.10814	53.90188	0.00000	0.27675	-0.083333	-20.510E-9	-0.0021491	42.980E-9
25	17HW.A02	67.09266	53.45337	0.00000	0.27684	-0.083333	-20.731E-9	-0.0021626	43.250E-9
25	17HW.A02	67.07717	53.00487	0.00000	0.27690	-0.083333	-20.926E-9	-0.0021745	43.488E-9
25	17HW.A02	67.06168	52.55636	0.00000	0.27693	-0.083333	-21.093E-9	-0.0021847	43.691E-9
25	17HW.A02	67.04619	52.10786	0.00000	0.27693	-0.083333	-21.232E-9	-0.0021931	43.860E-9
25	17HW.A02	67.03070	51.65935	0.00000	0.27690	-0.083333	-21.342E-9	-0.0021997	43.992E-9
25	17HW.A02	67.01521	51.21084	0.00000	0.27684	-0.083333	-21.421E-9	-0.0022046	44.089E-9
25	17HW.A02	66.99972	50.76234	0.00000	0.27675	-0.083333	-21.471E-9	-0.0022076	44.149E-9
25	17HW.A02	66.98423	50.31383	0.00000	0.27664	-0.083333	-21.489E-9	-0.0022087	44.172E-9
25	17HW.A02	66.96874	49.86533	0.00000	0.27650	-0.083333	-21.477E-9	-0.0022080	44.158E-9
25	17HW.A02	66.95326	49.41682	0.00000	0.27634	-0.083333	-21.434E-9	-0.0022055	44.107E-9
25	17HW.A02	66.93777	48.96832	0.00000	0.27615	-0.083333	-21.360E-9	-0.0022011	44.019E-9
25	17HW.A02	66.92228	48.51981	0.00000	0.27593	-0.083333	-21.257E-9	-0.0021949	43.895E-9
25	17HW.A02	66.90679	48.07131	0.00000	0.27568	-0.083333	-21.124E-9	-0.0021869	43.735E-9
25	17HW.A02	66.89130	47.62280	0.00000	0.27541	-0.083333	-20.962E-9	-0.0021772	43.541E-9
26	17HW.A03	66.89130	47.62280	0.00000	0.27541	-0.083333	-20.962E-9	-0.0021772	43.541E-9
26	17HW.A03	66.43956	47.65757	0.00000	0.27665	-0.083333	-22.843E-9	-0.0022904	45.805E-9
26	17HW.A03	65.98782	47.69234	0.00000	0.27750	-0.083333	-24.931E-9	-0.0024117	48.231E-9
26	17HW.A03	65.53608	47.72711	0.00000	0.27790	-0.083333	-27.254E-9	-0.0025418	50.832E-9
26	17HW.A03	65.08434	47.76188	0.00000	0.27781	-0.083333	-29.845E-9	-0.0026815	53.626E-9
26	17HW.A03	64.63260	47.79665	0.00000	0.27717	-0.083333	-32.739E-9	-0.0028317	56.629E-9
26	17HW.A03	64.18086	47.83142	0.00000	0.27589	-0.083333	-35.979E-9	-0.0029934	59.864E-9
26	17HW.A03	63.72912	47.86619	0.00000	0.27392	-0.083333	-39.615E-9	-0.0031678	63.351E-9
26	17HW.A03	63.27738	47.90096	0.00000	0.27116	-0.083333	-43.706E-9	-0.0033561	67.118E-9
26	17HW.A03	62.82564	47.93573	0.00000	0.26752	-0.083333	-48.319E-9	-0.0035599	71.191E-9
26	17HW.A03	62.37390	47.97050	0.00000	0.26290	-0.083333	-53.534E-9	-0.0037806	75.605E-9
26	17HW.A03	61.92216	48.00527	0.00000	0.25718	-0.083333	-59.447E-9	-0.0040201	80.395E-9
26	17HW.A03	61.47042	48.04004	0.00000	0.25023	-0.083333	-66.169E-9	-0.0042805	85.603E-9
26	17HW.A03	61.01868	48.07481	0.00000	0.24190	-0.083333	-73.835E-9	-0.0045642	91.275E-9
26	17HW.A03	60.56694	48.10958	0.00000	0.23203	-0.083333	-82.604E-9	-0.0048738	97.466E-9
26	17HW.A03	60.11520	48.14435	0.00000	0.22044	-0.083333	-92.668E-9	-0.0052124	104.24E-9
26	17HW.A03	59.66346	48.17912	0.00000	0.20691	-0.083333	-104.26E-9	-0.0055835	111.66E-9
26	17HW.A03	59.21172	48.21389	0.00000	0.19121	-0.083333	-117.65E-9	-0.0059911	119.81E-9
26	17HW.A03	58.75998	48.24866	0.00000	0.17308	-0.083333	-133.20E-9	-0.0064400	128.78E-9
26	17HW.A03	58.30824	48.28343	0.00000	0.15221	-0.083333	-151.30E-9	-0.0069355	138.69E-9

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
26	17HW.A03	57.85650	48.31820	0.00000	0.12825	-0.083333	-172.49E-9	-0.0074839	149.66E-9
27	17HW.A04	57.85650	48.31820	0.00000	0.12825	-0.083333	-172.49E-9	-0.0074839	149.66E-9
27	17HW.A04	57.90340	48.76984	0.00000	0.12793	-0.083333	-173.64E-9	-0.0075114	150.21E-9
27	17HW.A04	57.95030	49.22149	0.00000	0.12810	-0.083333	-174.20E-9	-0.0075239	150.46E-9
27	17HW.A04	57.99720	49.67313	0.00000	0.12878	-0.083333	-174.14E-9	-0.0075213	150.41E-9
27	17HW.A04	58.04410	50.12478	0.00000	0.12995	-0.083333	-173.47E-9	-0.0075037	150.05E-9
27	17HW.A04	58.09100	50.57642	0.00000	0.13162	-0.083333	-172.19E-9	-0.0074711	149.40E-9
27	17HW.A04	58.13790	51.02807	0.00000	0.13377	-0.083333	-170.33E-9	-0.0074240	148.46E-9
27	17HW.A04	58.18480	51.47971	0.00000	0.13639	-0.083333	-167.92E-9	-0.0073628	147.24E-9
27	17HW.A04	58.23170	51.93136	0.00000	0.13945	-0.083333	-164.98E-9	-0.0072880	145.74E-9
27	17HW.A04	58.27860	52.38300	0.00000	0.14294	-0.083333	-161.55E-9	-0.0072005	143.99E-9
27	17HW.A04	58.32550	52.83464	0.00000	0.14682	-0.083333	-157.70E-9	-0.0071010	142.00E-9
27	17HW.A04	58.37240	53.28629	0.00000	0.15106	-0.083333	-153.46E-9	-0.0069905	139.79E-9
27	17HW.A04	58.41930	53.73793	0.00000	0.15563	-0.083333	-148.88E-9	-0.0068700	137.38E-9
27	17HW.A04	58.46620	54.18958	0.00000	0.16050	-0.083333	-144.03E-9	-0.0067404	134.79E-9
27	17HW.A04	58.51310	54.64122	0.00000	0.16562	-0.083333	-138.95E-9	-0.0066028	132.04E-9
27	17HW.A04	58.56000	55.09287	0.00000	0.17096	-0.083333	-133.71E-9	-0.0064583	129.15E-9
27	17HW.A04	58.60690	55.54451	0.00000	0.17648	-0.083333	-128.34E-9	-0.0063079	126.14E-9
27	17HW.A04	58.65380	55.99616	0.00000	0.18213	-0.083333	-122.90E-9	-0.0061527	123.04E-9
27	17HW.A04	58.70070	56.44780	0.00000	0.18788	-0.083333	-117.44E-9	-0.0059937	119.86E-9
28	17HW.B01	58.67890	60.09730	0.00000	0.22359	-0.083333	-83.468E-9	-0.0049256	98.502E-9
28	17HW.B01	58.72484	59.63727	0.00000	0.22007	-0.083333	-86.851E-9	-0.0050392	100.77E-9
28	17HW.B01	58.77078	59.17725	0.00000	0.21667	-0.083333	-90.188E-9	-0.0051493	102.98E-9
28	17HW.B01	58.81671	58.71722	0.00000	0.21341	-0.083333	-93.452E-9	-0.0052552	105.09E-9
28	17HW.B01	58.86265	58.25720	0.00000	0.21032	-0.083333	-96.615E-9	-0.0053562	107.11E-9
28	17HW.B01	58.90859	57.79717	0.00000	0.20743	-0.083333	-99.648E-9	-0.0054516	109.02E-9
28	17HW.B01	58.95452	57.33715	0.00000	0.20476	-0.083333	-102.52E-9	-0.0055407	110.80E-9
28	17HW.B01	59.00046	56.87712	0.00000	0.20235	-0.083333	-105.21E-9	-0.0056228	112.44E-9
28	17HW.B01	59.04640	56.41710	0.00000	0.20020	-0.083333	-107.67E-9	-0.0056974	113.93E-9
29	17HW.B02	59.04640	56.41710	0.00000	0.20020	-0.083333	-107.67E-9	-0.0056974	113.93E-9
29	17HW.B02	59.47996	56.37762	0.00000	0.21390	-0.083333	-96.762E-9	-0.0053524	107.04E-9
29	17HW.B02	59.91352	56.33815	0.00000	0.22584	-0.083333	-87.136E-9	-0.0050340	100.67E-9
29	17HW.B02	60.34709	56.29868	0.00000	0.23619	-0.083333	-78.624E-9	-0.0047400	94.790E-9
29	17HW.B02	60.78065	56.25920	0.00000	0.24511	-0.083333	-71.080E-9	-0.0044679	89.349E-9
29	17HW.B02	61.21421	56.21972	0.00000	0.25273	-0.083333	-64.380E-9	-0.0042159	84.310E-9
29	17HW.B02	61.64777	56.18025	0.00000	0.25918	-0.083333	-58.417E-9	-0.0039822	79.636E-9
29	17HW.B02	62.08134	56.14078	0.00000	0.26457	-0.083333	-53.099E-9	-0.0037651	75.296E-9
29	17HW.B02	62.51490	56.10130	0.00000	0.26900	-0.083333	-48.347E-9	-0.0035633	71.260E-9
30	17HW.B03	62.51490	56.10130	0.00000	0.26900	-0.083333	-48.347E-9	-0.0035633	71.260E-9
30	17HW.B03	62.53797	56.55704	0.00000	0.27005	-0.083333	-47.000E-9	-0.0035053	70.100E-9
30	17HW.B03	62.56105	57.01278	0.00000	0.27110	-0.083333	-45.613E-9	-0.0034449	68.892E-9
30	17HW.B03	62.58413	57.46851	0.00000	0.27214	-0.083333	-44.196E-9	-0.0033822	67.640E-9
30	17HW.B03	62.60720	57.92425	0.00000	0.27315	-0.083333	-42.756E-9	-0.0033177	66.350E-9
30	17HW.B03	62.63027	58.37999	0.00000	0.27414	-0.083333	-41.302E-9	-0.0032517	65.028E-9
30	17HW.B03	62.65335	58.83573	0.00000	0.27508	-0.083333	-39.842E-9	-0.0031842	63.680E-9
30	17HW.B03	62.67643	59.29146	0.00000	0.27597	-0.083333	-38.381E-9	-0.0031158	62.311E-9
30	17HW.B03	62.69950	59.74720	0.00000	0.27679	-0.083333	-36.928E-9	-0.0030465	60.925E-9
31	17HW.B04	62.69950	59.74720	0.00000	0.27679	-0.083333	-36.928E-9	-0.0030465	60.925E-9
31	17HW.B04	62.29744	59.78221	0.00000	0.27473	-0.083333	-39.889E-9	-0.0031884	63.762E-9
31	17HW.B04	61.89538	59.81722	0.00000	0.27209	-0.083333	-43.129E-9	-0.0033387	66.768E-9
31	17HW.B04	61.49332	59.85223	0.00000	0.26884	-0.083333	-46.677E-9	-0.0034980	69.955E-9
31	17HW.B04	61.09126	59.88724	0.00000	0.26492	-0.083333	-50.567E-9	-0.0036670	73.334E-9
31	17HW.B04	60.68920	59.92225	0.00000	0.26026	-0.083333	-54.834E-9	-0.0038463	76.920E-9
31	17HW.B04	60.28714	59.95726	0.00000	0.25481	-0.083333	-59.521E-9	-0.0040367	80.728E-9
31	17HW.B04	59.88508	59.99227	0.00000	0.24849	-0.083333	-64.673E-9	-0.0042390	84.772E-9
31	17HW.B04	59.48302	60.02728	0.00000	0.24124	-0.083333	-70.342E-9	-0.0044539	89.070E-9
31	17HW.B04	59.08096	60.06229	0.00000	0.23297	-0.083333	-76.586E-9	-0.0046825	93.640E-9
31	17HW.B04	58.67890	60.09730	0.00000	0.22359	-0.083333	-83.468E-9	-0.0049256	98.502E-9

Results : Consolidation : Displacement Data : Lines

None

Results : Total : Displacement Data : Lines

None

Titles

Job No.: 1125
Job Title: 18A Frognal Gardens
Sub-title: Building GMA
Calculation Heading: PDisp A03 - Long Term
Initials: SB
Checker:
Date Saved:
Date Checked:
Notes:
File Name: PDisp A03 new.pdd
File Path: \\Mac\Dropbox for Business\A2-projects\1125 - 18a Frognal Gardens\03 - Calculations\Issue 01\Pdisp

History

Date	Time	By	Notes
14-Oct-2020	14:22	hamed	<history cleared>
14-Oct-2020	14:22	hamed	

Analysis Options

General
Global Poisson's ratio: 0.20
Maximum allowable ratio between values of E: 1.5
Horizontal rigid boundary level: -34.00 [m OD]
Displacements at load centroids: Yes
GSA piled raft data : No

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

Consolidation
Consolidation : No

Soil ProfilesSoil Profile 1

Layer ref.	Name	Level at top [mOD]	Number of intermediate displacement levels	Youngs Modulus : Top [kN/m²]	Youngs Modulus : Btm. [kN/m²]	Poissons ratio	Non-linear curve
1	Made Ground	0.0	5	10000.	10000.	0.20000	None
2	Bagshot Formation	-1.0000	5	18000.	18000.	0.20000	None
3	London Clay	-7.0000	5	11520.	79560.	0.20000	None

Non-linear Curve Coordinates - Non-linear Curve 1

Point	Strain [%]	Factor

Soil Zones

Zone	Name	X min [m]	X max [m]	Y min [m]	Y max [m]	Profile
1	1	0.0	80.000	0.0	100.00	Soil Profile 1

Polygonal Load Data

Load ref.	Name	Position : Level [m]	Position : Polygon : Coords. [m]	Position : Polygon : Rect. tolerance [%]	No. of Rectangles	Value : Normal (local z) [kN/m²]
1	Demo - 3F	-2.75000	(34.7,49.1) (43.8,49.1) (43.8,46.4) (42.8,46.4) (42.8,42.3) (34.9,42.3) (34.7,42.3) (34.7,49.1)	10.000	2	-45.000
2	Demo - 2F	0.00000	(34.7,53.3) (43.8,53.3) (43.7,49.1) (34.7,49.1) (34.7,53.3)	10.000	1	-30.000
3	Excav - Pool	-6.27500	(34.6,58.5) (44.7,58.5) (44.9,53.8) (34.7,53.8) (34.6,58.5)	10.000	1	-126.00
4	Excav A	-4.21000	(44.9,53.8) (45,49.1) (34.7,49.1) (34.7,53.8) (44.9,53.8)	10.000	5	-84.200
5	Excav B	-4.21000	(45,49.1) (45.3,42.1) (34.7,42.2) (34.7,49.1) (45,49.1)	10.000	2	-20.200
6	Loading - 4F	-4.21000	(35.1,43.3) (35.1,53) (38.6,53) (39.9,54.3) (40.4,58.3) (44.6,58.3) (45.2,42.4) (41.6,42.4) (40.4,43.3) (35.1,43.3)	10.000	4	40.000
7	Loading - 3F	-4.21000	(41.6,42.4) (40.5,42.4) (39.4,41.5) (35.1,41.5) (35.1,43.3) (40.4,43.3)	10.000	2	30.000
8	Loading - 2FA	-4.21000	(40.4,58.3) (35.1,58.3) (35.1,53) (38.6,53) (39.9,54.3) (40.4,58.3)	10.000	2	20.000
9	Loading - 2FB	-4.21000	(39.4,41.5) (40.5,42.4) (45.2,42.4) (45.4,36) (41.9,36) (41.3,40.4) (40,41.5) (39.4,41.5)	10.000	8	20.000

Polygonal Loads' Rectangles

No.	Centre x [m]	Centre y [m]	Angle of local x from global X [Degrees]	Width x [m]	Depth y [m]
Load 1 : Demo - 3F					
(Edge 7 optimal)					
1	38.75214	44.36162	90.266	4.0939	8.0366
2	39.27445	47.75430	90.266	2.6865	9.0839
Load 2 : Demo - 2F					
(Edge 4 optimal)					
1	39.23550	51.18897	179.84	8.9951	4.1869
Load 3 : Excav - Pool					
(Edge 3 optimal)					
1	39.70473	56.14037	-89.757	4.6515	10.116
Load 4 : Excav A					
(Edge 1 optimal)					

No.	Centre : x	Centre : y	Angle of local x from global X	Width x	Depth y
1	34.69186	52.61612	0.11868	0.065647	2.3542
2	39.79234	51.44430	0.11868	10.130	4.6978
3	44.88383	51.05898	0.11868	0.050930	3.9061
4	44.93638	50.27787	0.11868	0.050930	2.3437
5	44.98893	49.49676	0.11868	0.050930	0.78122
Load 5 : Excav B					
(Edge 2 optimal)					
1	39.93896	45.64899	-89.978	6.8759	10.411
2	42.64040	42.16538	-89.978	0.093440	5.2693
Load 6 : Loading - 4F					
(Edge 4 optimal)					
1	43.07710	42.87167	-89.900	0.89811	4.1902
2	42.41853	56.32179	-89.900	3.9427	4.5336
3	42.00406	53.68886	-89.900	1.3217	5.5531
4	40.03279	48.17461	-89.900	9.6999	9.8946
Load 7 : Loading - 3F					
(Edge 1 optimal)					
1	38.04638	42.86936	-90.305	0.86120	5.9090
2	37.54178	41.98003	-90.305	0.91179	4.9093
Load 8 : Loading - 2FA					
(Edge 2 optimal)					
1	37.61788	56.31890	-90.138	3.9338	5.0665
2	37.15328	53.68971	-90.138	1.3268	4.1500
Load 9 : Loading - 2FB					
(Edge 6 optimal)					
1	44.98559	35.96963	92.070	0.062969	0.87111
2	44.11278	36.00110	92.070	0.062969	2.6133
3	43.48429	38.25599	92.070	4.4893	3.7066
4	42.95451	41.05182	92.070	1.1370	4.5635
5	42.54506	41.97525	92.070	0.69779	5.3152
6	42.39331	42.34682	92.070	0.055844	4.0465
7	41.65598	42.37605	92.070	0.055844	2.4279
8	40.91866	42.40528	92.070	0.055844	0.80931

Displacement Lines

Name	X1 [m]	Y1 [m]	Z1 [m]	X2 [m]	Y2 [m]	Z2 [m]	Intervals [No.]	Calculate	Detailed Results
18B.01	27.06970	56.10310	0.00000	32.02050	56.10310	0.00000	10	Yes	Yes
18B.02	32.02050	56.10310	0.00000	32.02020	53.28900	0.00000	6	Yes	Yes
18B.03	32.02020	53.28900	0.00000	34.29880	53.28910	0.00000	6	Yes	Yes
18B.04	34.29880	53.28910	0.00000	34.29900	42.12610	0.00000	24	Yes	Yes
18B.05	34.29900	42.12610	0.00000	27.03130	42.06780	0.00000	16	Yes	Yes
18B.06	27.03130	42.06780	0.00000	27.03130	42.81150	0.00000	2	Yes	Yes
18B.07	27.03130	42.81150	0.00000	27.06970	56.10310	0.00000	28	Yes	Yes
20FG.01	21.02660	64.09150	0.00000	24.26740	63.42960	0.00000	8	Yes	Yes
20FG.02	24.26740	63.42960	0.00000	23.31400	55.50790	0.00000	16	Yes	Yes
20FG.03	23.31400	55.50790	0.00000	24.37380	55.60010	0.00000	4	Yes	Yes
20FG.04	24.37380	55.60010	0.00000	23.83670	53.15770	0.00000	6	Yes	Yes
20FG.05	23.83670	53.15770	0.00000	24.42370	53.20880	0.00000	2	Yes	Yes
20FG.06	24.42370	53.20880	0.00000	23.90190	50.14280	0.00000	8	Yes	Yes
20FG.07	23.90190	50.14280	0.00000	24.42370	50.18820	0.00000	2	Yes	Yes
20FG.08	24.42370	50.18820	0.00000	24.30050	42.16640	0.00000	18	Yes	Yes
20FG.09	24.30050	42.16640	0.00000	20.99250	42.79780	0.00000	8	Yes	Yes
20FG.10	20.99250	42.79780	0.00000	21.33710	43.74710	0.00000	4	Yes	Yes
20FG.11	21.33710	43.74710	0.00000	12.81700	45.36940	0.00000	18	Yes	Yes
20FG.12	12.81700	45.36940	0.00000	14.97910	55.63720	0.00000	22	Yes	Yes
20FG.13	14.97910	55.63720	0.00000	13.19400	56.13840	0.00000	4	Yes	Yes
20FG.14	13.19400	56.13840	0.00000	13.67460	58.54420	0.00000	6	Yes	Yes
20FG.15	13.67460	58.54420	0.00000	19.98620	57.39750	0.00000	14	Yes	Yes
20FG.16	19.98620	57.39750	0.00000	21.02660	64.09150	0.00000	14	Yes	Yes
17HW.A01	58.70070	56.44780	0.00000	67.17010	55.69590	0.00000	18	Yes	Yes
17HW.A02	67.17010	55.69590	0.00000	66.89130	47.62280	0.00000	18	Yes	Yes
17HW.A03	66.89130	47.62280	0.00000	57.85650	48.31820	0.00000	20	Yes	Yes
17HW.A04	57.85650	48.31820	0.00000	58.70070	56.44780	0.00000	18	Yes	Yes
17HW.B01	58.67890	60.09730	0.00000	59.04640	56.41710	0.00000	8	Yes	Yes
17HW.B02	59.04640	56.41710	0.00000	62.51490	56.10130	0.00000	8	Yes	Yes
17HW.B03	62.51490	56.10130	0.00000	62.69950	59.74720	0.00000	8	Yes	Yes
17HW.B04	62.69950	59.74720	0.00000	58.67890	60.09730	0.00000	10	Yes	Yes

Results : Immediate : Load Centres : Polygonal

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
1	Demo - 3F	38.97665	45.80077	-2.75000	-13.76653	-3.2813	-46.738	-99.349	-0.0020120
2	Demo - 2F	39.23031	51.19083	0.00000	-31.47103	-0.083333	-29.999	-69.988	-0.0022001
3	Excav - Pool	39.70523	56.13408	-6.27500	-36.80563	-6.6375	-112.22	-260.29	-0.0045890
4	Excav A	39.81036	51.44102	-4.21000	-25.36943	-4.6750	-59.424	-112.18	-0.0027152
5	Excav B	39.95369	45.61566	-4.21000	-10.37274	-4.6750	-23.753	-25.123	-0.0013044
6	Loading - 4F	40.57994	49.47071	-4.21000	-20.96106	-4.6750	-62.498	-99.732	-0.0030584
7	Loading - 3F	37.82069	42.45519	-4.21000	-5.46702	-4.6750	-10.557	-9.5224	-598.01E-6
8	Loading - 2FA	37.52464	55.78655	-4.21000	-36.55990	-4.6750	16.027	28.807	748.36E-6
9	Loading - 2FB	43.22027	39.42394	-4.21000	2.65534	-4.6750	19.007	34.124	887.97E-6

Results : Consolidation : Load Centres : Polygonal

None

Results : Total : Load Centres : Polygonal

None

Results : Immediate : Displacement Data : Lines

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
1	18B.01	27.06970	56.10310	0.00000	-2.01261	-0.083333	-1.3325E-6	-0.019417	388.17E-9
1	18B.01	27.56478	56.10310	0.00000	-2.23258	-0.083333	-1.6448E-6	-0.021874	437.28E-9
1	18B.01	28.05986	56.10310	0.00000	-2.48256	-0.083333	-2.0472E-6	-0.024747	494.69E-9
1	18B.01	28.55494	56.10310	0.00000	-2.76807	-0.083333	-2.5706E-6	-0.028121	562.11E-9
1	18B.01	29.05002	56.10310	0.00000	-3.09612	-0.083333	-3.2579E-6	-0.032103	641.68E-9
1	18B.01	29.54510	56.10310	0.00000	-3.47573	-0.083333	-4.1693E-6	-0.036825	736.00E-9
1	18B.01	30.04018	56.10310	0.00000	-3.91894	-0.083333	-5.3903E-6	-0.042448	848.31E-9
1	18B.01	30.53526	56.10310	0.00000	-4.44243	-0.083333	-7.0417E-6	-0.049168	982.52E-9
1	18B.01	31.03034	56.10310	0.00000	-5.07040	-0.083333	-9.2947E-6	-0.057224	1.1434E-6
1	18B.01	31.52542	56.10310	0.00000	-5.83984	-0.083333	-12.389E-6	-0.066893	1.3364E-6
1	18B.01	32.02050	56.10310	0.00000	-6.80951	-0.083333	-16.652E-6	-0.078483	1.5677E-6
2	18B.02	32.02050	56.10310	0.00000	-6.80951	-0.083333	-16.652E-6	-0.078483	1.5677E-6
2	18B.02	32.02045	55.63408	0.00000	-7.02412	-0.083333	-22.091E-6	-0.090572	1.8088E-6
2	18B.02	32.02040	55.16507	0.00000	-7.19710	-0.083333	-29.412E-6	-0.10463	2.0891E-6
2	18B.02	32.02035	54.69605	0.00000	-7.32890	-0.083333	-39.050E-6	-0.12070	2.4093E-6
2	18B.02	32.02030	54.22703	0.00000	-7.42112	-0.083333	-51.220E-6	-0.13855	2.7648E-6
2	18B.02	32.02025	53.75802	0.00000	-7.47641	-0.083333	-65.601E-6	-0.15753	3.1427E-6
2	18B.02	32.02020	53.28900	0.00000	-7.49795	-0.083333	-81.101E-6	-0.17651	3.5204E-6
3	18B.03	32.02020	53.28900	0.00000	-7.49795	-0.083333	-81.101E-6	-0.17651	3.5204E-6

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
3	18B.03	32.39997	53.28902	0.00000	-8.44630	-0.083333	-131.63E-6	-0.22436	4.4714E-6
3	18B.03	32.77973	53.28903	0.00000	-9.57644	-0.083333	-230.31E-6	-0.29365	5.8454E-6
3	18B.03	33.15950	53.28905	0.00000	-10.93867	-0.083333	-449.16E-6	-0.40022	7.9505E-6
3	18B.03	33.53927	53.28907	0.00000	-12.59636	-0.083333	-0.0010388	-0.57981	11.472E-6
3	18B.03	33.91903	53.28908	0.00000	-14.62556	-0.083333	-0.0032586	-0.93355	18.280E-6
3	18B.03	34.29880	53.28910	0.00000	-17.19952	-0.083333	-0.020383	-1.9002	35.558E-6
4	18B.04	34.29880	53.28910	0.00000	-17.19952	-0.083333	-0.020383	-1.9002	35.558E-6
4	18B.04	34.29881	52.82397	0.00000	-16.91811	-0.083333	-0.036036	-2.7751	51.179E-6
4	18B.04	34.29882	52.35885	0.00000	-16.58296	-0.083333	-0.039582	-3.1819	58.889E-6
4	18B.04	34.29883	51.89372	0.00000	-16.23136	-0.083333	-0.040638	-3.3654	62.432E-6
4	18B.04	34.29883	51.42860	0.00000	-15.83237	-0.083333	-0.041185	-3.4450	63.957E-6
4	18B.04	34.29884	50.96347	0.00000	-15.39863	-0.083333	-0.041548	-3.4564	64.141E-6
4	18B.04	34.29885	50.49835	0.00000	-14.93553	-0.083333	-0.041722	-3.3988	62.970E-6
4	18B.04	34.29886	50.03323	0.00000	-14.39229	-0.083333	-0.041357	-3.2340	59.718E-6
4	18B.04	34.29887	49.56810	0.00000	-13.74287	-0.083333	-0.038253	-2.8330	52.069E-6
4	18B.04	34.29888	49.10298	0.00000	-12.98546	-0.083333	-0.021310	-1.9243	35.929E-6
4	18B.04	34.29888	48.63785	0.00000	-12.21324	-0.083333	-0.0045358	-1.0157	19.769E-6
4	18B.04	34.29889	48.17272	0.00000	-11.51596	-0.083333	-0.0011775	-0.59565	11.772E-6
4	18B.04	34.29890	47.70760	0.00000	-10.89451	-0.083333	-437.41E-6	-0.39411	7.8297E-6
4	18B.04	34.29891	47.24247	0.00000	-10.33772	-0.083333	-203.20E-6	-0.28140	5.6036E-6
4	18B.04	34.29892	46.77735	0.00000	-9.83110	-0.083333	-108.78E-6	-0.21121	4.2112E-6
4	18B.04	34.29892	46.31222	0.00000	-9.36247	-0.083333	-64.105E-6	-0.16419	3.2761E-6
4	18B.04	34.29893	45.84710	0.00000	-8.91444	-0.083333	-40.472E-6	-0.13099	2.6150E-6
4	18B.04	34.29894	45.38197	0.00000	-8.47330	-0.083333	-26.907E-6	-0.10663	2.1293E-6
4	18B.04	34.29895	44.91685	0.00000	-8.03074	-0.083333	-18.621E-6	-0.088198	1.7617E-6
4	18B.04	34.29896	44.45172	0.00000	-7.57687	-0.083333	-13.306E-6	-0.073923	1.4769E-6
4	18B.04	34.29897	43.98660	0.00000	-7.09899	-0.083333	-9.7596E-6	-0.062648	1.2518E-6
4	18B.04	34.29897	43.52148	0.00000	-6.57861	-0.083333	-7.3164E-6	-0.053597	1.0711E-6
4	18B.04	34.29898	43.05635	0.00000	-5.98606	-0.083333	-5.5870E-6	-0.046232	923.98E-9
4	18B.04	34.29899	42.59123	0.00000	-5.28386	-0.083333	-4.3345E-6	-0.040169	802.86E-9
4	18B.04	34.29900	42.12610	0.00000	-4.49832	-0.083333	-3.4095E-6	-0.035126	702.12E-9
5	18B.05	34.29900	42.12610	0.00000	-4.49832	-0.083333	-3.4095E-6	-0.035126	702.12E-9
5	18B.05	33.84477	42.12246	0.00000	-4.02029	-0.083333	-3.1128E-6	-0.033194	663.50E-9
5	18B.05	33.39054	42.11881	0.00000	-3.63784	-0.083333	-2.8225E-6	-0.031254	624.74E-9
5	18B.05	32.93631	42.11517	0.00000	-3.31120	-0.083333	-2.5433E-6	-0.029333	586.36E-9
5	18B.05	32.48208	42.11153	0.00000	-3.02460	-0.083333	-2.2790E-6	-0.027452	548.78E-9
5	18B.05	32.02784	42.10788	0.00000	-2.76948	-0.083333	-2.0324E-6	-0.025630	512.35E-9
5	18B.05	31.57361	42.10424	0.00000	-2.54045	-0.083333	-1.8050E-6	-0.023880	477.38E-9
5	18B.05	31.11938	42.10059	0.00000	-2.33379	-0.083333	-1.5976E-6	-0.022213	444.06E-9
5	18B.05	30.66515	42.09695	0.00000	-2.14670	-0.083333	-1.4103E-6	-0.020635	412.54E-9
5	18B.05	30.21092	42.09331	0.00000	-1.97695	-0.083333	-1.2424E-6	-0.019152	382.88E-9
5	18B.05	29.75669	42.08966	0.00000	-1.82262	-0.083333	-1.0930E-6	-0.017763	355.13E-9
5	18B.05	29.30246	42.08602	0.00000	-1.68208	-0.083333	-960.65E-9	-0.016469	329.26E-9
5	18B.05	28.84822	42.08237	0.00000	-1.55387	-0.083333	-843.98E-9	-0.015267	305.24E-9
5	18B.05	28.39399	42.07873	0.00000	-1.43671	-0.083333	-741.47E-9	-0.014154	282.98E-9
5	18B.05	27.93976	42.07509	0.00000	-1.32947	-0.083333	-651.63E-9	-0.013125	262.42E-9
5	18B.05	27.48553	42.07144	0.00000	-1.23116	-0.083333	-573.03E-9	-0.012175	243.44E-9
5	18B.05	27.03130	42.06780	0.00000	-1.14089	-0.083333	-504.36E-9	-0.011301	225.95E-9
6	18B.06	27.03130	42.06780	0.00000	-1.14089	-0.083333	-504.36E-9	-0.011301	225.95E-9
6	18B.06	27.03130	42.43965	0.00000	-1.19019	-0.083333	-551.38E-9	-0.011883	237.60E-9
6	18B.06	27.03130	42.81150	0.00000	-1.24008	-0.083333	-602.64E-9	-0.012492	249.77E-9
7	18B.07	27.03130	42.81150	0.00000	-1.24008	-0.083333	-602.64E-9	-0.012492	249.77E-9
7	18B.07	27.03267	43.28620	0.00000	-1.30472	-0.083333	-674.92E-9	-0.013312	266.15E-9
7	18B.07	27.03404	43.76090	0.00000	-1.36981	-0.083333	-755.07E-9	-0.014173	283.38E-9
7	18B.07	27.03541	44.23560	0.00000	-1.43503	-0.083333	-843.43E-9	-0.015075	301.40E-9
7	18B.07	27.03679	44.71030	0.00000	-1.50002	-0.083333	-940.17E-9	-0.016012	320.14E-9
7	18B.07	27.03816	45.18500	0.00000	-1.56442	-0.083333	-1.0452E-6	-0.016980	339.48E-9
7	18B.07	27.03953	45.65970	0.00000	-1.62787	-0.083333	-1.1579E-6	-0.017970	359.26E-9
7	18B.07	27.04090	46.13440	0.00000	-1.68997	-0.083333	-1.2776E-6	-0.018972	379.28E-9
7	18B.07	27.04227	46.60910	0.00000	-1.75035	-0.083333	-1.4026E-6	-0.019973	399.29E-9
7	18B.07	27.04364	47.08380	0.00000	-1.80858	-0.083333	-1.5310E-6	-0.020959	418.99E-9
7	18B.07	27.04501	47.55850	0.00000	-1.86425	-0.083333	-1.6600E-6	-0.021912	438.05E-9
7	18B.07	27.04639	48.03320	0.00000	-1.91693	-0.083333	-1.7865E-6	-0.022814	456.07E-9
7	18B.07	27.04776	48.50790	0.00000	-1.96617	-0.083333	-1.9066E-6	-0.023645	472.67E-9
7	18B.07	27.04913	48.98260	0.00000	-2.01154	-0.083333	-2.0164E-6	-0.024384	487.43E-9
7	18B.07	27.05050	49.45730	0.00000	-2.05260	-0.083333	-2.1117E-6	-0.025011	499.97E-9
7	18B.07	27.05187	49.93200	0.00000	-2.08892	-0.083333	-2.1887E-6	-0.025509	509.92E-9
7	18B.07	27.05324	50.40670	0.00000	-2.12009	-0.083333	-2.2441E-6	-0.025862	516.98E-9
7	18B.07	27.05461	50.88140	0.00000	-2.14576	-0.083333	-2.2754E-6	-0.026060	520.93E-9
7	18B.07	27.05599	51.35610	0.00000	-2.16558	-0.083333	-2.2811E-6	-0.026097	521.66E-9
7	18B.07	27.05736	51.83080	0.00000	-2.17928	-0.083333	-2.2611E-6	-0.025970	519.13E-9
7	18B.07	27.05873	52.30550	0.00000	-2.18664	-0.083333	-2.2161E-6	-0.025684	513.42E-9
7	18B.07	27.06010	52.78020	0.00000	-2.18749	-0.083333	-2.1483E-6	-0.025249	504.72E-9
7	18B.07	27.06147	53.25490	0.00000	-2.18174	-0.083333	-2.0607E-6	-0.024677	493.29E-9
7	18B.07	27.06284	53.72960	0.00000	-2.16937	-0.083333	-1.9568E-6	-0.023985	479.47E-9
7	18B.07	27.06421	54.20430	0.00000	-2.15043	-0.083333	-1.8408E-6	-0.023193	463.64E-9
7	18B.07	27.06559	54.67900	0.00000	-2.12504	-0.083333	-1.7166E-6	-0.022320	446.19E-9
7	18B.07	27.06696	55.15370	0.00000	-2.09341	-0.083333	-1.5883E-6	-0.021387	427.55E-9
7	18B.07	27.06833	55.62840	0.00000	-2.05582	-0.083333	-1.4593E-6	-0.020413	408.09E-9
7	18B.07	27.06970	56.10310	0.00000	-2.01261	-0.083333	-1.3325E-6	-0.019417	388.17E-9
8	20FG.01	21.02660	64.09150	0.00000	-0.38575	-0.083333	-64.576E-9	-0.0034049	68.090E-9
8	20FG.01	21.43170	64.00876	0.00000	-0.41341	-0.083333	-70.567E-9	-0.0035881	71.753E-9
8	20FG.01	21.83680	63.92602	0.00000	-0.44309	-0.083333	-77.211E-9	-0.0037839	75.668E-9
8	20FG.01	22.24190	63.84329	0.00000	-0.47494	-0.083333	-84.588E-9	-0.0039933	79.856E-9
8	20FG.01	22.64700	63.76055	0.00000	-0.50914	-0.083333	-92.791E-9	-0.0042174	84.338E-9
8	20FG.01	23.05210	63.67781	0.00000	-0.54588	-0.083333	-101.92E-9	-0.0044576	89.139E-9
8	20FG.01	23.45720	63.59508	0.00000	-0.58536	-0.083333	-112.10E-9	-0.0047149	94.285E-9
8	20FG.01	23.86230	63.51234	0.00000	-0.62783	-0.083333	-123.46E-9	-0.0049910	99.805E-9
8	20FG.01	24.26740	63.42960	0.00000	-0.67352	-0.083333	-136.15E-9	-0.0052873	105.73E-9
9	20FG.02	24.26740	63.42960	0.00000	-0.67352	-0.083333	-136.15E-9	-0.0052873	105.73E-9
9	20FG.02	24.20781	62.93449	0.00000	-0.70172	-0.083333	-147.27E-9	-0.0055315	110.61E-9
9	20FG.02	24.14823	62.43939	0.00000	-0.72967	-0.083333	-159.12E-9	-0.0057825	115.63E-9
9	20FG.02	24.08864	61.94428	0.00000	-0.75718	-0.083333	-171.68E-9	-0.0060395	120.77E-9
9	20FG.02	24.02905	61.44917	0.00000	-0.78407	-0.083333	-184.94E-9	-0.0063015	126.01E-9
9	20FG.02	23.96946	60.95407	0.00000	-0.81012	-0.083333	-198.84E-9	-0.0065673	131.32E-9
9	20FG.02	23.90987	60.45896	0.00000	-0.83515	-0.083333	-213.33E-9	-0.0068353	136.68E-9
9	20FG.02	23.85029	59.96386	0.00000	-0.85894	-0.083333	-228.33E-9	-0.0071039	142.05E-9
9	20FG.02	23.79070	59.46875	0.00000	-0.88130	-0.083333	-243.73E-9	-0.0073712	147.40E-9
9	20FG.02	23.73111	58.97364	0.00000	-0.90202	-0.083333	-259.38E-9	-0.0076350	152.67E-9
9	20FG.02	23.67152	58.47854	0.00000	-0.92093	-0.083333	-275.12E-9	-0.0078928	157.82E-9
9	20FG.02	23.61194	57.98343	0.00000	-0.93787	-0.083333	-290.76E-9	-0.0081421	162.81E-9
9	20FG.02	23.55235	57.48833	0.00000	-0.95268	-0.083333	-306.07E-9	-0.0083801	167.56E-9
9	20FG.02	23.49276	56.99322	0.00000	-0.96523	-0.083333	-320.82E-9	-0.0086039	172.04E-9
9	20FG.02	23.43317	56.49811	0.00000	-0.97542	-0.083333	-334.74E-9	-0.0088107	176.17E-9
9	20FG.02	23.37359	56.00301	0.00000	-0.98318	-0.083333	-347.58E-9	-0.0089975	179.91E-9
9	20FG.02	23.31400	55.50790	0.00000	-0.98843	-0.083333	-359.07E-9	-0.0091617	183.19E-9
10	20FG.03	23.31400	55.50790	0.00000	-0.98843	-0.083333	-359.07E-9	-0.0091617	183.19E-9
10	20FG.03	23.57895	55.53095	0.00000	-1.03784	-0.083333	-391.29E-9	-0.0096269	192.49E-9
10	20FG.03	23.84390	55.55400	0.00000	-1.09001	-0.083333	-426.98E-9	-0.010123	202.42E-9
10	20FG.03	24.10885	55.57705	0.00000	-1.14514	-0.083333	-466.60E-9	-0.010654	213.02E-9
10	20FG.03	24.37380	55.60010	0.00000	-1.20342	-0.083333	-510.65E-9	-0.011221	224.35E-9
11	20FG.04	24.37380	55.60010	0.00000	-1.20342	-0.083333	-510.65E-9	-0.011221	224.35E-9
11	20FG.04	24.28428	55.19303	0.00000	-1.19830	-0.083333	-518.04E-9	-0.011307	226.07E-9
11	20FG.04	24.19477	54.78597	0.00000	-1.19092	-0.083333	-523.11E-9	-0.011364	227.21E-9
11	20FG.04	24.10525	54.37890	0.00000	-1.18138	-0.083333	-525.75E-9	-0.011391	227.76E-9
11	20FG.04	24.01573	53.97183	0.00000	-1.16976	-0.083333	-525.91E-9	-0.011388	227.70E-9
11	20FG.04	23.92622	53.56477	0.00000	-1.15617	-0.083333	-523.59E-9	-0.011355	227.04E-9
11	20FG.04	23.83670	53.15770	0.00000	-1.14071	-0.083333	-518.81E-9	-0.011292	225.79E-9
12	20FG.05	23.83670	53.15770	0.00000	-1.14071	-0.083333	-518.81E-9	-0.011292	225.79E-9
12	20FG.05	24.13020	53.18325	0.00000	-1.20668	-0.083333	-578.47E-9	-0.012018	240.29E-9
12	20FG.05	24.42370	53.20880	0.00000	-1.27703	-0.083333	-646.63E-9	-0.012808	256.08E-9
13	20FG.06	24.42370	53.20880	0.00000	-1.27703	-0.083333	-646.63E-9	-0.012808	256.08E-9
13	20FG.06	24.35847	52.82555	0.00000	-1.26364	-0.083333	-643.66E-9	-0.012771	255.35E-9
13	20FG.06	24.29325	52.44230	0.00000	-1.24841	-0.083333	-637.84E-9	-0.012703	253.98E-9
13	20FG.06	24.22803	52.05905	0.00000	-1.23146	-0.083333	-629.28E-9	-0.012603	251.99E-9
13	20FG.06	24.16280	51.67580	0.00000	-1.21289	-0.083333	-618.13E-9	-0.012474	249.41E-9
13	20FG.06	24.09757	51.29255	0.00000	-1.19283	-0.083333	-604.60E-9	-0.012317	246.27E-9
13	20FG.06	24.03235	50.90930	0.00000	-1.17139	-0.083333	-588.93E-9	-0.012134	242.61E-9
13	20FG.06	23.96712	50.52605	0.00000	-1.14870	-0.083333	-571.36E-9	-0.011927	238.46E-9
13	20FG.06	23.90190	50.14280	0.00000	-1.12488	-0.083333	-552.20E-9	-0.011698	233.89E-9

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
14	20FG.07	23.90190	50.14280	0.00000	-1.12488	-0.083333	-552.20E-9	-0.011698	233.89E-9
14	20FG.07	24.16280	50.16550	0.00000	-1.18279	-0.083333	-610.73E-9	-0.012391	247.74E-9
14	20FG.07	24.42370	50.18820	0.00000	-1.24411	-0.083333	-677.02E-9	-0.013141	262.74E-9
15	20FG.08	24.42370	50.18820	0.00000	-1.24411	-0.083333	-677.02E-9	-0.013141	262.74E-9
15	20FG.08	24.41686	49.74254	0.00000	-1.22766	-0.083333	-664.08E-9	-0.013000	259.92E-9
15	20FG.08	24.41001	49.29689	0.00000	-1.20900	-0.083333	-647.63E-9	-0.012819	256.30E-9
15	20FG.08	24.40317	48.85123	0.00000	-1.18827	-0.083333	-628.07E-9	-0.012601	251.94E-9
15	20FG.08	24.39632	48.40558	0.00000	-1.16561	-0.083333	-605.83E-9	-0.012349	246.91E-9
15	20FG.08	24.38948	47.95992	0.00000	-1.14120	-0.083333	-581.40E-9	-0.012068	241.29E-9
15	20FG.08	24.38263	47.51427	0.00000	-1.11519	-0.083333	-555.26E-9	-0.011761	235.16E-9
15	20FG.08	24.37579	47.06861	0.00000	-1.08776	-0.083333	-527.90E-9	-0.011433	228.60E-9
15	20FG.08	24.36894	46.62296	0.00000	-1.05906	-0.083333	-499.78E-9	-0.011087	221.69E-9
15	20FG.08	24.36210	46.17730	0.00000	-1.02927	-0.083333	-471.31E-9	-0.010728	214.51E-9
15	20FG.08	24.35526	45.73164	0.00000	-0.99856	-0.083333	-442.89E-9	-0.010360	207.14E-9
15	20FG.08	24.34841	45.28599	0.00000	-0.96708	-0.083333	-414.83E-9	-0.0099851	199.65E-9
15	20FG.08	24.34157	44.84033	0.00000	-0.93500	-0.083333	-387.43E-9	-0.0096077	192.11E-9
15	20FG.08	24.33472	44.39468	0.00000	-0.90248	-0.083333	-360.89E-9	-0.0092306	184.57E-9
15	20FG.08	24.32788	43.94902	0.00000	-0.86967	-0.083333	-335.40E-9	-0.0088561	177.08E-9
15	20FG.08	24.32103	43.50337	0.00000	-0.83671	-0.083333	-311.09E-9	-0.0084866	169.69E-9
15	20FG.08	24.31419	43.05771	0.00000	-0.80374	-0.083333	-288.04E-9	-0.0081238	162.44E-9
15	20FG.08	24.30734	42.61206	0.00000	-0.77089	-0.083333	-266.29E-9	-0.0077694	155.36E-9
15	20FG.08	24.30050	42.16640	0.00000	-0.73828	-0.083333	-245.88E-9	-0.0074244	148.46E-9
16	20FG.09	24.30050	42.16640	0.00000	-0.73828	-0.083333	-245.88E-9	-0.0074244	148.46E-9
16	20FG.09	23.88700	42.24533	0.00000	-0.69595	-0.083333	-223.80E-9	-0.0070254	140.48E-9
16	20FG.09	23.47350	42.32425	0.00000	-0.65594	-0.083333	-203.74E-9	-0.0066488	132.95E-9
16	20FG.09	23.06000	42.40318	0.00000	-0.61812	-0.083333	-185.55E-9	-0.0062937	125.85E-9
16	20FG.09	22.64650	42.48210	0.00000	-0.58239	-0.083333	-169.06E-9	-0.0059591	119.16E-9
16	20FG.09	22.23300	42.56103	0.00000	-0.54862	-0.083333	-154.11E-9	-0.0056440	112.86E-9
16	20FG.09	21.81950	42.63995	0.00000	-0.51671	-0.083333	-140.57E-9	-0.0053474	106.93E-9
16	20FG.09	21.40600	42.71888	0.00000	-0.48658	-0.083333	-128.30E-9	-0.0050683	101.35E-9
16	20FG.09	20.99250	42.79780	0.00000	-0.45811	-0.083333	-117.19E-9	-0.0048057	96.100E-9
17	20FG.10	20.99250	42.79780	0.00000	-0.45811	-0.083333	-117.19E-9	-0.0048057	96.100E-9
17	20FG.10	21.07865	43.03513	0.00000	-0.47297	-0.083333	-123.13E-9	-0.0049453	98.891E-9
17	20FG.10	21.16480	43.27245	0.00000	-0.48820	-0.083333	-129.39E-9	-0.0050891	101.77E-9
17	20FG.10	21.25095	43.50978	0.00000	-0.50379	-0.083333	-135.97E-9	-0.0052373	104.73E-9
17	20FG.10	21.33710	43.74710	0.00000	-0.51976	-0.083333	-142.90E-9	-0.0053899	107.78E-9
18	20FG.11	21.33710	43.74710	0.00000	-0.51976	-0.083333	-142.90E-9	-0.0053899	107.78E-9
18	20FG.11	20.86376	43.83723	0.00000	-0.48393	-0.083333	-127.99E-9	-0.0050530	101.05E-9
18	20FG.11	20.39042	43.92736	0.00000	-0.45050	-0.083333	-114.79E-9	-0.0047410	94.806E-9
18	20FG.11	19.91708	44.01748	0.00000	-0.41931	-0.083333	-103.11E-9	-0.0044518	89.023E-9
18	20FG.11	19.44374	44.10761	0.00000	-0.39020	-0.083333	-92.748E-9	-0.0041837	83.663E-9
18	20FG.11	18.97041	44.19774	0.00000	-0.36304	-0.083333	-83.552E-9	-0.0039350	78.690E-9
18	20FG.11	18.49707	44.28787	0.00000	-0.33769	-0.083333	-75.379E-9	-0.0037042	74.075E-9
18	20FG.11	18.02373	44.37799	0.00000	-0.31403	-0.083333	-68.106E-9	-0.0034898	69.789E-9
18	20FG.11	17.55039	44.46812	0.00000	-0.29195	-0.083333	-61.625E-9	-0.0032906	65.805E-9
18	20FG.11	17.07705	44.55825	0.00000	-0.27134	-0.083333	-55.841E-9	-0.0031053	62.100E-9
18	20FG.11	16.60371	44.64838	0.00000	-0.25211	-0.083333	-50.674E-9	-0.0029329	58.652E-9
18	20FG.11	16.13037	44.73851	0.00000	-0.23416	-0.083333	-46.050E-9	-0.0027723	55.440E-9
18	20FG.11	15.65703	44.82863	0.00000	-0.21740	-0.083333	-41.907E-9	-0.0026225	52.446E-9
18	20FG.11	15.18369	44.91876	0.00000	-0.20175	-0.083333	-38.190E-9	-0.0024829	49.653E-9
18	20FG.11	14.71036	45.00889	0.00000	-0.18715	-0.083333	-34.850E-9	-0.0023525	47.045E-9
18	20FG.11	14.23702	45.09902	0.00000	-0.17352	-0.083333	-31.845E-9	-0.0022306	44.608E-9
18	20FG.11	13.76368	45.18914	0.00000	-0.16080	-0.083333	-29.137E-9	-0.0021167	42.330E-9
18	20FG.11	13.29034	45.27927	0.00000	-0.14892	-0.083333	-26.694E-9	-0.0020100	40.197E-9
18	20FG.11	12.81700	45.36940	0.00000	-0.13784	-0.083333	-24.486E-9	-0.0019101	38.200E-9
19	20FG.12	12.81700	45.36940	0.00000	-0.13784	-0.083333	-24.486E-9	-0.0019101	38.200E-9
19	20FG.12	12.91528	45.83612	0.00000	-0.14295	-0.083333	-25.447E-9	-0.0019537	39.072E-9
19	20FG.12	13.01355	46.30284	0.00000	-0.14806	-0.083333	-26.415E-9	-0.0019970	39.937E-9
19	20FG.12	13.11183	46.76955	0.00000	-0.15317	-0.083333	-27.387E-9	-0.0020397	40.792E-9
19	20FG.12	13.21011	47.23627	0.00000	-0.15825	-0.083333	-28.359E-9	-0.0020819	41.634E-9
19	20FG.12	13.30839	47.70299	0.00000	-0.16329	-0.083333	-29.326E-9	-0.0021232	42.461E-9
19	20FG.12	13.40666	48.16971	0.00000	-0.16828	-0.083333	-30.284E-9	-0.0021636	43.268E-9
19	20FG.12	13.50494	48.63643	0.00000	-0.17319	-0.083333	-31.227E-9	-0.0022029	44.054E-9
19	20FG.12	13.60322	49.10315	0.00000	-0.17801	-0.083333	-32.151E-9	-0.0022409	44.813E-9
19	20FG.12	13.70150	49.56986	0.00000	-0.18273	-0.083333	-33.050E-9	-0.0022774	45.544E-9
19	20FG.12	13.79977	50.03658	0.00000	-0.18731	-0.083333	-33.919E-9	-0.0023123	46.243E-9
19	20FG.12	13.89805	50.50330	0.00000	-0.19176	-0.083333	-34.751E-9	-0.0023455	46.905E-9
19	20FG.12	13.99633	50.97002	0.00000	-0.19604	-0.083333	-35.541E-9	-0.0023767	47.529E-9
19	20FG.12	14.09460	51.43674	0.00000	-0.20014	-0.083333	-36.283E-9	-0.0024057	48.110E-9
19	20FG.12	14.19288	51.90345	0.00000	-0.20404	-0.083333	-36.972E-9	-0.0024325	48.646E-9
19	20FG.12	14.29116	52.37017	0.00000	-0.20773	-0.083333	-37.603E-9	-0.0024569	49.134E-9
19	20FG.12	14.38944	52.83689	0.00000	-0.21118	-0.083333	-38.170E-9	-0.0024787	49.570E-9
19	20FG.12	14.48771	53.30361	0.00000	-0.21438	-0.083333	-38.669E-9	-0.0024979	49.953E-9
19	20FG.12	14.58599	53.77033	0.00000	-0.21731	-0.083333	-39.096E-9	-0.0025143	50.281E-9
19	20FG.12	14.68427	54.23705	0.00000	-0.21997	-0.083333	-39.447E-9	-0.0025278	50.550E-9
19	20FG.12	14.78255	54.70376	0.00000	-0.22232	-0.083333	-39.719E-9	-0.0025383	50.761E-9
19	20FG.12	14.88082	55.17048	0.00000	-0.22437	-0.083333	-39.911E-9	-0.0025458	50.911E-9
19	20FG.12	14.97910	55.63720	0.00000	-0.22609	-0.083333	-40.019E-9	-0.0025502	50.999E-9
20	20FG.13	14.97910	55.63720	0.00000	-0.22609	-0.083333	-40.019E-9	-0.0025502	50.999E-9
20	20FG.13	14.53283	55.76250	0.00000	-0.20868	-0.083333	-36.264E-9	-0.0024067	48.129E-9
20	20FG.13	14.08655	55.88780	0.00000	-0.19256	-0.083333	-32.927E-9	-0.0022737	45.471E-9
20	20FG.13	13.64028	56.01310	0.00000	-0.17765	-0.083333	-29.953E-9	-0.0021505	43.007E-9
20	20FG.13	13.19400	56.13840	0.00000	-0.16383	-0.083333	-27.299E-9	-0.0020361	40.719E-9
21	20FG.14	13.19400	56.13840	0.00000	-0.16383	-0.083333	-27.299E-9	-0.0020361	40.719E-9
21	20FG.14	13.27410	56.53937	0.00000	-0.16447	-0.083333	-27.282E-9	-0.0020356	40.708E-9
21	20FG.14	13.35420	56.94033	0.00000	-0.16493	-0.083333	-27.229E-9	-0.0020335	40.667E-9
21	20FG.14	13.43430	57.34130	0.00000	-0.16522	-0.083333	-27.141E-9	-0.0020299	40.594E-9
21	20FG.14	13.51440	57.74227	0.00000	-0.16534	-0.083333	-27.018E-9	-0.0020247	40.492E-9
21	20FG.14	13.59450	58.14323	0.00000	-0.16527	-0.083333	-26.860E-9	-0.0020181	40.358E-9
21	20FG.14	13.67460	58.54420	0.00000	-0.16503	-0.083333	-26.670E-9	-0.0020099	40.196E-9
22	20FG.15	13.67460	58.54420	0.00000	-0.16503	-0.083333	-26.670E-9	-0.0020099	40.196E-9
22	20FG.15	14.12543	58.46229	0.00000	-0.17894	-0.083333	-29.207E-9	-0.0021206	42.409E-9
22	20FG.15	14.57626	58.38039	0.00000	-0.19396	-0.083333	-32.040E-9	-0.0022396	44.788E-9
22	20FG.15	15.02709	58.29848	0.00000	-0.21019	-0.083333	-35.212E-9	-0.0023677	47.350E-9
22	20FG.15	15.47791	58.21657	0.00000	-0.22774	-0.083333	-38.771E-9	-0.0025058	50.111E-9
22	20FG.15	15.92874	58.13466	0.00000	-0.24673	-0.083333	-42.773E-9	-0.0026549	53.093E-9
22	20FG.15	16.37957	58.05276	0.00000	-0.26729	-0.083333	-47.285E-9	-0.0028162	56.318E-9
22	20FG.15	16.83040	57.97085	0.00000	-0.28955	-0.083333	-52.383E-9	-0.0029909	59.811E-9
22	20FG.15	17.28123	57.88894	0.00000	-0.31368	-0.083333	-58.161E-9	-0.0031804	63.600E-9
22	20FG.15	17.73206	57.80704	0.00000	-0.33985	-0.083333	-64.725E-9	-0.0033863	67.719E-9
22	20FG.15	18.18289	57.72513	0.00000	-0.36826	-0.083333	-72.206E-9	-0.0036106	72.203E-9
22	20FG.15	18.63371	57.64322	0.00000	-0.39911	-0.083333	-80.757E-9	-0.0038552	77.094E-9
22	20FG.15	19.08454	57.56131	0.00000	-0.43264	-0.083333	-90.562E-9	-0.0041226	82.441E-9
22	20FG.15	19.53537	57.47941	0.00000	-0.46914	-0.083333	-101.84E-9	-0.0044154	88.296E-9
22	20FG.15	19.98620	57.39750	0.00000	-0.50888	-0.083333	-114.86E-9	-0.0047369	94.724E-9
23	20FG.16	19.98620	57.39750	0.00000	-0.50888	-0.083333	-114.86E-9	-0.0047369	94.724E-9
23	20FG.16	20.06051	57.87564	0.00000	-0.50508	-0.083333	-112.02E-9	-0.0046702	93.390E-9
23	20FG.16	20.13483	58.35379	0.00000	-0.50034	-0.083333	-108.92E-9	-0.0045965	91.917E-9
23	20FG.16	20.20914	58.83193	0.00000	-0.49468	-0.083333	-105.61E-9	-0.0045164	90.316E-9
23	20FG.16	20.28346	59.31007	0.00000	-0.48813	-0.083333	-102.11E-9	-0.0044307	88.602E-9
23	20FG.16	20.35777	59.78821	0.00000	-0.48075	-0.083333	-98.471E-9	-0.0043400	86.788E-9
23	20FG.16	20.43209	60.26636	0.00000	-0.47258	-0.083333	-94.727E-9	-0.0042449	84.887E-9
23	20FG.16	20.50640	60.74450	0.00000	-0.46367	-0.083333	-90.912E-9	-0.0041462	82.914E-9
23	20FG.16	20.58071	61.22264	0.00000	-0.45407	-0.083333	-87.058E-9	-0.0040445	80.881E-9
23	20FG.16	20.65503	61.70079	0.00000	-0.44386	-0.083333	-83.194E-9	-0.0039405	78.800E-9
23	20FG.16	20.72934	62.17893	0.00000	-0.43309	-0.083333	-79.348E-9	-0.0038347	76.685E-9
23	20FG.16	20.80366	62.65707	0.00000	-0.42183	-0.083333	-75.544E-9	-0.0037278	74.547E-9
23	20FG.16	20.87797	63.13521	0.00000	-0.41014	-0.083333	-71.802E-9	-0.0036202	72.395E-9
23	20FG.16	20.95229	63.61336	0.00000	-0.39809	-0.083333	-68.141E-9	-0.0035124	70.240E-9
23	20FG.16	21.02660	64.09150	0.00000	-0.38575	-0.083333	-64.576E-9	-0.0034049	68.090E-9
24	17HW.A01	58.70070	56.44780	0.00000	-0.50630	-0.083333	-117.44E-9	-0.0047949	95.885E-9
24	17HW.A01	59.17122	56.40603	0.00000	-0.46606	-0.083333	-104.39E-9	-0.0044761	89.509E-9
24	17HW.A01	59.64174	56.36426	0.00000	-0.42914	-0.083333	-93.021E-9	-0.0041842	83.674E-9
24	17HW.A01	60.11227	56.32248	0.00000	-0.39523	-0.083333	-83.092E-9	-0.0039167	78.325E-9
24	17HW.A01	60.58279	56.28071	0.00000	-0.36407	-0.083333	-74.395E-9	-0.0036711	73.413E-9
24	17HW.A01	61.05331	56.23894	0.00000	-0.33540	-0.083333	-66.758E-9	-0.0034452	68.897E-9
24	17HW.A01	61.52383	56.19717	0.00000	-0.30902	-0.083333	-60.034E-9	-0.0032372	64.737E-9
24	17HW.A01	61.99436	56.15539	0.00000	-0.28472	-0.083333	-54.100E-9	-0.0030453	60.899E-9
24	17HW.A01	62.46488	56.11362	0.00000	-0.26233	-0.083333	-48.850E-9	-0.0028680	57.355E-9
24	17HW.A01	62.93540	56.07185	0.00000	-0.24169	-0.083333	-44.196E-9	-0.0027041	54.076E-9

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
24	17HW.A01	63.40592	56.03008	0.00000	-0.22264	-0.083333	-40.060E-9	-0.0025522	51.039E-9
24	17HW.A01	63.87644	55.98831	0.00000	-0.20506	-0.083333	-36.377E-9	-0.0024113	48.223E-9
24	17HW.A01	64.34697	55.94653	0.00000	-0.18882	-0.083333	-33.090E-9	-0.0022805	45.607E-9
24	17HW.A01	64.81749	55.90476	0.00000	-0.17382	-0.083333	-30.151E-9	-0.0021589	43.174E-9
24	17HW.A01	65.28801	55.86299	0.00000	-0.15995	-0.083333	-27.519E-9	-0.0020457	40.910E-9
24	17HW.A01	65.75853	55.82122	0.00000	-0.14713	-0.083333	-25.156E-9	-0.0019401	38.800E-9
24	17HW.A01	66.22906	55.77944	0.00000	-0.13527	-0.083333	-23.031E-9	-0.0018417	36.831E-9
24	17HW.A01	66.69958	55.73767	0.00000	-0.12430	-0.083333	-21.117E-9	-0.0017497	34.991E-9
24	17HW.A01	67.17010	55.69590	0.00000	-0.11414	-0.083333	-19.389E-9	-0.0016637	33.271E-9
24	17HW.A02	67.17010	55.69590	0.00000	-0.11414	-0.083333	-19.389E-9	-0.0016637	33.271E-9
25	17HW.A02	67.15461	55.24739	0.00000	-0.11516	-0.083333	-19.702E-9	-0.0016793	33.584E-9
25	17HW.A02	67.13912	54.79889	0.00000	-0.11604	-0.083333	-19.994E-9	-0.0016938	33.874E-9
25	17HW.A02	67.12363	54.35038	0.00000	-0.11676	-0.083333	-20.264E-9	-0.0017072	34.141E-9
25	17HW.A02	67.10814	53.90188	0.00000	-0.11733	-0.083333	-20.510E-9	-0.0017193	34.383E-9
25	17HW.A02	67.09266	53.45337	0.00000	-0.11774	-0.083333	-20.731E-9	-0.0017301	34.600E-9
25	17HW.A02	67.07717	53.00487	0.00000	-0.11799	-0.083333	-20.926E-9	-0.0017396	34.790E-9
25	17HW.A02	67.06168	52.55636	0.00000	-0.11807	-0.083333	-21.093E-9	-0.0017477	34.952E-9
25	17HW.A02	67.04619	52.10786	0.00000	-0.11800	-0.083333	-21.232E-9	-0.0017545	35.087E-9
25	17HW.A02	67.03070	51.65935	0.00000	-0.11777	-0.083333	-21.342E-9	-0.0017598	35.193E-9
25	17HW.A02	67.01521	51.21084	0.00000	-0.11737	-0.083333	-21.421E-9	-0.0017637	35.271E-9
25	17HW.A02	66.99972	50.76234	0.00000	-0.11682	-0.083333	-21.471E-9	-0.0017660	35.318E-9
25	17HW.A02	66.98423	50.31383	0.00000	-0.11610	-0.083333	-21.489E-9	-0.0017670	35.337E-9
25	17HW.A02	66.96874	49.86533	0.00000	-0.11523	-0.083333	-21.477E-9	-0.0017664	35.326E-9
25	17HW.A02	66.95326	49.41682	0.00000	-0.11421	-0.083333	-21.434E-9	-0.0017644	35.285E-9
25	17HW.A02	66.93777	48.96832	0.00000	-0.11305	-0.083333	-21.360E-9	-0.0017609	35.215E-9
25	17HW.A02	66.92228	48.51981	0.00000	-0.11174	-0.083333	-21.257E-9	-0.0017559	35.116E-9
25	17HW.A02	66.90679	48.07131	0.00000	-0.11029	-0.083333	-21.124E-9	-0.0017495	34.988E-9
25	17HW.A02	66.89130	47.62280	0.00000	-0.10871	-0.083333	-20.962E-9	-0.0017417	34.832E-9
26	17HW.A03	66.89130	47.62280	0.00000	-0.10871	-0.083333	-20.962E-9	-0.0017417	34.832E-9
26	17HW.A03	66.43956	47.65757	0.00000	-0.11805	-0.083333	-22.843E-9	-0.0018323	36.644E-9
26	17HW.A03	65.98782	47.69234	0.00000	-0.12810	-0.083333	-24.931E-9	-0.0019294	38.584E-9
26	17HW.A03	65.53608	47.72711	0.00000	-0.13894	-0.083333	-27.254E-9	-0.0020334	40.665E-9
26	17HW.A03	65.08434	47.76188	0.00000	-0.15063	-0.083333	-29.845E-9	-0.0021452	42.900E-9
26	17HW.A03	64.63260	47.79665	0.00000	-0.16323	-0.083333	-32.739E-9	-0.0022653	45.303E-9
26	17HW.A03	64.18086	47.83142	0.00000	-0.17683	-0.083333	-35.979E-9	-0.0023947	47.890E-9
26	17HW.A03	63.72912	47.86619	0.00000	-0.19152	-0.083333	-39.615E-9	-0.0025342	50.680E-9
26	17HW.A03	63.27738	47.90096	0.00000	-0.20738	-0.083333	-43.706E-9	-0.0026849	53.693E-9
26	17HW.A03	62.82564	47.93573	0.00000	-0.22451	-0.083333	-48.319E-9	-0.0028479	56.952E-9
26	17HW.A03	62.37390	47.97050	0.00000	-0.24304	-0.083333	-53.534E-9	-0.0030245	60.483E-9
26	17HW.A03	61.92216	48.00527	0.00000	-0.26309	-0.083333	-59.447E-9	-0.0032161	64.315E-9
26	17HW.A03	61.47042	48.04004	0.00000	-0.28479	-0.083333	-66.169E-9	-0.0034244	68.481E-9
26	17HW.A03	61.01868	48.07481	0.00000	-0.30829	-0.083333	-73.835E-9	-0.0036514	73.018E-9
26	17HW.A03	60.56694	48.10958	0.00000	-0.33378	-0.083333	-82.604E-9	-0.0038990	77.971E-9
26	17HW.A03	60.11520	48.14435	0.00000	-0.36142	-0.083333	-92.668E-9	-0.0041699	83.387E-9
26	17HW.A03	59.66346	48.17912	0.00000	-0.39143	-0.083333	-104.26E-9	-0.0044668	89.323E-9
26	17HW.A03	59.21172	48.21389	0.00000	-0.42405	-0.083333	-117.65E-9	-0.0047929	95.844E-9
26	17HW.A03	58.75998	48.24866	0.00000	-0.45952	-0.083333	-133.20E-9	-0.0051520	103.02E-9
26	17HW.A03	58.30824	48.28343	0.00000	-0.49814	-0.083333	-151.30E-9	-0.0055484	110.95E-9
26	17HW.A03	57.85650	48.31820	0.00000	-0.54023	-0.083333	-172.49E-9	-0.0059871	119.72E-9
27	17HW.A04	57.85650	48.31820	0.00000	-0.54023	-0.083333	-172.49E-9	-0.0059871	119.72E-9
27	17HW.A04	57.90340	48.76984	0.00000	-0.54768	-0.083333	-173.64E-9	-0.0060091	120.16E-9
27	17HW.A04	57.95030	49.22149	0.00000	-0.55407	-0.083333	-174.20E-9	-0.0060191	120.36E-9
27	17HW.A04	57.99720	49.67313	0.00000	-0.55935	-0.083333	-174.14E-9	-0.0060171	120.32E-9
27	17HW.A04	58.04410	50.12478	0.00000	-0.56351	-0.083333	-173.47E-9	-0.0060029	120.04E-9
27	17HW.A04	58.09100	50.57642	0.00000	-0.56652	-0.083333	-172.19E-9	-0.0059769	119.52E-9
27	17HW.A04	58.13790	51.02807	0.00000	-0.56837	-0.083333	-170.33E-9	-0.0059392	118.76E-9
27	17HW.A04	58.18480	51.47971	0.00000	-0.56906	-0.083333	-167.92E-9	-0.0058902	117.78E-9
27	17HW.A04	58.23170	51.93136	0.00000	-0.56858	-0.083333	-164.98E-9	-0.0058304	116.59E-9
27	17HW.A04	58.27860	52.38300	0.00000	-0.56695	-0.083333	-161.55E-9	-0.0057604	115.19E-9
27	17HW.A04	58.32550	52.83464	0.00000	-0.56419	-0.083333	-157.70E-9	-0.0056808	113.60E-9
27	17HW.A04	58.37240	53.28629	0.00000	-0.56034	-0.083333	-153.46E-9	-0.0055924	111.83E-9
27	17HW.A04	58.41930	53.73793	0.00000	-0.55542	-0.083333	-148.88E-9	-0.0054960	109.90E-9
27	17HW.A04	58.46620	54.18958	0.00000	-0.54948	-0.083333	-144.03E-9	-0.0053923	107.83E-9
27	17HW.A04	58.51310	54.64122	0.00000	-0.54256	-0.083333	-138.95E-9	-0.0052822	105.63E-9
27	17HW.A04	58.56000	55.09287	0.00000	-0.53472	-0.083333	-133.71E-9	-0.0051666	103.32E-9
27	17HW.A04	58.60690	55.54451	0.00000	-0.52603	-0.083333	-128.34E-9	-0.0050463	100.91E-9
27	17HW.A04	58.65380	55.99616	0.00000	-0.51653	-0.083333	-122.90E-9	-0.0049222	98.428E-9
27	17HW.A04	58.70070	56.44780	0.00000	-0.50630	-0.083333	-117.44E-9	-0.0047949	95.885E-9
28	17HW.B01	58.67890	60.09730	0.00000	-0.43377	-0.083333	-83.468E-9	-0.0039405	78.799E-9
28	17HW.B01	58.72484	59.63727	0.00000	-0.44172	-0.083333	-86.851E-9	-0.0040314	80.617E-9
28	17HW.B01	58.77078	59.17725	0.00000	-0.44902	-0.083333	-90.188E-9	-0.0041195	82.378E-9
28	17HW.B01	58.81671	58.71722	0.00000	-0.45560	-0.083333	-93.452E-9	-0.0042042	84.072E-9
28	17HW.B01	58.86265	58.25720	0.00000	-0.46142	-0.083333	-96.615E-9	-0.0042849	85.687E-9
28	17HW.B01	58.90859	57.79717	0.00000	-0.46645	-0.083333	-99.648E-9	-0.0043613	87.213E-9
28	17HW.B01	58.95452	57.33715	0.00000	-0.47064	-0.083333	-102.52E-9	-0.0044325	88.638E-9
28	17HW.B01	59.00046	56.87712	0.00000	-0.47397	-0.083333	-105.21E-9	-0.0044983	89.952E-9
28	17HW.B01	59.04640	56.41710	0.00000	-0.47640	-0.083333	-107.67E-9	-0.0045579	91.145E-9
29	17HW.B02	59.04640	56.41710	0.00000	-0.47640	-0.083333	-107.67E-9	-0.0045579	91.145E-9
29	17HW.B02	59.47996	56.37762	0.00000	-0.44149	-0.083333	-96.762E-9	-0.0042819	85.626E-9
29	17HW.B02	59.91352	56.33815	0.00000	-0.40923	-0.083333	-87.136E-9	-0.0040272	80.534E-9
29	17HW.B02	60.34709	56.29868	0.00000	-0.37938	-0.083333	-78.624E-9	-0.0037920	75.830E-9
29	17HW.B02	60.78065	56.25920	0.00000	-0.35176	-0.083333	-71.080E-9	-0.0035743	71.478E-9
29	17HW.B02	61.21421	56.21972	0.00000	-0.32617	-0.083333	-64.380E-9	-0.0033727	67.447E-9
29	17HW.B02	61.64777	56.18025	0.00000	-0.30247	-0.083333	-58.417E-9	-0.0031857	63.708E-9
29	17HW.B02	62.08134	56.14078	0.00000	-0.28049	-0.083333	-53.099E-9	-0.0030121	60.235E-9
29	17HW.B02	62.51490	56.10130	0.00000	-0.26010	-0.083333	-48.347E-9	-0.0028506	57.007E-9
30	17HW.B03	62.51490	56.10130	0.00000	-0.26010	-0.083333	-48.347E-9	-0.0028506	57.007E-9
30	17HW.B03	62.53797	56.55704	0.00000	-0.25647	-0.083333	-47.000E-9	-0.0028042	56.079E-9
30	17HW.B03	62.56105	57.01278	0.00000	-0.25251	-0.083333	-45.613E-9	-0.0027559	55.112E-9
30	17HW.B03	62.58413	57.46851	0.00000	-0.24822	-0.083333	-44.196E-9	-0.0027058	54.111E-9
30	17HW.B03	62.60720	57.92425	0.00000	-0.24364	-0.083333	-42.756E-9	-0.0026542	53.079E-9
30	17HW.B03	62.63027	58.37999	0.00000	-0.23879	-0.083333	-41.302E-9	-0.0026013	52.022E-9
30	17HW.B03	62.65335	58.83573	0.00000	-0.23370	-0.083333	-39.842E-9	-0.0025474	50.943E-9
30	17HW.B03	62.67643	59.29146	0.00000	-0.22838	-0.083333	-38.381E-9	-0.0024926	49.848E-9
30	17HW.B03	62.69950	59.74720	0.00000	-0.22286	-0.083333	-36.928E-9	-0.0024372	48.739E-9
31	17HW.B04	62.69950	59.74720	0.00000	-0.22286	-0.083333	-36.928E-9	-0.0024372	48.739E-9
31	17HW.B04	62.29744	59.78221	0.00000	-0.23835	-0.083333	-39.889E-9	-0.0025507	51.009E-9
31	17HW.B04	61.89538	59.81722	0.00000	-0.25486	-0.083333	-43.129E-9	-0.0026709	53.414E-9
31	17HW.B04	61.49332	59.85223	0.00000	-0.27248	-0.083333	-46.677E-9	-0.0027984	55.963E-9
31	17HW.B04	61.09126	59.88724	0.00000	-0.29127	-0.083333	-50.567E-9	-0.0029336	58.666E-9
31	17HW.B04	60.68920	59.92225	0.00000	-0.31132	-0.083333	-54.834E-9	-0.0030771	61.535E-9
31	17HW.B04	60.28714	59.95726	0.00000	-0.33271	-0.083333	-59.521E-9	-0.0032294	64.581E-9
31	17HW.B04	59.88508	59.99227	0.00000	-0.35555	-0.083333	-64.673E-9	-0.0033912	67.816E-9
31	17HW.B04	59.48302	60.02728	0.00000	-0.37993	-0.083333	-70.342E-9	-0.0035631	71.254E-9
31	17HW.B04	59.08096	60.06229	0.00000	-0.40596	-0.083333	-76.586E-9	-0.0037460	74.910E-9
31	17HW.B04	58.67890	60.09730	0.00000	-0.43377	-0.083333	-83.468E-9	-0.0039405	78.799E-9

Results : Consolidation : Displacement Data : Lines

None

Results : Total : Displacement Data : Lines

None

Titles

Job No.: 1125
Job Title: 18A Frognal Gardens
Sub-title: Building GMA
Calculation Heading: PDisp B01 - Underpin Loading
Initials: SB
Checker:
Date Saved:
Date Checked:
Notes:
File Name: PDisp B01 new.pdd
File Path: \\Mac\Dropbox for Business\A2-projects\1125 - 18a Frognal Gardens\03 - Calculations\Issue 01\Pdisp

History

Date	Time	By	Notes
14-Oct-2020	14:23	hamed	<history cleared>
14-Oct-2020	14:23	hamed	

Analysis Options

General
Global Poisson's ratio: 0.20
Maximum allowable ratio between values of E: 1.5
Horizontal rigid boundary level: -34.00 [m OD]
Displacements at load centroids: Yes
GSA piled raft data : No

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

Consolidation
Consolidation : No

Soil ProfilesSoil Profile 1

Layer ref.	Name	Level at top [mOD]	Number of intermediate displacement levels	Youngs Modulus : Top [kN/m²]	Youngs Modulus : Btm. [kN/m²]	Poissons ratio	Non-linear curve
1	Made Ground	0.0	5	10000.	10000.	0.20000	None
2	Bagshot Formation	-1.0000	5	18000.	18000.	0.20000	None
3	London Clay	-7.0000	5	11520.	79560.	0.20000	None

Soil Zones

Zone	Name	X min [m]	X max [m]	Y min [m]	Y max [m]	Profile
1	1	0.0	80.000	0.0	100.00	Soil Profile 1

Polygonal Load Data

Load ref.	Name	Position : Level [m]	Position : Polygon : Coords. [m]	Position : Polygon : Rect. tolerance [%]	No. of Rectangles	Value : Normal (local z) [kN/m²]
1	Party wall loading	-4.00000	(34.6,49.3) (34.6,53.8) (35.6,53.8) (35.6,49.3)	10.000	1	114.00
2	Party wall loading	-6.60000	(34.5,58.5) (34.6,53.8) (35.6,53.8) (35.5,58.5)	10.000	1	114.00

Polygonal Loads' Rectangles

No.	Centre : Centre : x [m]	Centre : y [m]	Angle of local x from global X [Degrees]	Width x [m]	Depth y [m]
Load 1 : Party wall loading					
(Edge 2 optimal)					
1	35.07988	51.55120	90.365	4.4777	0.99983
Load 2 : Party wall loading					
(Edge 1 optimal)					
1	35.05053	56.14105	-89.633	4.6894	0.99993

Displacement Lines

Name	X1 [m]	Y1 [m]	Z1 [m]	X2 [m]	Y2 [m]	Z2 [m]	Intervals [No.]	Calculate	Detailed Results
18B.01	27.06970	56.10310	0.00000	32.02050	56.10310	0.00000	10	Yes	Yes
18B.02	32.02050	56.10310	0.00000	32.02020	53.28900	0.00000	6	Yes	Yes
18B.03	32.02020	53.28900	0.00000	34.29880	53.28910	0.00000	6	Yes	Yes
18B.04	34.29880	53.28910	0.00000	34.29900	42.12610	0.00000	24	Yes	Yes
18B.05	34.29900	42.12610	0.00000	27.03130	42.06780	0.00000	16	Yes	Yes
18B.06	27.03130	42.06780	0.00000	27.03130	42.81150	0.00000	2	Yes	Yes
18B.07	27.03130	42.81150	0.00000	27.06970	56.10310	0.00000	28	Yes	Yes
20FG.01	21.02660	64.09150	0.00000	24.26740	63.42960	0.00000	8	Yes	Yes
20FG.02	24.26740	63.42960	0.00000	23.31400	55.50790	0.00000	16	Yes	Yes
20FG.03	23.31400	55.50790	0.00000	24.37380	55.60010	0.00000	4	Yes	Yes
20FG.04	24.37380	55.60010	0.00000	23.83670	53.15770	0.00000	12	Yes	Yes
20FG.05	23.83670	53.15770	0.00000	24.42370	53.20880	0.00000	2	Yes	Yes
20FG.06	24.42370	53.20880	0.00000	23.90190	50.14280	0.00000	8	Yes	Yes
20FG.07	23.90190	50.14280	0.00000	24.42370	50.18820	0.00000	2	Yes	Yes
20FG.08	24.42370	50.18820	0.00000	24.30050	42.16640	0.00000	18	Yes	Yes
20FG.09	24.30050	42.16640	0.00000	20.99250	42.79780	0.00000	8	Yes	Yes
20FG.10	20.99250	42.79780	0.00000	21.33710	43.74710	0.00000	4	Yes	Yes
20FG.11	21.33710	43.74710	0.00000	12.81700	45.36940	0.00000	18	Yes	Yes
20FG.12	12.81700	45.36940	0.00000	14.97910	55.63720	0.00000	22	Yes	Yes
20FG.13	14.97910	55.63720	0.00000	13.19400	56.13840	0.00000	4	Yes	Yes
20FG.14	13.19400	56.13840	0.00000	13.67460	58.54420	0.00000	6	Yes	Yes
20FG.15	13.67460	58.54420	0.00000	19.98620	57.39750	0.00000	14	Yes	Yes
20FG.16	19.98620	57.39750	0.00000	21.02660	64.09150	0.00000	14	Yes	Yes
17HW.A01	58.70070	56.44780	0.00000	67.17010	55.69590	0.00000	18	Yes	Yes
17HW.A02	67.17010	55.69590	0.00000	66.89130	47.62280	0.00000	18	Yes	Yes
17HW.A03	66.89130	47.62280	0.00000	57.85650	48.31820	0.00000	20	Yes	Yes
17HW.A04	57.85650	48.31820	0.00000	58.70070	56.44780	0.00000	18	Yes	Yes
17HW.B01	58.67890	60.09730	0.00000	59.04640	56.41710	0.00000	8	Yes	Yes
17HW.B02	59.04640	56.41710	0.00000	62.51490	56.10130	0.00000	8	Yes	Yes
17HW.B03	62.51490	56.10130	0.00000	62.69950	59.74720	0.00000	8	Yes	Yes
17HW.B04	62.69950	59.74720	0.00000	58.67890	60.09730	0.00000	10	Yes	Yes

Name	X1 [m]	Y1 [m]	Z1 [m]	X2 [m]	Y2 [m]	Z2 [m]	Intervals [No.]	Calculate	Detailed Results

Results : Immediate : Load Centres : Polygonal

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
1	Party wall loading	35.07987	51.55124	-4.00000	12.48152	-4.5000	93.160	132.65	0.0047368
2	Party wall loading	35.05052	56.14109	-6.60000	11.79900	-6.8000	113.46	210.12	0.0052290

Results : Consolidation : Load Centres : Polygonal

None

Results : Total : Load Centres : Polygonal

None

Results : Immediate : Displacement Data : Lines

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
1	18B.01	27.06970	56.10310	0.00000	0.48430	-0.083333	0.0	0.0	0.0
1	18B.01	27.56478	56.10310	0.00000	0.54687	-0.083333	0.0	0.0	0.0
1	18B.01	28.05986	56.10310	0.00000	0.61993	-0.083333	0.0	0.0	0.0
1	18B.01	28.55494	56.10310	0.00000	0.70584	-0.083333	0.0	0.0	0.0
1	18B.01	29.05002	56.10310	0.00000	0.80761	-0.083333	0.0	0.0	0.0
1	18B.01	29.54510	56.10310	0.00000	0.92928	-0.083333	0.0	0.0	0.0
1	18B.01	30.04018	56.10310	0.00000	1.07641	-0.083333	0.0	0.0	0.0
1	18B.01	30.53526	56.10310	0.00000	1.25704	-0.083333	0.0	0.0	0.0
1	18B.01	31.03034	56.10310	0.00000	1.48372	-0.083333	0.0	0.0	0.0
1	18B.01	31.52542	56.10310	0.00000	1.77755	-0.083333	0.0	0.0	0.0
1	18B.01	32.02050	56.10310	0.00000	2.17648	-0.083333	0.0	0.0	0.0
2	18B.02	32.02050	56.10310	0.00000	2.17648	-0.083333	0.0	0.0	0.0
2	18B.02	32.02045	55.63408	0.00000	2.26561	-0.083333	0.0	0.0	0.0
2	18B.02	32.02040	55.16507	0.00000	2.33773	-0.083333	0.0	0.0	0.0
2	18B.02	32.02035	54.69605	0.00000	2.39262	-0.083333	0.0	0.0	0.0
2	18B.02	32.02030	54.22703	0.00000	2.43005	-0.083333	0.0	0.0	0.0
2	18B.02	32.02025	53.75802	0.00000	2.45006	-0.083333	0.0	0.0	0.0
2	18B.02	32.02020	53.28900	0.00000	2.45281	-0.083333	0.0	0.0	0.0
3	18B.03	32.02020	53.28900	0.00000	2.45281	-0.083333	0.0	0.0	0.0
3	18B.03	32.39997	53.28902	0.00000	2.87167	-0.083333	0.0	0.0	0.0
3	18B.03	32.77973	53.28903	0.00000	3.39873	-0.083333	0.0	0.0	0.0
3	18B.03	33.15950	53.28905	0.00000	4.07511	-0.083333	0.0	0.0	0.0
3	18B.03	33.53927	53.28907	0.00000	4.95852	-0.083333	0.0	0.0	0.0
3	18B.03	33.91903	53.28908	0.00000	6.15399	-0.083333	0.0	0.0	0.0
3	18B.03	34.29880	53.28910	0.00000	8.12328	-0.083333	0.0	0.0	0.0
4	18B.04	34.29880	53.28910	0.00000	8.12328	-0.083333	0.0	0.0	0.0
4	18B.04	34.29881	52.82397	0.00000	7.87956	-0.083333	0.0	0.0	0.0
4	18B.04	34.29882	52.35885	0.00000	7.63511	-0.083333	0.0	0.0	0.0
4	18B.04	34.29883	51.89372	0.00000	7.41723	-0.083333	0.0	0.0	0.0
4	18B.04	34.29883	51.42860	0.00000	7.18473	-0.083333	0.0	0.0	0.0
4	18B.04	34.29884	50.96347	0.00000	6.89167	-0.083333	0.0	0.0	0.0
4	18B.04	34.29885	50.49835	0.00000	6.49058	-0.083333	0.0	0.0	0.0
4	18B.04	34.29886	50.03323	0.00000	5.91579	-0.083333	0.0	0.0	0.0
4	18B.04	34.29887	49.56810	0.00000	5.02588	-0.083333	0.0	0.0	0.0
4	18B.04	34.29888	49.10298	0.00000	3.77189	-0.083333	0.0	0.0	0.0
4	18B.04	34.29888	48.63785	0.00000	2.83464	-0.083333	0.0	0.0	0.0
4	18B.04	34.29889	48.17272	0.00000	2.22781	-0.083333	0.0	0.0	0.0
4	18B.04	34.29890	47.70760	0.00000	1.79530	-0.083333	0.0	0.0	0.0
4	18B.04	34.29891	47.24247	0.00000	1.47254	-0.083333	0.0	0.0	0.0
4	18B.04	34.29892	46.77735	0.00000	1.22426	-0.083333	0.0	0.0	0.0
4	18B.04	34.29892	46.31222	0.00000	1.02914	-0.083333	0.0	0.0	0.0
4	18B.04	34.29893	45.84710	0.00000	0.87341	-0.083333	0.0	0.0	0.0
4	18B.04	34.29894	45.38197	0.00000	0.74761	-0.083333	0.0	0.0	0.0
4	18B.04	34.29895	44.91685	0.00000	0.64491	-0.083333	0.0	0.0	0.0
4	18B.04	34.29896	44.45172	0.00000	0.56023	-0.083333	0.0	0.0	0.0
4	18B.04	34.29897	43.98660	0.00000	0.48976	-0.083333	0.0	0.0	0.0
4	18B.04	34.29897	43.52148	0.00000	0.43060	-0.083333	0.0	0.0	0.0
4	18B.04	34.29898	43.05635	0.00000	0.38051	-0.083333	0.0	0.0	0.0
4	18B.04	34.29899	42.59123	0.00000	0.33777	-0.083333	0.0	0.0	0.0
4	18B.04	34.29900	42.12610	0.00000	0.30104	-0.083333	0.0	0.0	0.0
5	18B.05	34.29900	42.12610	0.00000	0.30104	-0.083333	0.0	0.0	0.0
5	18B.05	33.84477	42.12246	0.00000	0.29725	-0.083333	0.0	0.0	0.0
5	18B.05	33.39054	42.11881	0.00000	0.29203	-0.083333	0.0	0.0	0.0
5	18B.05	32.93631	42.11517	0.00000	0.28551	-0.083333	0.0	0.0	0.0
5	18B.05	32.48208	42.11153	0.00000	0.27787	-0.083333	0.0	0.0	0.0
5	18B.05	32.02784	42.10788	0.00000	0.26928	-0.083333	0.0	0.0	0.0
5	18B.05	31.57361	42.10424	0.00000	0.25994	-0.083333	0.0	0.0	0.0
5	18B.05	31.11938	42.10059	0.00000	0.25003	-0.083333	0.0	0.0	0.0
5	18B.05	30.66515	42.09695	0.00000	0.23972	-0.083333	0.0	0.0	0.0
5	18B.05	30.21092	42.09331	0.00000	0.22916	-0.083333	0.0	0.0	0.0
5	18B.05	29.75669	42.08966	0.00000	0.21849	-0.083333	0.0	0.0	0.0
5	18B.05	29.30246	42.08602	0.00000	0.20783	-0.083333	0.0	0.0	0.0
5	18B.05	28.84822	42.08237	0.00000	0.19728	-0.083333	0.0	0.0	0.0
5	18B.05	28.39399	42.07873	0.00000	0.18693	-0.083333	0.0	0.0	0.0
5	18B.05	27.93976	42.07509	0.00000	0.17683	-0.083333	0.0	0.0	0.0
5	18B.05	27.48553	42.07144	0.00000	0.16703	-0.083333	0.0	0.0	0.0
5	18B.05	27.03130	42.06780	0.00000	0.15758	-0.083333	0.0	0.0	0.0
6	18B.06	27.03130	42.06780	0.00000	0.15758	-0.083333	0.0	0.0	0.0
6	18B.06	27.03130	42.43965	0.00000	0.16726	-0.083333	0.0	0.0	0.0
6	18B.06	27.03130	42.81150	0.00000	0.17747	-0.083333	0.0	0.0	0.0
7	18B.07	27.03130	42.81150	0.00000	0.17747	-0.083333	0.0	0.0	0.0
7	18B.07	27.03267	43.28620	0.00000	0.19134	-0.083333	0.0	0.0	0.0
7	18B.07	27.03404	43.76090	0.00000	0.20613	-0.083333	0.0	0.0	0.0
7	18B.07	27.03541	44.23560	0.00000	0.22184	-0.083333	0.0	0.0	0.0
7	18B.07	27.03679	44.71030	0.00000	0.23847	-0.083333	0.0	0.0	0.0
7	18B.07	27.03816	45.18500	0.00000	0.25599	-0.083333	0.0	0.0	0.0
7	18B.07	27.03953	45.65970	0.00000	0.27432	-0.083333	0.0	0.0	0.0
7	18B.07	27.04090	46.13440	0.00000	0.29339	-0.083333	0.0	0.0	0.0
7	18B.07	27.04227	46.60910	0.00000	0.31308	-0.083333	0.0	0.0	0.0
7	18B.07	27.04364	47.08380	0.00000	0.33322	-0.083333	0.0	0.0	0.0
7	18B.07	27.04501	47.55850	0.00000	0.35361	-0.083333	0.0	0.0	0.0
7	18B.07	27.04639	48.03320	0.00000	0.37403	-0.083333	0.0	0.0	0.0
7	18B.07	27.04776	48.50790	0.00000	0.39421	-0.083333	0.0	0.0	0.0
7	18B.07	27.04913	48.98260	0.00000	0.41385	-0.083333	0.0	0.0	0.0
7	18B.07	27.05050	49.45730	0.00000	0.43266	-0.083333	0.0	0.0	0.0
7	18B.07	27.05187	49.93200	0.00000	0.45031	-0.083333	0.0	0.0	0.0
7	18B.07	27.05324	50.40670	0.00000	0.46650	-0.083333	0.0	0.0	0.0
7	18B.07	27.05461	50.88140	0.00000	0.48095	-0.083333	0.0	0.0	0.0
7	18B.07	27.05599	51.35610	0.00000	0.49340	-0.083333	0.0	0.0	0.0
7	18B.07	27.05736	51.83080	0.00000	0.50364	-0.083333	0.0	0.0	0.0
7	18B.07	27.05873	52.30550	0.00000	0.51150	-0.083333	0.0	0.0	0.0
7	18B.07	27.06010	52.78020	0.00000	0.51686	-0.083333	0.0	0.0	0.0
7	18B.07	27.06147	53.25490	0.00000	0.51965	-0.083333	0.0	0.0	0.0
7	18B.07	27.06284	53.72960	0.00000	0.51985	-0.083333	0.0	0.0	0.0
7	18B.07	27.06421	54.20430	0.00000	0.51748	-0.083333	0.0	0.0	0.0
7	18B.07	27.06559	54.67900	0.00000	0.51262	-0.083333	0.0	0.0	0.0
7	18B.07	27.06696	55.15370	0.00000	0.50537	-0.083333	0.0	0.0	0.0
7	18B.07	27.06833	55.62840	0.00000	0.49587	-0.083333	0.0	0.0	0.0

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
7	18B.07	27.06970	56.10310	0.00000	0.48430	-0.083333	0.0	0.0	0.0
8	20FG.01	21.02660	64.09150	0.00000	0.07722	-0.083333	0.0	0.0	0.0
8	20FG.01	21.43170	64.00876	0.00000	0.08288	-0.083333	0.0	0.0	0.0
8	20FG.01	21.83680	63.92602	0.00000	0.08898	-0.083333	0.0	0.0	0.0
8	20FG.01	22.24190	63.84329	0.00000	0.09556	-0.083333	0.0	0.0	0.0
8	20FG.01	22.64700	63.76055	0.00000	0.10264	-0.083333	0.0	0.0	0.0
8	20FG.01	23.05210	63.67781	0.00000	0.11027	-0.083333	0.0	0.0	0.0
8	20FG.01	23.45720	63.59508	0.00000	0.11851	-0.083333	0.0	0.0	0.0
8	20FG.01	23.86230	63.51234	0.00000	0.12741	-0.083333	0.0	0.0	0.0
8	20FG.01	24.26740	63.42960	0.00000	0.13702	-0.083333	0.0	0.0	0.0
9	20FG.02	24.26740	63.42960	0.00000	0.13702	-0.083333	0.0	0.0	0.0
9	20FG.02	24.20781	62.93449	0.00000	0.14406	-0.083333	0.0	0.0	0.0
9	20FG.02	24.14823	62.43939	0.00000	0.15112	-0.083333	0.0	0.0	0.0
9	20FG.02	24.08864	61.94428	0.00000	0.15813	-0.083333	0.0	0.0	0.0
9	20FG.02	24.02905	61.44917	0.00000	0.16504	-0.083333	0.0	0.0	0.0
9	20FG.02	23.96946	60.95407	0.00000	0.17177	-0.083333	0.0	0.0	0.0
9	20FG.02	23.90987	60.45896	0.00000	0.17826	-0.083333	0.0	0.0	0.0
9	20FG.02	23.85029	59.96386	0.00000	0.18445	-0.083333	0.0	0.0	0.0
9	20FG.02	23.79070	59.46875	0.00000	0.19025	-0.083333	0.0	0.0	0.0
9	20FG.02	23.73111	58.97364	0.00000	0.19559	-0.083333	0.0	0.0	0.0
9	20FG.02	23.67152	58.47854	0.00000	0.20042	-0.083333	0.0	0.0	0.0
9	20FG.02	23.61194	57.98343	0.00000	0.20467	-0.083333	0.0	0.0	0.0
9	20FG.02	23.55235	57.48833	0.00000	0.20829	-0.083333	0.0	0.0	0.0
9	20FG.02	23.49276	56.99322	0.00000	0.21122	-0.083333	0.0	0.0	0.0
9	20FG.02	23.43317	56.49811	0.00000	0.21344	-0.083333	0.0	0.0	0.0
9	20FG.02	23.37359	56.00301	0.00000	0.21490	-0.083333	0.0	0.0	0.0
9	20FG.02	23.31400	55.50790	0.00000	0.21559	-0.083333	0.0	0.0	0.0
10	20FG.03	23.31400	55.50790	0.00000	0.21559	-0.083333	0.0	0.0	0.0
10	20FG.03	23.57895	55.53095	0.00000	0.22758	-0.083333	0.0	0.0	0.0
10	20FG.03	23.84390	55.55400	0.00000	0.24036	-0.083333	0.0	0.0	0.0
10	20FG.03	24.10885	55.57705	0.00000	0.25398	-0.083333	0.0	0.0	0.0
10	20FG.03	24.37380	55.60010	0.00000	0.26852	-0.083333	0.0	0.0	0.0
11	20FG.04	24.37380	55.60010	0.00000	0.26852	-0.083333	0.0	0.0	0.0
11	20FG.04	24.32904	55.39657	0.00000	0.26763	-0.083333	0.0	0.0	0.0
11	20FG.04	24.28428	55.19303	0.00000	0.26655	-0.083333	0.0	0.0	0.0
11	20FG.04	24.23953	54.98950	0.00000	0.26530	-0.083333	0.0	0.0	0.0
11	20FG.04	24.19477	54.78597	0.00000	0.26387	-0.083333	0.0	0.0	0.0
11	20FG.04	24.15001	54.58243	0.00000	0.26227	-0.083333	0.0	0.0	0.0
11	20FG.04	24.10525	54.37890	0.00000	0.26051	-0.083333	0.0	0.0	0.0
11	20FG.04	24.06049	54.17537	0.00000	0.25859	-0.083333	0.0	0.0	0.0
11	20FG.04	24.01573	53.97183	0.00000	0.25652	-0.083333	0.0	0.0	0.0
11	20FG.04	23.97097	53.76830	0.00000	0.25430	-0.083333	0.0	0.0	0.0
11	20FG.04	23.92622	53.56477	0.00000	0.25193	-0.083333	0.0	0.0	0.0
11	20FG.04	23.88146	53.36123	0.00000	0.24943	-0.083333	0.0	0.0	0.0
11	20FG.04	23.83670	53.15770	0.00000	0.24680	-0.083333	0.0	0.0	0.0
12	20FG.05	23.83670	53.15770	0.00000	0.24680	-0.083333	0.0	0.0	0.0
12	20FG.05	24.13020	53.18325	0.00000	0.26288	-0.083333	0.0	0.0	0.0
12	20FG.05	24.42370	53.20880	0.00000	0.28022	-0.083333	0.0	0.0	0.0
13	20FG.06	24.42370	53.20880	0.00000	0.28022	-0.083333	0.0	0.0	0.0
13	20FG.06	24.35847	52.82555	0.00000	0.27528	-0.083333	0.0	0.0	0.0
13	20FG.06	24.29325	52.44230	0.00000	0.26981	-0.083333	0.0	0.0	0.0
13	20FG.06	24.22803	52.05905	0.00000	0.26385	-0.083333	0.0	0.0	0.0
13	20FG.06	24.16280	51.67580	0.00000	0.25745	-0.083333	0.0	0.0	0.0
13	20FG.06	24.09757	51.29255	0.00000	0.25068	-0.083333	0.0	0.0	0.0
13	20FG.06	24.03235	50.90930	0.00000	0.24358	-0.083333	0.0	0.0	0.0
13	20FG.06	23.96712	50.52605	0.00000	0.23620	-0.083333	0.0	0.0	0.0
13	20FG.06	23.90190	50.14280	0.00000	0.22862	-0.083333	0.0	0.0	0.0
14	20FG.07	23.90190	50.14280	0.00000	0.22862	-0.083333	0.0	0.0	0.0
14	20FG.07	24.16280	50.16550	0.00000	0.24156	-0.083333	0.0	0.0	0.0
14	20FG.07	24.42370	50.18820	0.00000	0.25538	-0.083333	0.0	0.0	0.0
15	20FG.08	24.42370	50.18820	0.00000	0.25538	-0.083333	0.0	0.0	0.0
15	20FG.08	24.41686	49.74254	0.00000	0.24850	-0.083333	0.0	0.0	0.0
15	20FG.08	24.41001	49.29689	0.00000	0.24110	-0.083333	0.0	0.0	0.0
15	20FG.08	24.40317	48.85123	0.00000	0.23326	-0.083333	0.0	0.0	0.0
15	20FG.08	24.39632	48.40558	0.00000	0.22507	-0.083333	0.0	0.0	0.0
15	20FG.08	24.38948	47.95992	0.00000	0.21661	-0.083333	0.0	0.0	0.0
15	20FG.08	24.38263	47.51427	0.00000	0.20796	-0.083333	0.0	0.0	0.0
15	20FG.08	24.37579	47.06861	0.00000	0.19919	-0.083333	0.0	0.0	0.0
15	20FG.08	24.36894	46.62296	0.00000	0.19038	-0.083333	0.0	0.0	0.0
15	20FG.08	24.36210	46.17730	0.00000	0.18158	-0.083333	0.0	0.0	0.0
15	20FG.08	24.35526	45.73164	0.00000	0.17286	-0.083333	0.0	0.0	0.0
15	20FG.08	24.34841	45.28599	0.00000	0.16428	-0.083333	0.0	0.0	0.0
15	20FG.08	24.34157	44.84033	0.00000	0.15586	-0.083333	0.0	0.0	0.0
15	20FG.08	24.33472	44.39468	0.00000	0.14765	-0.083333	0.0	0.0	0.0
15	20FG.08	24.32788	43.94902	0.00000	0.13969	-0.083333	0.0	0.0	0.0
15	20FG.08	24.32103	43.50337	0.00000	0.13198	-0.083333	0.0	0.0	0.0
15	20FG.08	24.31419	43.05771	0.00000	0.12456	-0.083333	0.0	0.0	0.0
15	20FG.08	24.30734	42.61206	0.00000	0.11743	-0.083333	0.0	0.0	0.0
15	20FG.08	24.30050	42.16640	0.00000	0.11061	-0.083333	0.0	0.0	0.0
16	20FG.09	24.30050	42.16640	0.00000	0.11061	-0.083333	0.0	0.0	0.0
16	20FG.09	23.88700	42.24533	0.00000	0.10542	-0.083333	0.0	0.0	0.0
16	20FG.09	23.47350	42.32425	0.00000	0.10039	-0.083333	0.0	0.0	0.0
16	20FG.09	23.06000	42.40318	0.00000	0.09550	-0.083333	0.0	0.0	0.0
16	20FG.09	22.64650	42.48210	0.00000	0.09077	-0.083333	0.0	0.0	0.0
16	20FG.09	22.23300	42.56103	0.00000	0.08621	-0.083333	0.0	0.0	0.0
16	20FG.09	21.81950	42.63995	0.00000	0.08181	-0.083333	0.0	0.0	0.0
16	20FG.09	21.40600	42.71888	0.00000	0.07759	-0.083333	0.0	0.0	0.0
16	20FG.09	20.99250	42.79780	0.00000	0.07353	-0.083333	0.0	0.0	0.0
17	20FG.10	20.99250	42.79780	0.00000	0.07353	-0.083333	0.0	0.0	0.0
17	20FG.10	21.07865	43.03513	0.00000	0.07638	-0.083333	0.0	0.0	0.0
17	20FG.10	21.16480	43.27245	0.00000	0.07934	-0.083333	0.0	0.0	0.0
17	20FG.10	21.25095	43.50978	0.00000	0.08239	-0.083333	0.0	0.0	0.0
17	20FG.10	21.33710	43.74710	0.00000	0.08556	-0.083333	0.0	0.0	0.0
18	20FG.11	21.33710	43.74710	0.00000	0.08556	-0.083333	0.0	0.0	0.0
18	20FG.11	20.86376	43.83723	0.00000	0.08016	-0.083333	0.0	0.0	0.0
18	20FG.11	20.39042	43.92736	0.00000	0.07505	-0.083333	0.0	0.0	0.0
18	20FG.11	19.91708	44.01748	0.00000	0.07023	-0.083333	0.0	0.0	0.0
18	20FG.11	19.44374	44.10761	0.00000	0.06567	-0.083333	0.0	0.0	0.0
18	20FG.11	18.97041	44.19774	0.00000	0.06138	-0.083333	0.0	0.0	0.0
18	20FG.11	18.49707	44.28787	0.00000	0.05734	-0.083333	0.0	0.0	0.0
18	20FG.11	18.02373	44.37799	0.00000	0.05353	-0.083333	0.0	0.0	0.0
18	20FG.11	17.55039	44.46812	0.00000	0.04996	-0.083333	0.0	0.0	0.0
18	20FG.11	17.07705	44.55825	0.00000	0.04660	-0.083333	0.0	0.0	0.0
18	20FG.11	16.60371	44.64838	0.00000	0.04344	-0.083333	0.0	0.0	0.0
18	20FG.11	16.13037	44.73851	0.00000	0.04048	-0.083333	0.0	0.0	0.0
18	20FG.11	15.65703	44.82863	0.00000	0.03770	-0.083333	0.0	0.0	0.0
18	20FG.11	15.18369	44.91876	0.00000	0.03510	-0.083333	0.0	0.0	0.0
18	20FG.11	14.71036	45.00889	0.00000	0.03266	-0.083333	0.0	0.0	0.0
18	20FG.11	14.23702	45.09902	0.00000	0.03037	-0.083333	0.0	0.0	0.0
18	20FG.11	13.76368	45.18914	0.00000	0.02823	-0.083333	0.0	0.0	0.0
18	20FG.11	13.29034	45.27927	0.00000	0.02623	-0.083333	0.0	0.0	0.0
18	20FG.11	12.81700	45.36940	0.00000	0.02436	-0.083333	0.0	0.0	0.0
19	20FG.12	12.81700	45.36940	0.00000	0.02436	-0.083333	0.0	0.0	0.0
19	20FG.12	12.91528	45.83612	0.00000	0.02544	-0.083333	0.0	0.0	0.0
19	20FG.12	13.01355	46.30284	0.00000	0.02653	-0.083333	0.0	0.0	0.0
19	20FG.12	13.11183	46.76955	0.00000	0.02763	-0.083333	0.0	0.0	0.0
19	20FG.12	13.21011	47.23627	0.00000	0.02874	-0.083333	0.0	0.0	0.0
19	20FG.12	13.30839	47.70299	0.00000	0.02986	-0.083333	0.0	0.0	0.0
19	20FG.12	13.40666	48.16971	0.00000	0.03098	-0.083333	0.0	0.0	0.0
19	20FG.12	13.50494	48.63643	0.00000	0.03209	-0.083333	0.0	0.0	0.0
19	20FG.12	13.60322	49.10315	0.00000	0.03319	-0.083333	0.0	0.0	0.0
19	20FG.12	13.70150	49.56986	0.00000	0.03428	-0.083333	0.0	0.0	0.0
19	20FG.12	13.79977	50.03658	0.00000	0.03536	-0.083333	0.0	0.0	0.0
19	20FG.12	13.89805	50.50330	0.00000	0.03641	-0.083333	0.0	0.0	0.0
19	20FG.12	13.99633	50.97002	0.00000	0.03744	-0.083333	0.0	0.0	0.0
19	20FG.12	14.09460	51.43674	0.00000	0.03843	-0.083333	0.0	0.0	0.0
19	20FG.12	14.19288	51.90345	0.00000	0.03939	-0.083333	0.0	0.0	0.0
19	20FG.12	14.29116	52.37017	0.00000	0.04030	-0.083333	0.0	0.0	0.0
19	20FG.12	14.38944	52.83689	0.00000	0.04117	-0.083333	0.0	0.0	0.0
19	20FG.12	14.48771	53.30361	0.00000	0.04199	-0.083333	0.0	0.0	0.0

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
19	20FG.12	14.58599	53.77033	0.00000	0.04274	-0.083333	0.0	0.0	0.0
19	20FG.12	14.68427	54.23705	0.00000	0.04344	-0.083333	0.0	0.0	0.0
19	20FG.12	14.78255	54.70376	0.00000	0.04406	-0.083333	0.0	0.0	0.0
19	20FG.12	14.88082	55.17048	0.00000	0.04462	-0.083333	0.0	0.0	0.0
19	20FG.12	14.97910	55.63720	0.00000	0.04510	-0.083333	0.0	0.0	0.0
20	20FG.13	14.97910	55.63720	0.00000	0.04510	-0.083333	0.0	0.0	0.0
20	20FG.13	14.53283	55.76250	0.00000	0.04158	-0.083333	0.0	0.0	0.0
20	20FG.13	14.08655	55.88780	0.00000	0.03834	-0.083333	0.0	0.0	0.0
20	20FG.13	13.64028	56.01310	0.00000	0.03536	-0.083333	0.0	0.0	0.0
20	20FG.13	13.19400	56.13840	0.00000	0.03260	-0.083333	0.0	0.0	0.0
21	20FG.14	13.19400	56.13840	0.00000	0.03260	-0.083333	0.0	0.0	0.0
21	20FG.14	13.27410	56.53937	0.00000	0.03279	-0.083333	0.0	0.0	0.0
21	20FG.14	13.35420	56.94033	0.00000	0.03295	-0.083333	0.0	0.0	0.0
21	20FG.14	13.43430	57.34130	0.00000	0.03306	-0.083333	0.0	0.0	0.0
21	20FG.14	13.51440	57.74227	0.00000	0.03313	-0.083333	0.0	0.0	0.0
21	20FG.14	13.59450	58.14323	0.00000	0.03316	-0.083333	0.0	0.0	0.0
21	20FG.14	13.67460	58.54420	0.00000	0.03315	-0.083333	0.0	0.0	0.0
22	20FG.15	13.67460	58.54420	0.00000	0.03315	-0.083333	0.0	0.0	0.0
22	20FG.15	14.12543	58.46229	0.00000	0.03597	-0.083333	0.0	0.0	0.0
22	20FG.15	14.57626	58.38039	0.00000	0.03902	-0.083333	0.0	0.0	0.0
22	20FG.15	15.02709	58.29848	0.00000	0.04233	-0.083333	0.0	0.0	0.0
22	20FG.15	15.47791	58.21657	0.00000	0.04594	-0.083333	0.0	0.0	0.0
22	20FG.15	15.92874	58.13466	0.00000	0.04986	-0.083333	0.0	0.0	0.0
22	20FG.15	16.37957	58.05276	0.00000	0.05412	-0.083333	0.0	0.0	0.0
22	20FG.15	16.83040	57.97085	0.00000	0.05877	-0.083333	0.0	0.0	0.0
22	20FG.15	17.28123	57.88894	0.00000	0.06384	-0.083333	0.0	0.0	0.0
22	20FG.15	17.73206	57.80704	0.00000	0.06937	-0.083333	0.0	0.0	0.0
22	20FG.15	18.18289	57.72513	0.00000	0.07541	-0.083333	0.0	0.0	0.0
22	20FG.15	18.63371	57.64322	0.00000	0.08202	-0.083333	0.0	0.0	0.0
22	20FG.15	19.08454	57.56131	0.00000	0.08926	-0.083333	0.0	0.0	0.0
22	20FG.15	19.53537	57.47941	0.00000	0.09720	-0.083333	0.0	0.0	0.0
22	20FG.15	19.98620	57.39750	0.00000	0.10592	-0.083333	0.0	0.0	0.0
23	20FG.16	19.98620	57.39750	0.00000	0.10592	-0.083333	0.0	0.0	0.0
23	20FG.16	20.06051	57.87564	0.00000	0.10518	-0.083333	0.0	0.0	0.0
23	20FG.16	20.13483	58.35379	0.00000	0.10418	-0.083333	0.0	0.0	0.0
23	20FG.16	20.20914	58.83193	0.00000	0.10294	-0.083333	0.0	0.0	0.0
23	20FG.16	20.28346	59.31007	0.00000	0.10145	-0.083333	0.0	0.0	0.0
23	20FG.16	20.35777	59.78821	0.00000	0.09974	-0.083333	0.0	0.0	0.0
23	20FG.16	20.43209	60.26636	0.00000	0.09783	-0.083333	0.0	0.0	0.0
23	20FG.16	20.50640	60.74450	0.00000	0.09572	-0.083333	0.0	0.0	0.0
23	20FG.16	20.58071	61.22264	0.00000	0.09344	-0.083333	0.0	0.0	0.0
23	20FG.16	20.65503	61.70079	0.00000	0.09100	-0.083333	0.0	0.0	0.0
23	20FG.16	20.72934	62.17893	0.00000	0.08843	-0.083333	0.0	0.0	0.0
23	20FG.16	20.80366	62.65707	0.00000	0.08575	-0.083333	0.0	0.0	0.0
23	20FG.16	20.87797	63.13521	0.00000	0.08297	-0.083333	0.0	0.0	0.0
23	20FG.16	20.95229	63.61336	0.00000	0.08012	-0.083333	0.0	0.0	0.0
23	20FG.16	21.02660	64.09150	0.00000	0.07722	-0.083333	0.0	0.0	0.0
24	17HW.A01	58.70070	56.44780	0.00000	0.02371	-0.083333	0.0	0.0	0.0
24	17HW.A01	59.17122	56.40603	0.00000	0.02183	-0.083333	0.0	0.0	0.0
24	17HW.A01	59.64174	56.36426	0.00000	0.02008	-0.083333	0.0	0.0	0.0
24	17HW.A01	60.11227	56.32248	0.00000	0.01847	-0.083333	0.0	0.0	0.0
24	17HW.A01	60.58279	56.28071	0.00000	0.01698	-0.083333	0.0	0.0	0.0
24	17HW.A01	61.05331	56.23894	0.00000	0.01560	-0.083333	0.0	0.0	0.0
24	17HW.A01	61.52383	56.19717	0.00000	0.01432	-0.083333	0.0	0.0	0.0
24	17HW.A01	61.99436	56.15539	0.00000	0.01313	-0.083333	0.0	0.0	0.0
24	17HW.A01	62.46488	56.11362	0.00000	0.01204	-0.083333	0.0	0.0	0.0
24	17HW.A01	62.93540	56.07185	0.00000	0.01102	-0.083333	0.0	0.0	0.0
24	17HW.A01	63.40592	56.03008	0.00000	0.01009	-0.083333	0.0	0.0	0.0
24	17HW.A01	63.87644	55.98831	0.00000	0.00921	-0.083333	0.0	0.0	0.0
24	17HW.A01	64.34697	55.94653	0.00000	0.00841	-0.083333	0.0	0.0	0.0
24	17HW.A01	64.81749	55.90476	0.00000	0.00766	-0.083333	0.0	0.0	0.0
24	17HW.A01	65.28801	55.86299	0.00000	0.00697	-0.083333	0.0	0.0	0.0
24	17HW.A01	65.75853	55.82122	0.00000	0.00632	-0.083333	0.0	0.0	0.0
24	17HW.A01	66.22906	55.77944	0.00000	0.00573	-0.083333	0.0	0.0	0.0
24	17HW.A01	66.69958	55.73767	0.00000	0.00518	-0.083333	0.0	0.0	0.0
24	17HW.A01	67.17010	55.69590	0.00000	0.00466	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.17010	55.69590	0.00000	0.00466	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.15461	55.24739	0.00000	0.00471	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.13912	54.79889	0.00000	0.00475	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.12363	54.35038	0.00000	0.00478	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.10814	53.90188	0.00000	0.00480	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.09266	53.45337	0.00000	0.00482	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.07717	53.00487	0.00000	0.00483	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.06168	52.55636	0.00000	0.00484	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.04619	52.10786	0.00000	0.00484	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.03070	51.65935	0.00000	0.00483	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.01521	51.21084	0.00000	0.00482	-0.083333	0.0	0.0	0.0
25	17HW.A02	66.99972	50.76234	0.00000	0.00480	-0.083333	0.0	0.0	0.0
25	17HW.A02	66.98423	50.31383	0.00000	0.00477	-0.083333	0.0	0.0	0.0
25	17HW.A02	66.96874	49.86533	0.00000	0.00474	-0.083333	0.0	0.0	0.0
25	17HW.A02	66.95326	49.41682	0.00000	0.00470	-0.083333	0.0	0.0	0.0
25	17HW.A02	66.93777	48.96832	0.00000	0.00466	-0.083333	0.0	0.0	0.0
25	17HW.A02	66.92228	48.51981	0.00000	0.00460	-0.083333	0.0	0.0	0.0
25	17HW.A02	66.90679	48.07131	0.00000	0.00455	-0.083333	0.0	0.0	0.0
25	17HW.A02	66.89130	47.62280	0.00000	0.00449	-0.083333	0.0	0.0	0.0
26	17HW.A03	66.89130	47.62280	0.00000	0.00449	-0.083333	0.0	0.0	0.0
26	17HW.A03	66.43956	47.65757	0.00000	0.00496	-0.083333	0.0	0.0	0.0
26	17HW.A03	65.98782	47.69234	0.00000	0.00548	-0.083333	0.0	0.0	0.0
26	17HW.A03	65.53608	47.72711	0.00000	0.00603	-0.083333	0.0	0.0	0.0
26	17HW.A03	65.08434	47.76188	0.00000	0.00663	-0.083333	0.0	0.0	0.0
26	17HW.A03	64.63260	47.79665	0.00000	0.00727	-0.083333	0.0	0.0	0.0
26	17HW.A03	64.18086	47.83142	0.00000	0.00796	-0.083333	0.0	0.0	0.0
26	17HW.A03	63.72912	47.86619	0.00000	0.00870	-0.083333	0.0	0.0	0.0
26	17HW.A03	63.27738	47.90096	0.00000	0.00950	-0.083333	0.0	0.0	0.0
26	17HW.A03	62.82564	47.93573	0.00000	0.01037	-0.083333	0.0	0.0	0.0
26	17HW.A03	62.37390	47.97050	0.00000	0.01129	-0.083333	0.0	0.0	0.0
26	17HW.A03	61.92216	48.00527	0.00000	0.01229	-0.083333	0.0	0.0	0.0
26	17HW.A03	61.47042	48.04004	0.00000	0.01337	-0.083333	0.0	0.0	0.0
26	17HW.A03	61.01868	48.07481	0.00000	0.01453	-0.083333	0.0	0.0	0.0
26	17HW.A03	60.56694	48.10958	0.00000	0.01578	-0.083333	0.0	0.0	0.0
26	17HW.A03	60.11520	48.14435	0.00000	0.01712	-0.083333	0.0	0.0	0.0
26	17HW.A03	59.66346	48.17912	0.00000	0.01858	-0.083333	0.0	0.0	0.0
26	17HW.A03	59.21172	48.21389	0.00000	0.02014	-0.083333	0.0	0.0	0.0
26	17HW.A03	58.75998	48.24866	0.00000	0.02183	-0.083333	0.0	0.0	0.0
26	17HW.A03	58.30824	48.28343	0.00000	0.02366	-0.083333	0.0	0.0	0.0
26	17HW.A03	57.85650	48.31820	0.00000	0.02563	-0.083333	0.0	0.0	0.0
27	17HW.A04	57.85650	48.31820	0.00000	0.02563	-0.083333	0.0	0.0	0.0
27	17HW.A04	57.90340	48.76984	0.00000	0.02584	-0.083333	0.0	0.0	0.0
27	17HW.A04	57.95030	49.22149	0.00000	0.02602	-0.083333	0.0	0.0	0.0
27	17HW.A04	57.99720	49.67313	0.00000	0.02616	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.04410	50.12478	0.00000	0.02626	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.09100	50.57642	0.00000	0.02632	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.13790	51.02807	0.00000	0.02634	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.18480	51.47971	0.00000	0.02632	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.23170	51.93136	0.00000	0.02626	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.27860	52.38300	0.00000	0.02617	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.32550	52.83464	0.00000	0.02604	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.37240	53.28629	0.00000	0.02587	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.41930	53.73793	0.00000	0.02566	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.46620	54.18958	0.00000	0.02541	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.51310	54.64122	0.00000	0.02514	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.56000	55.09287	0.00000	0.02483	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.60690	55.54451	0.00000	0.02448	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.65380	55.99616	0.00000	0.02411	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.70070	56.44780	0.00000	0.02371	-0.083333	0.0	0.0	0.0
28	17HW.B01	58.67890	60.09730	0.00000	0.02112	-0.083333	0.0	0.0	0.0
28	17HW.B01	58.72484	59.63727	0.00000	0.02138	-0.083333	0.0	0.0	0.0
28	17HW.B01	58.77078	59.17725	0.00000	0.02161	-0.083333	0.0	0.0	0.0
28	17HW.B01	58.81671	58.71722	0.00000	0.02180	-0.083333	0.0	0.0	0.0
28	17HW.B01	58.86265	58.25720	0.00000	0.02197	-0.083333	0.0	0.0	0.0

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
28	17HW.B01	58.90859	57.79717	0.00000	0.02210	-0.083333	0.0	0.0	0.0
28	17HW.B01	58.95452	57.33715	0.00000	0.02221	-0.083333	0.0	0.0	0.0
28	17HW.B01	59.00046	56.87712	0.00000	0.02228	-0.083333	0.0	0.0	0.0
28	17HW.B01	59.04640	56.41710	0.00000	0.02231	-0.083333	0.0	0.0	0.0
29	17HW.B02	59.04640	56.41710	0.00000	0.02231	-0.083333	0.0	0.0	0.0
29	17HW.B02	59.47996	56.37762	0.00000	0.02067	-0.083333	0.0	0.0	0.0
29	17HW.B02	59.91352	56.33815	0.00000	0.01914	-0.083333	0.0	0.0	0.0
29	17HW.B02	60.34709	56.29868	0.00000	0.01771	-0.083333	0.0	0.0	0.0
29	17HW.B02	60.78065	56.25920	0.00000	0.01638	-0.083333	0.0	0.0	0.0
29	17HW.B02	61.21421	56.21972	0.00000	0.01515	-0.083333	0.0	0.0	0.0
29	17HW.B02	61.64777	56.18025	0.00000	0.01400	-0.083333	0.0	0.0	0.0
29	17HW.B02	62.08134	56.14078	0.00000	0.01293	-0.083333	0.0	0.0	0.0
29	17HW.B02	62.51490	56.10130	0.00000	0.01193	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.51490	56.10130	0.00000	0.01193	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.53797	56.55704	0.00000	0.01178	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.56105	57.01278	0.00000	0.01162	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.58413	57.46851	0.00000	0.01144	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.60720	57.92425	0.00000	0.01126	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.63027	58.37999	0.00000	0.01106	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.65335	58.83573	0.00000	0.01085	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.67643	59.29146	0.00000	0.01063	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.69950	59.74720	0.00000	0.01040	-0.083333	0.0	0.0	0.0
31	17HW.B04	62.69950	59.74720	0.00000	0.01040	-0.083333	0.0	0.0	0.0
31	17HW.B04	62.29744	59.78221	0.00000	0.01119	-0.083333	0.0	0.0	0.0
31	17HW.B04	61.89538	59.81722	0.00000	0.01204	-0.083333	0.0	0.0	0.0
31	17HW.B04	61.49332	59.85223	0.00000	0.01294	-0.083333	0.0	0.0	0.0
31	17HW.B04	61.09126	59.88724	0.00000	0.01390	-0.083333	0.0	0.0	0.0
31	17HW.B04	60.68920	59.92225	0.00000	0.01492	-0.083333	0.0	0.0	0.0
31	17HW.B04	60.28714	59.95726	0.00000	0.01601	-0.083333	0.0	0.0	0.0
31	17HW.B04	59.88508	59.99227	0.00000	0.01717	-0.083333	0.0	0.0	0.0
31	17HW.B04	59.48302	60.02728	0.00000	0.01841	-0.083333	0.0	0.0	0.0
31	17HW.B04	59.08096	60.06229	0.00000	0.01972	-0.083333	0.0	0.0	0.0
31	17HW.B04	58.67890	60.09730	0.00000	0.02112	-0.083333	0.0	0.0	0.0

Results : Consolidation : Displacement Data : Lines

None

Results : Total : Displacement Data : Lines

None

Titles

Job No.: 1125
Job Title: 18A Frognal Gardens
Sub-title: Building GMA
Calculation Heading: PDisp B02 - LT Loading
Initials: SB
Checker:
Date Saved:
Date Checked:
Notes:
File Name: PDisp B02 new.pdd
File Path: \\Mac\Dropbox for Business\A2-projects\1125 - 18a Frognal Gardens\03 - Calculations\Issue 01\Pdisp

History

Date	Time	By	Notes
14-Oct-2020	14:25	hamed	<history cleared>
14-Oct-2020	14:25	hamed	

Analysis Options

General
Global Poisson's ratio: 0.20
Maximum allowable ratio between values of E: 1.5
Horizontal rigid boundary level: -34.00 [m OD]
Displacements at load centroids: Yes
GSA piled raft data : No

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

Consolidation
Consolidation : No

Soil ProfilesSoil Profile 1

Layer ref.	Name	Level at top [mOD]	Number of intermediate displacement levels	Youngs Modulus : Top [kN/m²]	Youngs Modulus : Btm. [kN/m²]	Poissons ratio	Non-linear curve
1	Made Ground	0.0	5	10000.	10000.	0.20000	None
2	Bagshot Formation	-1.0000	5	18000.	18000.	0.20000	None
3	London Clay	-7.0000	5	11520.	79560.	0.20000	None

Soil Zones

Zone	Name	X min [m]	X max [m]	Y min [m]	Y max [m]	Profile
1	1	0.0	80.000	0.0	100.00	Soil Profile 1

Polygonal Load Data

Load ref.	Name	Position : Level [m]	Position : Polygon : Coords. [m]	Position : Polygon : Rect. tolerance [%]	No. of Rectangles	Value : Normal (local z) [kN/m²]
1	Loading - 4F	-4.21000	(35.1,43.3) (35.1,53) (38.6,53) (39.9,54.3) (40.4,58.3) (44.6,58.3) (45.2,42.4) (41.6,42.4) (40.4,43.3) (35.1,43.3)	10.000	4	40.000
2	Loading - 3F	-4.21000	(41.6,42.4) (40.5,42.4) (39.4,41.5) (35.1,41.5) (35.1,43.3) (40.4,43.3)	10.000	2	30.000
3	Loading - 2FA	-4.21000	(40.4,58.3) (35.1,58.3) (35.1,53) (38.6,53) (39.9,54.3) (40.4,58.3)	10.000	2	20.000
4	Loading - 2FB	-4.21000	(39.4,41.5) (40.5,42.4) (45.2,42.4) (45.4,36) (41.9,36) (41.3,40.4) (40,41.5) (39.4,41.5)	10.000	8	20.000
5	Party wall loading	-4.00000	(34.6,49.3) (34.6,53.8) (35.6,53.8) (35.6,49.3)	10.000	1	114.00
6	Party wall loading	-6.60000	(34.5,58.5) (34.6,53.8) (35.6,53.8) (35.5,58.5)	10.000	1	114.00

Polygonal Loads' Rectangles

No.	Centre : x [m]	Centre : y [m]	Angle of local x from global X [Degrees]	Width x [m]	Depth y [m]
Load 1 : Loading - 4F					
(Edge 4 optimal)					
1	43.07710	42.87167	-89.900	0.89811	4.1902
2	42.41853	56.32179	-89.900	3.9427	4.5336
3	42.00406	53.68886	-89.900	1.3217	5.5531
4	40.03279	48.17461	-89.900	9.6999	9.8946
Load 2 : Loading - 3F					
(Edge 1 optimal)					
1	38.04638	42.86936	-90.305	0.86120	5.9090
2	37.54178	41.98003	-90.305	0.91179	4.9093
Load 3 : Loading - 2FA					
(Edge 2 optimal)					
1	37.61788	56.31890	-90.138	3.9338	5.0665
2	37.15328	53.68971	-90.138	1.3268	4.1500
Load 4 : Loading - 2FB					
(Edge 6 optimal)					
1	44.98559	35.96963	92.070	0.062969	0.87111
2	44.11278	36.00110	92.070	0.062969	2.6133
3	43.48429	38.25599	92.070	4.4893	3.7066
4	42.95451	41.05182	92.070	1.1370	4.5635
5	42.54506	41.97525	92.070	0.69779	5.3152
6	42.39331	42.34682	92.070	0.055844	4.0465
7	41.65598	42.37605	92.070	0.055844	2.4279
8	40.91866	42.40528	92.070	0.055844	0.80931
Load 5 : Party wall loading					
(Edge 2 optimal)					
1	35.07988	51.55120	90.365	4.4777	0.99983
Load 6 : Party wall loading					
(Edge 1 optimal)					

No.	Centre : x	Centre : y	Angle of local x from global X	Width x	Depth y
1	35.05053	56.14105	-89.633	4.6894	0.99993

Displacement Lines

Name	X1 [m]	Y1 [m]	Z1 [m]	X2 [m]	Y2 [m]	Z2 [m]	Intervals [No.]	Calculate	Detailed Results
18B.01	27.06970	56.10310	0.00000	32.02050	56.10310	0.00000	10	Yes	Yes
18B.02	32.02050	56.10310	0.00000	32.02020	53.28900	0.00000	6	Yes	Yes
18B.03	32.02020	53.28900	0.00000	34.29880	53.28910	0.00000	6	Yes	Yes
18B.04	34.29880	53.28910	0.00000	34.29900	42.12610	0.00000	24	Yes	Yes
18B.05	34.29900	42.12610	0.00000	27.03130	42.06780	0.00000	16	Yes	Yes
18B.06	27.03130	42.06780	0.00000	27.03130	42.81150	0.00000	2	Yes	Yes
18B.07	27.03130	42.81150	0.00000	27.06970	56.10310	0.00000	28	Yes	Yes
20FG.01	21.02660	64.09150	0.00000	24.26740	63.42960	0.00000	8	Yes	Yes
20FG.02	24.26740	63.42960	0.00000	23.31400	55.50790	0.00000	16	Yes	Yes
20FG.03	23.31400	55.50790	0.00000	24.37380	55.60010	0.00000	4	Yes	Yes
20FG.04	24.37380	55.60010	0.00000	23.83670	53.15770	0.00000	6	Yes	Yes
20FG.05	23.83670	53.15770	0.00000	24.42370	53.20880	0.00000	2	Yes	Yes
20FG.06	24.42370	53.20880	0.00000	23.90190	50.14280	0.00000	8	Yes	Yes
20FG.07	23.90190	50.14280	0.00000	24.42370	50.18820	0.00000	2	Yes	Yes
20FG.08	24.42370	50.18820	0.00000	24.30050	42.16640	0.00000	18	Yes	Yes
20FG.09	24.30050	42.16640	0.00000	20.99250	42.79780	0.00000	8	Yes	Yes
20FG.10	20.99250	42.79780	0.00000	21.33710	43.74710	0.00000	4	Yes	Yes
20FG.11	21.33710	43.74710	0.00000	12.81700	45.36940	0.00000	18	Yes	Yes
20FG.12	12.81700	45.36940	0.00000	14.97910	55.63720	0.00000	22	Yes	Yes
20FG.13	14.97910	55.63720	0.00000	13.19400	56.13840	0.00000	4	Yes	Yes
20FG.14	13.19400	56.13840	0.00000	13.67460	58.54420	0.00000	6	Yes	Yes
20FG.15	13.67460	58.54420	0.00000	19.98620	57.39750	0.00000	14	Yes	Yes
20FG.16	19.98620	57.39750	0.00000	21.02660	64.09150	0.00000	14	Yes	Yes
17HW.A01	58.70070	56.44780	0.00000	67.17010	55.69590	0.00000	18	Yes	Yes
17HW.A02	67.17010	55.69590	0.00000	66.89130	47.62280	0.00000	18	Yes	Yes
17HW.A03	66.89130	47.62280	0.00000	57.85650	48.31820	0.00000	20	Yes	Yes
17HW.A04	57.85650	48.31820	0.00000	58.70070	56.44780	0.00000	18	Yes	Yes
17HW.B01	58.67890	60.09730	0.00000	59.04640	56.41710	0.00000	8	Yes	Yes
17HW.B02	59.04640	56.41710	0.00000	62.51490	56.10130	0.00000	8	Yes	Yes
17HW.B03	62.51490	56.10130	0.00000	62.69950	59.74720	0.00000	8	Yes	Yes
17HW.B04	62.69950	59.74720	0.00000	58.67890	60.09730	0.00000	10	Yes	Yes

Results : Immediate : Load Centres : Polygonal

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
1	Loading - 4F	40.57994	49.47071	-4.21000	18.95743	-4.6750	39.991	89.543	0.0016711
2	Loading - 3F	37.82069	42.45519	-4.21000	11.82776	-4.6750	29.348	61.129	0.0012773
3	Loading - 2FA	37.52464	55.78655	-4.21000	13.00571	-4.6750	20.037	46.300	821.35E-6
4	Loading - 2FB	43.22027	39.42394	-4.21000	8.02062	-4.6750	19.885	41.780	861.47E-6
5	Party wall loading	35.07987	51.55124	-4.00000	22.70350	-4.5000	113.17	178.24	0.0055641
6	Party wall loading	35.05052	56.14109	-6.60000	16.95576	-6.8000	122.83	229.07	0.0056433

Results : Consolidation : Load Centres : Polygonal

None

Results : Total : Load Centres : Polygonal

None

Results : Immediate : Displacement Data : Lines

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
1	18B.01	27.06970	56.10310	0.00000	1.36631	-0.083333	0.0	0.0	0.0
1	18B.01	27.56478	56.10310	0.00000	1.51415	-0.083333	0.0	0.0	0.0
1	18B.01	28.05986	56.10310	0.00000	1.68237	-0.083333	0.0	0.0	0.0
1	18B.01	28.55494	56.10310	0.00000	1.87481	-0.083333	0.0	0.0	0.0
1	18B.01	29.05002	56.10310	0.00000	2.09637	-0.083333	0.0	0.0	0.0
1	18B.01	29.54510	56.10310	0.00000	2.35330	-0.083333	0.0	0.0	0.0
1	18B.01	30.04018	56.10310	0.00000	2.65393	-0.083333	0.0	0.0	0.0
1	18B.01	30.53526	56.10310	0.00000	3.00972	-0.083333	0.0	0.0	0.0
1	18B.01	31.03034	56.10310	0.00000	3.43748	-0.083333	0.0	0.0	0.0
1	18B.01	31.52542	56.10310	0.00000	3.96363	-0.083333	0.0	0.0	0.0
1	18B.01	32.02050	56.10310	0.00000	4.63279	-0.083333	0.0	0.0	0.0
2	18B.02	32.02050	56.10310	0.00000	4.63279	-0.083333	0.0	0.0	0.0
2	18B.02	32.02045	55.63408	0.00000	4.84551	-0.083333	0.0	0.0	0.0
2	18B.02	32.02040	55.16507	0.00000	5.03884	-0.083333	0.0	0.0	0.0
2	18B.02	32.02035	54.69605	0.00000	5.21219	-0.083333	0.0	0.0	0.0
2	18B.02	32.02030	54.22703	0.00000	5.36485	-0.083333	0.0	0.0	0.0
2	18B.02	32.02025	53.75802	0.00000	5.49612	-0.083333	0.0	0.0	0.0
2	18B.02	32.02020	53.28900	0.00000	5.60516	-0.083333	0.0	0.0	0.0
3	18B.03	32.02020	53.28900	0.00000	5.60516	-0.083333	0.0	0.0	0.0
3	18B.03	32.39997	53.28902	0.00000	6.35847	-0.083333	0.0	0.0	0.0
3	18B.03	32.77973	53.28903	0.00000	7.26756	-0.083333	0.0	0.0	0.0
3	18B.03	33.15950	53.28905	0.00000	8.38245	-0.083333	0.0	0.0	0.0
3	18B.03	33.53927	53.28907	0.00000	9.77248	-0.083333	0.0	0.0	0.0
3	18B.03	33.91903	53.28908	0.00000	11.55887	-0.083333	0.0	0.0	0.0
3	18B.03	34.29880	53.28910	0.00000	14.22573	-0.083333	0.0	0.0	0.0
4	18B.04	34.29880	53.28910	0.00000	14.22573	-0.083333	0.0	0.0	0.0
4	18B.04	34.29881	52.82397	0.00000	14.25671	-0.083333	0.0	0.0	0.0
4	18B.04	34.29882	52.35885	0.00000	14.26613	-0.083333	0.0	0.0	0.0
4	18B.04	34.29883	51.89372	0.00000	14.26787	-0.083333	0.0	0.0	0.0
4	18B.04	34.29883	51.42860	0.00000	14.21815	-0.083333	0.0	0.0	0.0
4	18B.04	34.29884	50.96347	0.00000	14.07322	-0.083333	0.0	0.0	0.0
4	18B.04	34.29885	50.49835	0.00000	13.78873	-0.083333	0.0	0.0	0.0
4	18B.04	34.29886	50.03323	0.00000	13.30184	-0.083333	0.0	0.0	0.0
4	18B.04	34.29887	49.56810	0.00000	12.47348	-0.083333	0.0	0.0	0.0
4	18B.04	34.29888	49.10298	0.00000	11.25656	-0.083333	0.0	0.0	0.0
4	18B.04	34.29888	48.63785	0.00000	10.33317	-0.083333	0.0	0.0	0.0
4	18B.04	34.29889	48.17272	0.00000	9.71774	-0.083333	0.0	0.0	0.0
4	18B.04	34.29890	47.70760	0.00000	9.25437	-0.083333	0.0	0.0	0.0
4	18B.04	34.29891	47.24247	0.00000	8.87808	-0.083333	0.0	0.0	0.0
4	18B.04	34.29892	46.77735	0.00000	8.55268	-0.083333	0.0	0.0	0.0
4	18B.04	34.29892	46.31222	0.00000	8.25533	-0.083333	0.0	0.0	0.0
4	18B.04	34.29893	45.84710	0.00000	7.97015	-0.083333	0.0	0.0	0.0
4	18B.04	34.29894	45.38197	0.00000	7.68496	-0.083333	0.0	0.0	0.0
4	18B.04	34.29895	44.91685	0.00000	7.38964	-0.083333	0.0	0.0	0.0
4	18B.04	34.29896	44.45172	0.00000	7.07539	-0.083333	0.0	0.0	0.0
4	18B.04	34.29897	43.98660	0.00000	6.73472	-0.083333	0.0	0.0	0.0
4	18B.04	34.29897	43.52148	0.00000	6.36303	-0.083333	0.0	0.0	0.0
4	18B.04	34.29898	43.05635	0.00000	5.96124	-0.083333	0.0	0.0	0.0
4	18B.04	34.29899	42.59123	0.00000	5.53388	-0.083333	0.0	0.0	0.0
4	18B.04	34.29900	42.12610	0.00000	5.08368	-0.083333	0.0	0.0	0.0
5	18B.05	34.29900	42.12610	0.00000	5.08368	-0.083333	0.0	0.0	0.0
5	18B.05	33.84477	42.12246	0.00000	4.44925	-0.083333	0.0	0.0	0.0
5	18B.05	33.39054	42.11881	0.00000	3.93254	-0.083333	0.0	0.0	0.0
5	18B.05	32.93631	42.11517	0.00000	3.50036	-0.083333	0.0	0.0	0.0

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
5	18B.05	32.48208	42.11153	0.00000	3.13259	-0.083333	0.0	0.0	0.0
5	18B.05	32.02784	42.10788	0.00000	2.81619	-0.083333	0.0	0.0	0.0
5	18B.05	31.57361	42.10424	0.00000	2.54178	-0.083333	0.0	0.0	0.0
5	18B.05	31.11938	42.10059	0.00000	2.30216	-0.083333	0.0	0.0	0.0
5	18B.05	30.66515	42.09695	0.00000	2.09162	-0.083333	0.0	0.0	0.0
5	18B.05	30.21092	42.09331	0.00000	1.90553	-0.083333	0.0	0.0	0.0
5	18B.05	29.75669	42.08966	0.00000	1.74016	-0.083333	0.0	0.0	0.0
5	18B.05	29.30246	42.08602	0.00000	1.59248	-0.083333	0.0	0.0	0.0
5	18B.05	28.84822	42.08237	0.00000	1.46000	-0.083333	0.0	0.0	0.0
5	18B.05	28.39399	42.07873	0.00000	1.34068	-0.083333	0.0	0.0	0.0
5	18B.05	27.93976	42.07509	0.00000	1.23284	-0.083333	0.0	0.0	0.0
5	18B.05	27.48553	42.07144	0.00000	1.13507	-0.083333	0.0	0.0	0.0
5	18B.05	27.03130	42.06780	0.00000	1.04619	-0.083333	0.0	0.0	0.0
6	18B.06	27.03130	42.06780	0.00000	1.04619	-0.083333	0.0	0.0	0.0
6	18B.06	27.03130	42.43965	0.00000	1.08008	-0.083333	0.0	0.0	0.0
6	18B.06	27.03130	42.81150	0.00000	1.11384	-0.083333	0.0	0.0	0.0
7	18B.07	27.03130	42.81150	0.00000	1.11384	-0.083333	0.0	0.0	0.0
7	18B.07	27.03267	43.28620	0.00000	1.15688	-0.083333	0.0	0.0	0.0
7	18B.07	27.03404	43.76090	0.00000	1.19936	-0.083333	0.0	0.0	0.0
7	18B.07	27.03541	44.23560	0.00000	1.24106	-0.083333	0.0	0.0	0.0
7	18B.07	27.03679	44.71030	0.00000	1.28176	-0.083333	0.0	0.0	0.0
7	18B.07	27.03816	45.18500	0.00000	1.32124	-0.083333	0.0	0.0	0.0
7	18B.07	27.03953	45.65970	0.00000	1.35929	-0.083333	0.0	0.0	0.0
7	18B.07	27.04090	46.13440	0.00000	1.39566	-0.083333	0.0	0.0	0.0
7	18B.07	27.04227	46.60910	0.00000	1.43012	-0.083333	0.0	0.0	0.0
7	18B.07	27.04364	47.08380	0.00000	1.46241	-0.083333	0.0	0.0	0.0
7	18B.07	27.04501	47.55850	0.00000	1.49225	-0.083333	0.0	0.0	0.0
7	18B.07	27.04639	48.03320	0.00000	1.51937	-0.083333	0.0	0.0	0.0
7	18B.07	27.04776	48.50790	0.00000	1.54345	-0.083333	0.0	0.0	0.0
7	18B.07	27.04913	48.98260	0.00000	1.56421	-0.083333	0.0	0.0	0.0
7	18B.07	27.05050	49.45730	0.00000	1.58134	-0.083333	0.0	0.0	0.0
7	18B.07	27.05187	49.93200	0.00000	1.59456	-0.083333	0.0	0.0	0.0
7	18B.07	27.05324	50.40670	0.00000	1.60363	-0.083333	0.0	0.0	0.0
7	18B.07	27.05461	50.88140	0.00000	1.60832	-0.083333	0.0	0.0	0.0
7	18B.07	27.05599	51.35610	0.00000	1.60847	-0.083333	0.0	0.0	0.0
7	18B.07	27.05736	51.83080	0.00000	1.60397	-0.083333	0.0	0.0	0.0
7	18B.07	27.05873	52.30550	0.00000	1.59477	-0.083333	0.0	0.0	0.0
7	18B.07	27.06010	52.78020	0.00000	1.58090	-0.083333	0.0	0.0	0.0
7	18B.07	27.06147	53.25490	0.00000	1.56242	-0.083333	0.0	0.0	0.0
7	18B.07	27.06284	53.72960	0.00000	1.53948	-0.083333	0.0	0.0	0.0
7	18B.07	27.06421	54.20430	0.00000	1.51228	-0.083333	0.0	0.0	0.0
7	18B.07	27.06559	54.67900	0.00000	1.48105	-0.083333	0.0	0.0	0.0
7	18B.07	27.06696	55.15370	0.00000	1.44610	-0.083333	0.0	0.0	0.0
7	18B.07	27.06833	55.62840	0.00000	1.40773	-0.083333	0.0	0.0	0.0
7	18B.07	27.06970	56.10310	0.00000	1.36631	-0.083333	0.0	0.0	0.0
8	20FG.01	21.02660	64.09150	0.00000	0.24381	-0.083333	0.0	0.0	0.0
8	20FG.01	21.43170	64.00876	0.00000	0.26101	-0.083333	0.0	0.0	0.0
8	20FG.01	21.83680	63.92602	0.00000	0.27942	-0.083333	0.0	0.0	0.0
8	20FG.01	22.24190	63.84329	0.00000	0.29912	-0.083333	0.0	0.0	0.0
8	20FG.01	22.64700	63.76055	0.00000	0.32021	-0.083333	0.0	0.0	0.0
8	20FG.01	23.05210	63.67781	0.00000	0.34280	-0.083333	0.0	0.0	0.0
8	20FG.01	23.45720	63.59508	0.00000	0.36701	-0.083333	0.0	0.0	0.0
8	20FG.01	23.86230	63.51234	0.00000	0.39297	-0.083333	0.0	0.0	0.0
8	20FG.01	24.26740	63.42960	0.00000	0.42081	-0.083333	0.0	0.0	0.0
9	20FG.02	24.26740	63.42960	0.00000	0.42081	-0.083333	0.0	0.0	0.0
9	20FG.02	24.20781	62.93449	0.00000	0.44072	-0.083333	0.0	0.0	0.0
9	20FG.02	24.14823	62.43939	0.00000	0.46074	-0.083333	0.0	0.0	0.0
9	20FG.02	24.08864	61.94428	0.00000	0.48078	-0.083333	0.0	0.0	0.0
9	20FG.02	24.02905	61.44917	0.00000	0.50071	-0.083333	0.0	0.0	0.0
9	20FG.02	23.96946	60.95407	0.00000	0.52042	-0.083333	0.0	0.0	0.0
9	20FG.02	23.90987	60.45896	0.00000	0.53976	-0.083333	0.0	0.0	0.0
9	20FG.02	23.85029	59.96386	0.00000	0.55861	-0.083333	0.0	0.0	0.0
9	20FG.02	23.79070	59.46875	0.00000	0.57682	-0.083333	0.0	0.0	0.0
9	20FG.02	23.73111	58.97364	0.00000	0.59426	-0.083333	0.0	0.0	0.0
9	20FG.02	23.67152	58.47854	0.00000	0.61080	-0.083333	0.0	0.0	0.0
9	20FG.02	23.61194	57.98343	0.00000	0.62629	-0.083333	0.0	0.0	0.0
9	20FG.02	23.55235	57.48833	0.00000	0.64062	-0.083333	0.0	0.0	0.0
9	20FG.02	23.49276	56.99322	0.00000	0.65368	-0.083333	0.0	0.0	0.0
9	20FG.02	23.43317	56.49811	0.00000	0.66536	-0.083333	0.0	0.0	0.0
9	20FG.02	23.37359	56.00301	0.00000	0.67557	-0.083333	0.0	0.0	0.0
9	20FG.02	23.31400	55.50790	0.00000	0.68423	-0.083333	0.0	0.0	0.0
10	20FG.03	23.31400	55.50790	0.00000	0.68423	-0.083333	0.0	0.0	0.0
10	20FG.03	23.57895	55.53095	0.00000	0.71767	-0.083333	0.0	0.0	0.0
10	20FG.03	23.84390	55.55400	0.00000	0.75295	-0.083333	0.0	0.0	0.0
10	20FG.03	24.10885	55.57705	0.00000	0.79018	-0.083333	0.0	0.0	0.0
10	20FG.03	24.37380	55.60010	0.00000	0.82950	-0.083333	0.0	0.0	0.0
11	20FG.04	24.37380	55.60010	0.00000	0.82950	-0.083333	0.0	0.0	0.0
11	20FG.04	24.28428	55.19303	0.00000	0.83140	-0.083333	0.0	0.0	0.0
11	20FG.04	24.19477	54.78597	0.00000	0.83175	-0.083333	0.0	0.0	0.0
11	20FG.04	24.10525	54.37890	0.00000	0.83057	-0.083333	0.0	0.0	0.0
11	20FG.04	24.01573	53.97183	0.00000	0.82789	-0.083333	0.0	0.0	0.0
11	20FG.04	23.92622	53.56477	0.00000	0.82376	-0.083333	0.0	0.0	0.0
11	20FG.04	23.83670	53.15770	0.00000	0.81822	-0.083333	0.0	0.0	0.0
12	20FG.05	23.83670	53.15770	0.00000	0.81822	-0.083333	0.0	0.0	0.0
12	20FG.05	24.13020	53.18325	0.00000	0.86493	-0.083333	0.0	0.0	0.0
12	20FG.05	24.42370	53.20880	0.00000	0.91473	-0.083333	0.0	0.0	0.0
13	20FG.06	24.42370	53.20880	0.00000	0.91473	-0.083333	0.0	0.0	0.0
13	20FG.06	24.35847	52.82555	0.00000	0.91101	-0.083333	0.0	0.0	0.0
13	20FG.06	24.29325	52.44230	0.00000	0.90590	-0.083333	0.0	0.0	0.0
13	20FG.06	24.22803	52.05905	0.00000	0.89944	-0.083333	0.0	0.0	0.0
13	20FG.06	24.16280	51.67580	0.00000	0.89170	-0.083333	0.0	0.0	0.0
13	20FG.06	24.09757	51.29255	0.00000	0.88274	-0.083333	0.0	0.0	0.0
13	20FG.06	24.03235	50.90930	0.00000	0.87263	-0.083333	0.0	0.0	0.0
13	20FG.06	23.96712	50.52605	0.00000	0.86144	-0.083333	0.0	0.0	0.0
13	20FG.06	23.90190	50.14280	0.00000	0.84925	-0.083333	0.0	0.0	0.0
14	20FG.07	23.90190	50.14280	0.00000	0.84925	-0.083333	0.0	0.0	0.0
14	20FG.07	24.16280	50.16550	0.00000	0.89285	-0.083333	0.0	0.0	0.0
14	20FG.07	24.42370	50.18820	0.00000	0.93904	-0.083333	0.0	0.0	0.0
15	20FG.08	24.42370	50.18820	0.00000	0.93904	-0.083333	0.0	0.0	0.0
15	20FG.08	24.41686	49.74254	0.00000	0.93412	-0.083333	0.0	0.0	0.0
15	20FG.08	24.41001	49.29689	0.00000	0.92745	-0.083333	0.0	0.0	0.0
15	20FG.08	24.40317	48.85123	0.00000	0.91911	-0.083333	0.0	0.0	0.0
15	20FG.08	24.39632	48.40558	0.00000	0.90918	-0.083333	0.0	0.0	0.0
15	20FG.08	24.38948	47.95992	0.00000	0.89774	-0.083333	0.0	0.0	0.0
15	20FG.08	24.38263	47.51427	0.00000	0.88490	-0.083333	0.0	0.0	0.0
15	20FG.08	24.37579	47.06861	0.00000	0.87074	-0.083333	0.0	0.0	0.0
15	20FG.08	24.36894	46.62296	0.00000	0.85538	-0.083333	0.0	0.0	0.0
15	20FG.08	24.36210	46.17730	0.00000	0.83890	-0.083333	0.0	0.0	0.0
15	20FG.08	24.35526	45.73164	0.00000	0.82142	-0.083333	0.0	0.0	0.0
15	20FG.08	24.34841	45.28599	0.00000	0.80303	-0.083333	0.0	0.0	0.0
15	20FG.08	24.34157	44.84033	0.00000	0.78384	-0.083333	0.0	0.0	0.0
15	20FG.08	24.33472	44.39468	0.00000	0.76395	-0.083333	0.0	0.0	0.0
15	20FG.08	24.32788	43.94902	0.00000	0.74345	-0.083333	0.0	0.0	0.0
15	20FG.08	24.32103	43.50337	0.00000	0.72245	-0.083333	0.0	0.0	0.0
15	20FG.08	24.31419	43.05771	0.00000	0.70103	-0.083333	0.0	0.0	0.0
15	20FG.08	24.30734	42.61206	0.00000	0.67929	-0.083333	0.0	0.0	0.0
15	20FG.08	24.30050	42.16640	0.00000	0.65732	-0.083333	0.0	0.0	0.0
16	20FG.09	24.30050	42.16640	0.00000	0.65732	-0.083333	0.0	0.0	0.0
16	20FG.09	23.88700	42.24533	0.00000	0.61639	-0.083333	0.0	0.0	0.0
16	20FG.09	23.47350	42.32425	0.00000	0.57804	-0.083333	0.0	0.0	0.0
16	20FG.09	23.06000	42.40318	0.00000	0.54208	-0.083333	0.0	0.0	0.0
16	20FG.09	22.64650	42.48210	0.00000	0.50836	-0.083333	0.0	0.0	0.0
16	20FG.09	22.23300	42.56103	0.00000	0.47673	-0.083333	0.0	0.0	0.0
16	20FG.09	21.81950	42.63995	0.00000	0.44705	-0.083333	0.0	0.0	0.0
16	20FG.09	21.40600	42.71888	0.00000	0.41920	-0.083333	0.0	0.0	0.0
16	20FG.09	20.99250	42.79780	0.00000	0.39306	-0.083333	0.0	0.0	0.0
17	20FG.10	20.99250	42.79780	0.00000	0.39306	-0.083333	0.0	0.0	0.0
17	20FG.10	21.07865	43.03513	0.00000	0.40416	-0.083333	0.0	0.0	0.0
17	20FG.10	21.16480	43.27245	0.00000	0.41547	-0.083333	0.0	0.0	0.0
17	20FG.10	21.25095	43.50978	0.00000	0.42699	-0.083333	0.0	0.0	0.0

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
17	20FG.10	21.33710	43.74710	0.00000	0.43872	-0.083333	0.0	0.0	0.0
18	20FG.11	21.33710	43.74710	0.00000	0.43872	-0.083333	0.0	0.0	0.0
18	20FG.11	20.86376	43.83723	0.00000	0.40677	-0.083333	0.0	0.0	0.0
18	20FG.11	20.39042	43.92736	0.00000	0.37714	-0.083333	0.0	0.0	0.0
18	20FG.11	19.91708	44.01748	0.00000	0.34965	-0.083333	0.0	0.0	0.0
18	20FG.11	19.44374	44.10761	0.00000	0.32414	-0.083333	0.0	0.0	0.0
18	20FG.11	18.97041	44.19774	0.00000	0.30045	-0.083333	0.0	0.0	0.0
18	20FG.11	18.49707	44.28787	0.00000	0.27846	-0.083333	0.0	0.0	0.0
18	20FG.11	18.02373	44.37799	0.00000	0.25803	-0.083333	0.0	0.0	0.0
18	20FG.11	17.55039	44.46812	0.00000	0.23904	-0.083333	0.0	0.0	0.0
18	20FG.11	17.07705	44.55825	0.00000	0.22140	-0.083333	0.0	0.0	0.0
18	20FG.11	16.60371	44.64838	0.00000	0.20501	-0.083333	0.0	0.0	0.0
18	20FG.11	16.13037	44.73851	0.00000	0.18977	-0.083333	0.0	0.0	0.0
18	20FG.11	15.65703	44.82863	0.00000	0.17560	-0.083333	0.0	0.0	0.0
18	20FG.11	15.18369	44.91876	0.00000	0.16242	-0.083333	0.0	0.0	0.0
18	20FG.11	14.71036	45.00889	0.00000	0.15016	-0.083333	0.0	0.0	0.0
18	20FG.11	14.23702	45.09902	0.00000	0.13877	-0.083333	0.0	0.0	0.0
18	20FG.11	13.76368	45.18914	0.00000	0.12816	-0.083333	0.0	0.0	0.0
18	20FG.11	13.29034	45.27927	0.00000	0.11830	-0.083333	0.0	0.0	0.0
18	20FG.11	12.81700	45.36940	0.00000	0.10912	-0.083333	0.0	0.0	0.0
19	20FG.12	12.81700	45.36940	0.00000	0.10912	-0.083333	0.0	0.0	0.0
19	20FG.12	12.91528	45.83612	0.00000	0.11251	-0.083333	0.0	0.0	0.0
19	20FG.12	13.01355	46.30284	0.00000	0.11586	-0.083333	0.0	0.0	0.0
19	20FG.12	13.11183	46.76955	0.00000	0.11917	-0.083333	0.0	0.0	0.0
19	20FG.12	13.21011	47.23627	0.00000	0.12242	-0.083333	0.0	0.0	0.0
19	20FG.12	13.30839	47.70299	0.00000	0.12560	-0.083333	0.0	0.0	0.0
19	20FG.12	13.40666	48.16971	0.00000	0.12870	-0.083333	0.0	0.0	0.0
19	20FG.12	13.50494	48.63643	0.00000	0.13170	-0.083333	0.0	0.0	0.0
19	20FG.12	13.60322	49.10315	0.00000	0.13460	-0.083333	0.0	0.0	0.0
19	20FG.12	13.70150	49.56986	0.00000	0.13739	-0.083333	0.0	0.0	0.0
19	20FG.12	13.79977	50.03658	0.00000	0.14004	-0.083333	0.0	0.0	0.0
19	20FG.12	13.89805	50.50330	0.00000	0.14256	-0.083333	0.0	0.0	0.0
19	20FG.12	13.99633	50.97002	0.00000	0.14493	-0.083333	0.0	0.0	0.0
19	20FG.12	14.09460	51.43674	0.00000	0.14714	-0.083333	0.0	0.0	0.0
19	20FG.12	14.19288	51.90345	0.00000	0.14918	-0.083333	0.0	0.0	0.0
19	20FG.12	14.29116	52.37017	0.00000	0.15104	-0.083333	0.0	0.0	0.0
19	20FG.12	14.38944	52.83689	0.00000	0.15270	-0.083333	0.0	0.0	0.0
19	20FG.12	14.48771	53.30361	0.00000	0.15417	-0.083333	0.0	0.0	0.0
19	20FG.12	14.58599	53.77033	0.00000	0.15543	-0.083333	0.0	0.0	0.0
19	20FG.12	14.68427	54.23705	0.00000	0.15647	-0.083333	0.0	0.0	0.0
19	20FG.12	14.78255	54.70376	0.00000	0.15730	-0.083333	0.0	0.0	0.0
19	20FG.12	14.88082	55.17048	0.00000	0.15790	-0.083333	0.0	0.0	0.0
19	20FG.12	14.97910	55.63720	0.00000	0.15827	-0.083333	0.0	0.0	0.0
20	20FG.13	14.97910	55.63720	0.00000	0.15827	-0.083333	0.0	0.0	0.0
20	20FG.13	14.53283	55.76250	0.00000	0.14583	-0.083333	0.0	0.0	0.0
20	20FG.13	14.08655	55.88780	0.00000	0.13433	-0.083333	0.0	0.0	0.0
20	20FG.13	13.64028	56.01310	0.00000	0.12369	-0.083333	0.0	0.0	0.0
20	20FG.13	13.19400	56.13840	0.00000	0.11384	-0.083333	0.0	0.0	0.0
21	20FG.14	13.19400	56.13840	0.00000	0.11384	-0.083333	0.0	0.0	0.0
21	20FG.14	13.27410	56.53937	0.00000	0.11379	-0.083333	0.0	0.0	0.0
21	20FG.14	13.35420	56.94033	0.00000	0.11362	-0.083333	0.0	0.0	0.0
21	20FG.14	13.43430	57.34130	0.00000	0.11333	-0.083333	0.0	0.0	0.0
21	20FG.14	13.51440	57.74227	0.00000	0.11293	-0.083333	0.0	0.0	0.0
21	20FG.14	13.59450	58.14323	0.00000	0.11241	-0.083333	0.0	0.0	0.0
21	20FG.14	13.67460	58.54420	0.00000	0.11177	-0.083333	0.0	0.0	0.0
22	20FG.15	13.67460	58.54420	0.00000	0.11177	-0.083333	0.0	0.0	0.0
22	20FG.15	14.12543	58.46229	0.00000	0.12135	-0.083333	0.0	0.0	0.0
22	20FG.15	14.57626	58.38039	0.00000	0.13168	-0.083333	0.0	0.0	0.0
22	20FG.15	15.02709	58.29848	0.00000	0.14284	-0.083333	0.0	0.0	0.0
22	20FG.15	15.47791	58.21657	0.00000	0.15490	-0.083333	0.0	0.0	0.0
22	20FG.15	15.92874	58.13466	0.00000	0.16792	-0.083333	0.0	0.0	0.0
22	20FG.15	16.37957	58.05276	0.00000	0.18202	-0.083333	0.0	0.0	0.0
22	20FG.15	16.83040	57.97085	0.00000	0.19726	-0.083333	0.0	0.0	0.0
22	20FG.15	17.28123	57.88894	0.00000	0.21377	-0.083333	0.0	0.0	0.0
22	20FG.15	17.73206	57.80704	0.00000	0.23165	-0.083333	0.0	0.0	0.0
22	20FG.15	18.18289	57.72513	0.00000	0.25104	-0.083333	0.0	0.0	0.0
22	20FG.15	18.63371	57.64322	0.00000	0.27208	-0.083333	0.0	0.0	0.0
22	20FG.15	19.08454	57.56131	0.00000	0.29493	-0.083333	0.0	0.0	0.0
22	20FG.15	19.53537	57.47941	0.00000	0.31977	-0.083333	0.0	0.0	0.0
22	20FG.15	19.98620	57.39750	0.00000	0.34679	-0.083333	0.0	0.0	0.0
23	20FG.16	19.98620	57.39750	0.00000	0.34679	-0.083333	0.0	0.0	0.0
23	20FG.16	20.06051	57.87564	0.00000	0.34215	-0.083333	0.0	0.0	0.0
23	20FG.16	20.13483	58.35379	0.00000	0.33695	-0.083333	0.0	0.0	0.0
23	20FG.16	20.20914	58.83193	0.00000	0.33121	-0.083333	0.0	0.0	0.0
23	20FG.16	20.28346	59.31007	0.00000	0.32497	-0.083333	0.0	0.0	0.0
23	20FG.16	20.35777	59.78821	0.00000	0.31826	-0.083333	0.0	0.0	0.0
23	20FG.16	20.43209	60.26636	0.00000	0.31112	-0.083333	0.0	0.0	0.0
23	20FG.16	20.50640	60.74450	0.00000	0.30360	-0.083333	0.0	0.0	0.0
23	20FG.16	20.58071	61.22264	0.00000	0.29573	-0.083333	0.0	0.0	0.0
23	20FG.16	20.65503	61.70079	0.00000	0.28757	-0.083333	0.0	0.0	0.0
23	20FG.16	20.72934	62.17893	0.00000	0.27915	-0.083333	0.0	0.0	0.0
23	20FG.16	20.80366	62.65707	0.00000	0.27052	-0.083333	0.0	0.0	0.0
23	20FG.16	20.87797	63.13521	0.00000	0.26172	-0.083333	0.0	0.0	0.0
23	20FG.16	20.95229	63.61336	0.00000	0.25281	-0.083333	0.0	0.0	0.0
23	20FG.16	21.02660	64.09150	0.00000	0.24381	-0.083333	0.0	0.0	0.0
24	17HW.A01	58.70070	56.44780	0.00000	0.37541	-0.083333	0.0	0.0	0.0
24	17HW.A01	59.17122	56.40603	0.00000	0.34755	-0.083333	0.0	0.0	0.0
24	17HW.A01	59.64174	56.36426	0.00000	0.32180	-0.083333	0.0	0.0	0.0
24	17HW.A01	60.11227	56.32248	0.00000	0.29797	-0.083333	0.0	0.0	0.0
24	17HW.A01	60.58279	56.28071	0.00000	0.27592	-0.083333	0.0	0.0	0.0
24	17HW.A01	61.05331	56.23894	0.00000	0.25549	-0.083333	0.0	0.0	0.0
24	17HW.A01	61.52383	56.19717	0.00000	0.23656	-0.083333	0.0	0.0	0.0
24	17HW.A01	61.99436	56.15539	0.00000	0.21901	-0.083333	0.0	0.0	0.0
24	17HW.A01	62.46488	56.11362	0.00000	0.20272	-0.083333	0.0	0.0	0.0
24	17HW.A01	62.93540	56.07185	0.00000	0.18761	-0.083333	0.0	0.0	0.0
24	17HW.A01	63.40592	56.03008	0.00000	0.17359	-0.083333	0.0	0.0	0.0
24	17HW.A01	63.87644	55.98831	0.00000	0.16056	-0.083333	0.0	0.0	0.0
24	17HW.A01	64.34697	55.94653	0.00000	0.14846	-0.083333	0.0	0.0	0.0
24	17HW.A01	64.81749	55.90476	0.00000	0.13722	-0.083333	0.0	0.0	0.0
24	17HW.A01	65.28801	55.86299	0.00000	0.12677	-0.083333	0.0	0.0	0.0
24	17HW.A01	65.75853	55.82122	0.00000	0.11705	-0.083333	0.0	0.0	0.0
24	17HW.A01	66.22906	55.77944	0.00000	0.10802	-0.083333	0.0	0.0	0.0
24	17HW.A01	66.69958	55.73767	0.00000	0.09961	-0.083333	0.0	0.0	0.0
24	17HW.A01	67.17010	55.69590	0.00000	0.09179	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.17010	55.69590	0.00000	0.09179	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.15461	55.24739	0.00000	0.09356	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.13912	54.79889	0.00000	0.09525	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.12363	54.35038	0.00000	0.09687	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.10814	53.90188	0.00000	0.09840	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.09266	53.45337	0.00000	0.09984	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.07717	53.00487	0.00000	0.10119	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.06168	52.55636	0.00000	0.10245	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.04619	52.10786	0.00000	0.10360	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.03070	51.65935	0.00000	0.10466	-0.083333	0.0	0.0	0.0
25	17HW.A02	67.01521	51.21084	0.00000	0.10560	-0.083333	0.0	0.0	0.0
25	17HW.A02	66.99972	50.76234	0.00000	0.10643	-0.083333	0.0	0.0	0.0
25	17HW.A02	66.98423	50.31383	0.00000	0.10716	-0.083333	0.0	0.0	0.0
25	17HW.A02	66.96874	49.86533	0.00000	0.10776	-0.083333	0.0	0.0	0.0
25	17HW.A02	66.95326	49.41682	0.00000	0.10825	-0.083333	0.0	0.0	0.0
25	17HW.A02	66.93777	48.96832	0.00000	0.10862	-0.083333	0.0	0.0	0.0
25	17HW.A02	66.92228	48.51981	0.00000	0.10887	-0.083333	0.0	0.0	0.0
25	17HW.A02	66.90679	48.07131	0.00000	0.10900	-0.083333	0.0	0.0	0.0
25	17HW.A02	66.89130	47.62280	0.00000	0.10900	-0.083333	0.0	0.0	0.0
26	17HW.A03	66.89130	47.62280	0.00000	0.10900	-0.083333	0.0	0.0	0.0
26	17HW.A03	66.43956	47.65757	0.00000	0.11814	-0.083333	0.0	0.0	0.0
26	17HW.A03	65.98782	47.69234	0.00000	0.12797	-0.083333	0.0	0.0	0.0
26	17HW.A03	65.53608	47.72711	0.00000	0.13856	-0.083333	0.0	0.0	0.0
26	17HW.A03	65.08434	47.76188	0.00000	0.14998	-0.083333	0.0	0.0	0.0
26	17HW.A03	64.63260	47.79665	0.00000	0.16228	-0.083333	0.0	0.0	0.0
26	17HW.A03	64.18086	47.83142	0.00000	0.17555	-0.083333	0.0	0.0	0.0

Ref.	Name	x [m]	y [m]	z [mOD]	δz [mm]	Stress: Calc. Level [mOD]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
26	17HW.A03	63.72912	47.86619	0.00000	0.18987	-0.083333	0.0	0.0	0.0
26	17HW.A03	63.27738	47.90096	0.00000	0.20532	-0.083333	0.0	0.0	0.0
26	17HW.A03	62.82564	47.93573	0.00000	0.22201	-0.083333	0.0	0.0	0.0
26	17HW.A03	62.37390	47.97050	0.00000	0.24005	-0.083333	0.0	0.0	0.0
26	17HW.A03	61.92216	48.00527	0.00000	0.25955	-0.083333	0.0	0.0	0.0
26	17HW.A03	61.47042	48.04004	0.00000	0.28064	-0.083333	0.0	0.0	0.0
26	17HW.A03	61.01868	48.07481	0.00000	0.30348	-0.083333	0.0	0.0	0.0
26	17HW.A03	60.56694	48.10958	0.00000	0.32823	-0.083333	0.0	0.0	0.0
26	17HW.A03	60.11520	48.14435	0.00000	0.35506	-0.083333	0.0	0.0	0.0
26	17HW.A03	59.66346	48.17912	0.00000	0.38418	-0.083333	0.0	0.0	0.0
26	17HW.A03	59.21172	48.21389	0.00000	0.41580	-0.083333	0.0	0.0	0.0
26	17HW.A03	58.75998	48.24866	0.00000	0.45018	-0.083333	0.0	0.0	0.0
26	17HW.A03	58.30824	48.28343	0.00000	0.48759	-0.083333	0.0	0.0	0.0
26	17HW.A03	57.85650	48.31820	0.00000	0.52835	-0.083333	0.0	0.0	0.0
27	17HW.A04	57.85650	48.31820	0.00000	0.52835	-0.083333	0.0	0.0	0.0
27	17HW.A04	57.90340	48.76984	0.00000	0.52468	-0.083333	0.0	0.0	0.0
27	17HW.A04	57.95030	49.22149	0.00000	0.52028	-0.083333	0.0	0.0	0.0
27	17HW.A04	57.99720	49.67313	0.00000	0.51518	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.04410	50.12478	0.00000	0.50940	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.09100	50.57642	0.00000	0.50296	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.13790	51.02807	0.00000	0.49590	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.18480	51.47971	0.00000	0.48825	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.23170	51.93136	0.00000	0.48003	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.27860	52.38300	0.00000	0.47129	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.32550	52.83464	0.00000	0.46205	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.37240	53.28629	0.00000	0.45237	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.41930	53.73793	0.00000	0.44228	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.46620	54.18958	0.00000	0.43181	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.51310	54.64122	0.00000	0.42102	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.56000	55.09287	0.00000	0.40994	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.60690	55.54451	0.00000	0.39862	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.65380	55.99616	0.00000	0.38709	-0.083333	0.0	0.0	0.0
27	17HW.A04	58.70070	56.44780	0.00000	0.37541	-0.083333	0.0	0.0	0.0
28	17HW.B01	58.67890	60.09730	0.00000	0.29836	-0.083333	0.0	0.0	0.0
28	17HW.B01	58.72484	59.63727	0.00000	0.30646	-0.083333	0.0	0.0	0.0
28	17HW.B01	58.77078	59.17725	0.00000	0.31432	-0.083333	0.0	0.0	0.0
28	17HW.B01	58.81671	58.71722	0.00000	0.32191	-0.083333	0.0	0.0	0.0
28	17HW.B01	58.86265	58.25720	0.00000	0.32920	-0.083333	0.0	0.0	0.0
28	17HW.B01	58.90859	57.79717	0.00000	0.33616	-0.083333	0.0	0.0	0.0
28	17HW.B01	58.95452	57.33715	0.00000	0.34275	-0.083333	0.0	0.0	0.0
28	17HW.B01	59.00046	56.87712	0.00000	0.34895	-0.083333	0.0	0.0	0.0
28	17HW.B01	59.04640	56.41710	0.00000	0.35473	-0.083333	0.0	0.0	0.0
29	17HW.B02	59.04640	56.41710	0.00000	0.35473	-0.083333	0.0	0.0	0.0
29	17HW.B02	59.47996	56.37762	0.00000	0.33044	-0.083333	0.0	0.0	0.0
29	17HW.B02	59.91352	56.33815	0.00000	0.30784	-0.083333	0.0	0.0	0.0
29	17HW.B02	60.34709	56.29868	0.00000	0.28679	-0.083333	0.0	0.0	0.0
29	17HW.B02	60.78065	56.25920	0.00000	0.26718	-0.083333	0.0	0.0	0.0
29	17HW.B02	61.21421	56.21972	0.00000	0.24891	-0.083333	0.0	0.0	0.0
29	17HW.B02	61.64777	56.18025	0.00000	0.23187	-0.083333	0.0	0.0	0.0
29	17HW.B02	62.08134	56.14078	0.00000	0.21597	-0.083333	0.0	0.0	0.0
29	17HW.B02	62.51490	56.10130	0.00000	0.20113	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.51490	56.10130	0.00000	0.20113	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.53797	56.55704	0.00000	0.19631	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.56105	57.01278	0.00000	0.19137	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.58413	57.46851	0.00000	0.18633	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.60720	57.92425	0.00000	0.18120	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.63027	58.37999	0.00000	0.17600	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.65335	58.83573	0.00000	0.17075	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.67643	59.29146	0.00000	0.16547	-0.083333	0.0	0.0	0.0
30	17HW.B03	62.69950	59.74720	0.00000	0.16016	-0.083333	0.0	0.0	0.0
31	17HW.B04	62.69950	59.74720	0.00000	0.16016	-0.083333	0.0	0.0	0.0
31	17HW.B04	62.29744	59.78221	0.00000	0.17062	-0.083333	0.0	0.0	0.0
31	17HW.B04	61.89538	59.81722	0.00000	0.18170	-0.083333	0.0	0.0	0.0
31	17HW.B04	61.49332	59.85223	0.00000	0.19346	-0.083333	0.0	0.0	0.0
31	17HW.B04	61.09126	59.88724	0.00000	0.20593	-0.083333	0.0	0.0	0.0
31	17HW.B04	60.68920	59.92225	0.00000	0.21915	-0.083333	0.0	0.0	0.0
31	17HW.B04	60.28714	59.95726	0.00000	0.23318	-0.083333	0.0	0.0	0.0
31	17HW.B04	59.88508	59.99227	0.00000	0.24806	-0.083333	0.0	0.0	0.0
31	17HW.B04	59.48302	60.02728	0.00000	0.26384	-0.083333	0.0	0.0	0.0
31	17HW.B04	59.08096	60.06229	0.00000	0.28059	-0.083333	0.0	0.0	0.0
31	17HW.B04	58.67890	60.09730	0.00000	0.29836	-0.083333	0.0	0.0	0.0

Results : Consolidation : Displacement Data : Lines

None

Results : Total : Displacement Data : Lines

None