

100, Woodside Avenue. N10 3JA

Project Management Plan

CFA Piling

Revision 1

Contract Number:	9761
Issue Date:	09/11/2023
Principal Contractor (P/C):	Formation Design & Build Ltd
P/C Main Contact:	Bryan McNamee
R & A Contract Supervisor:	Peter Mallett
Site Foreman:	TBC
Rig Type:	SR45

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1	Steel fixing	S&J
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4	Pile Setting Out	Boundary Point
5	Guide Walls	None

Document Control

Date	R&A Revision (Template)	Revised By	Changes	Effects
03/02/21	3.3	ND/WL	Updates to Risk Assessments and HS&S Advisor	Issued from 04/02/21
27/04/21	3.3.1	ND	Hand tied cages weight limit changed.	Issued from 28/04/21
07/12/21	4.0	PC	Update document control (BMS2 Issue 09).	Issued from 01/02/22
08/04/21	4.1	ND	Amendments to Section 4, WP 2, Risk Assessment and other minor amendments.	Issued from 11/04/22
06/10/22	4.2	ND	Various amendments: exclusion zones, PPE, protection to rebar and eye care.	Issued from 06/10/22
27/07/23	4.3	ND	Amendments to blowing out procedure.	Issued from 29/08/23

Date	RAMS Revision	Prepared by	Approved by	Comments
09/11/2023	1	N Dewey	N Dewey	Thames Water Asset Info. Updated; Contact Info. Amended.
20/09/2023	0	N Dewey	N Dewey	

PROJECT MANAGEMENT PLAN

PMP SECTION 1.2 – APPOINTMENT OF PERSONNEL

Site Address	100, Woodside Avenue. N10 3JA
Contract No.	9761
Business Unit	Rock & Alluvium
Date	09/11/2023

The following operations management team has been appointed for the project identified above:

Pre-Construction Manager

Nick Dewey	Signature of acknowledgement	
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Construction Manager

Mark Gibson	Signature of acknowledgement	
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Site Supervisor

Peter Mallett	Signature of acknowledgement	
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General Foreman

TBC	Signature of acknowledgement	
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Please refer to Section 2.12 and Section 8 for further details on roles and responsibilities

Your role is to operate and maintain appropriate systems and standards to ensure that the workplace and any operations under your control are carried out and delivered safely and without adverse impact to the environment or neighbours. You should supervise the work of contractors engaged in your operations and take appropriate action where they are working at unacceptable standards.

To assist you in this role, you need to ensure that you have read and understood the Company's Health, Safety and Environmental Policies and are familiar with the requirements outlined therein. You should have an up to date copy of these documents available for your use. If you do not have copies, or the copies you have are out of date, please contact your Line Manager who will arrange for the documents to be issued to you.

You must notify your line manager immediately in the case of absence due to ill health and also advise your line manager of any periods of planned absence so that we can ensure that a suitably experienced and competent person is designated to undertake this role in your absence.

Nick Dewey
Pre-Construction Manager

Rock & Alluvium

PROJECT MANAGEMENT PLAN

PMP SECTION 3 – LIFTING PLAN (NON CRANE)

v4.3

Rock & Alluvium 

Contract Title: 100, Woodside Avenue. N10 3JA		Contract No:	MS Reference:
Work Package: CFAPiling		9761	MS/PMP 21
Author: ND / WL		Date Produced: 09/11/2023	
1.0	Scope of Works	CFAPiling	
2.0	Date(s)	From / To: Refer to Technical Package	
3.0	Precise Location:	100, Woodside Avenue. N10 3JA	
4.0	Personnel:	The personnel allocated to this contract are identified on the Labour Allocation Sheet, issued Weekly; it is anticipated that 4 – 7 No. (minimum 3No.) personnel will be on site per rig. Qualification of the crew is produced on day of start (or earlier) by the Foreman using Site Personnel Training matrix.	
5.0	Communication & Responsibilities	All operatives shall be briefed on the WP Method statement and each task briefings prior to commencing each phase of work. See PMP - Section 8 - Roles and Responsibilities.	
6.0	Significant HS&E Risks:	As detailed in PMP - Section 10 Risk Assessment (FM-HSS-H03-03)	
7.0	Phase of Work:	Refer to Phase of Works (Methodology) including HS&E Arrangements, Personnel, Plant and Risks/Hazards in this document.	
8.0	Access / Egress & Deliveries:	Formation Design & Build Ltd is to provide safe means of access and egress to the site and all work areas, including pedestrian and vehicle segregation within the site. If other trades are working near the piling area, Formation Design & Build Ltd is to provide fencing to segregate the piling area from other operations, the R&A Foreman can stop piling works if it is deemed that follow-on trades are working too close and effecting the safety of himself and others. Any required exclusion zones/barriers around the auger at ground level are to be maintained in accordance with the agreed scope of works.	
9.0	List Plant & Equipment:	Soilmec hydraulic Piling rig Trailer mounted concrete pump (CFA Only) Concrete agitator (CFA Only) Compressor (CFA Only) Bunded Vented Fuel bowser Storage container (normally 10ft/3m) Foreman's van Set Tower Lights (Winter only) Access Platform 3No crowd/chapter 8 barrier (to create exclusion zone) Refer to Phase of Works (Methodology) including HS&E Arrangements, Personnel, Plant and Risks/Hazards in this document. An attendant 360° tracked excavator (minimum 13 tonnes) is to be provided by Formation Design & Build Ltd . The piling foreman is to check the machine operator's CPCS (ideally blue) card is in date and covers the plant to be operated. He is also to ensure that the operator is included in the Rock & Alluvium inductions and all site safety tool box talks.	

		As the attendant excavator will be required to work in close proximity to Rock & Alluvium personnel the foreman is under instructions to raise with Formation Design & Build Ltd any doubts as to the driver's abilities or communication skills, notwithstanding any formal qualifications the driver may have; the attendant 360° operator and the R&A banksman are required to sign up to the attached pictorial guide for the safe interaction between plant and operatives.
10.0	Materials	Ready-mixed concrete Reinforcement Oils, fuels, greases Prime-a-pump line lubricant
11.0	Temporary Works:	N/A
14.0	Emergency Procedures:	See PMP - Section 10 Risk Assessments and Spill Response Plan
15.0	Permits to Work Required:	Break Ground (RA-FM-07-032 Permit to Work)
16.0	Hold Points:	Site Health and Safety checks (as below) and Piling Operations are not to commence until Rock & Alluvium have received a signed copy of the <u>Working Platform Certificate</u> and <u>Permit to Work</u> from Formation Design & Build Ltd .

Phase of Works (Methodology) including HS&E Arrangements, Personnel, Plant and Risks/Hazards

This Project Management Plan is to be read in conjunction with the Site Specific Risk Assessment and Galliford Try (Parent Company) Health, Safety and Environmental Standards.

1. TASK

Rock & Alluvium Ltd as a Specialist Piling Sub Contractor are to construct piles using CFAt techniques at the above site. R & A will be working under the instruction of our Client - Formation Design & Build Ltd . A copy of the F10, confirming the appointment of Formation Design & Build Ltd is to be available on site.

2. SITE HEALTH and SAFETY

Before any piling operations commence, the piling foreman is to:

- a) Review the site specific risk assessment, noting any special requirements and ensure that all piling operatives have received the necessary training to carry out their work.
- b) Brief the piling operatives on the site health and safety requirements and check that they have all of the necessary PPE.
- c) Check that Formation Design & Build Ltd is displaying all of the relevant HSE statutory notices.
- d) Carry out daily checks of all piling equipment and complete both the "Record of Inspections LOLER" and "Record of Inspections PUWER" books / GT Forms on a weekly basis.
- e) Ensure the weekly workplace inspection and safety harness inspection forms are up to date.
- f) Check that the piling rig has been thoroughly inspected and certificated within the last 12 months and that the lifting equipment and fall arrest device have been thoroughly inspected and certificated within the last 6 months.
- g) Formation Design & Build Ltd will carry out the Piling Team Site Induction on arrival
- h) Ensure the following documents are in place:
 - Platform Certificate

- Permit to Work
- Approved Method Statement
- Permit to Dig (Provided by Formation Design & Build Ltd)

The Contract Supervisor is to ensure that all of above are completed to their satisfaction before piling operations commence; see 'Role & Responsibilities' for a complete list of daily / weekly checks carried out by the site Foreman on his tablet.

3. WORKFORCE

The piling team is to be suitably trained. Copies of all plant operator, CPCS/CSCS cards and training certificates will be kept with the piling foreman and shown to the site manager on our arrival to site.

The Piling Team will consist of:

Piling Foreman/Rig driver
Concrete Ganger
Banksman (1 or 2No)

Additional operatives may include:

Steel fixers (up to 3No)
Setting Out Engineer

4. PLANT and EQUIPMENT

Our standard plant assembly supplied for piling operations comprises:

Soilmec hydraulic Piling rig
Trailer mounted concrete pump (CFA Only)
Concrete agitator (CFA Only)
Compressor (CFA Only)
Bunded Vented Fuel bowser
Storage container (normally 10ft/3m)
Foreman's van
Set Tower Lights (Winter only)

An attendant 360° tracked excavator (minimum 13 tonnes) is to be provided by Formation Design & Build Ltd . The piling foreman is to check the machine operator's plant operator's CPCS card is in date and covers the plant to be operated. He is also to ensure that the operator is included in **the** Rock & Alluvium inductions and all site safety tool box talks.

All relevant certificates for plant and ancillary equipment (excluding MEWP) can be issued via e-mail prior to arrival, these are also available on the day of mobilisation from the rig file; all daily/weekly inspection forms are completed electronically by the Foreman on his tablet; these can be sent directly to the client if required.

As attendant excavator will be required to work in close proximity to Rock & Alluvium personnel the foreman is under instructions to raise with Formation Design & Build Ltd any doubts as to the driver's abilities or communication skills, notwithstanding any formal qualifications the driver may have.

5. PUBLIC and ADJACENT PREMISES

The site boundary is to be kept secure by Formation Design & Build Ltd and is to prevent unauthorised access onto the site. In the event of unauthorised people entering the piling area, the piling foreman is to cease all piling operations and ask the people to leave. Piling is not to restart until the piling area is clear. Rock & Alluvium's Foreman is to ensure that this procedure is strictly enforced.

General Note: Rock & Alluvium fully comply with the HSE endorsed FPS guidance on "Cleaning and Guarding of Augers on Piling Operations", however in extreme circumstances where auger guards cannot be utilised, R&A work in accordance with section 4.3 of the above mentioned document, i.e. the use of a physical barrier at a 2m radius from the centre of the pile, this physical barrier is to be supplied by Formation Design & Build Ltd .

6. OTHER CONTRACTORS

All other personnel on site are to be notified of piling works by Formation Design & Build Ltd and told not to enter into the piling area unless specifically involved. In the event of unauthorised contractors entering the piling area, piling is to cease and the contractors asked to leave. Piling is not to restart until the piling area is clear. R & A Foreman is to ensure that this procedure is strictly enforced. It may be prudent for Formation

Design & Build Ltd to include a specific section within the site induction regarding Piling and the associated hazards; particularly with regard to hearing protection.

7. PILING PLATFORM

Formation Design & Build Ltd is to design, construct and maintain, a safe and adequate Piling Platform in accordance with BRE 470 'Working platforms for tracked plant'; this is to be confirmed by Formation Design & Build Ltd issuing a signed FPS "Working Platform Certificate".

Piling Operations are not to commence until Rock & Alluvium have received a signed copy of the Working Platform Certificate and Permit to Work from Formation Design & Build Ltd .

The Piling Platform is to be constructed to safely support the bearing pressures of the Rock & Alluvium piling rig allocated to the project in both its travelling (BRE Load case 1) and working (BRE Load case 2) modes. The rig to be used on site is given on page 1, for which the associated bearing pressures can be supplied by our Contracts Department.

8. SETTING OUT

The Pile positions are to be set out during the Piling by a full time Setting Out Engineer, provided by Boundary Point. The Principal Contractor is to provide either the main grid lines or a minimum of three base control stations and their co-ordinates. These three base stations must be within the site boundary.

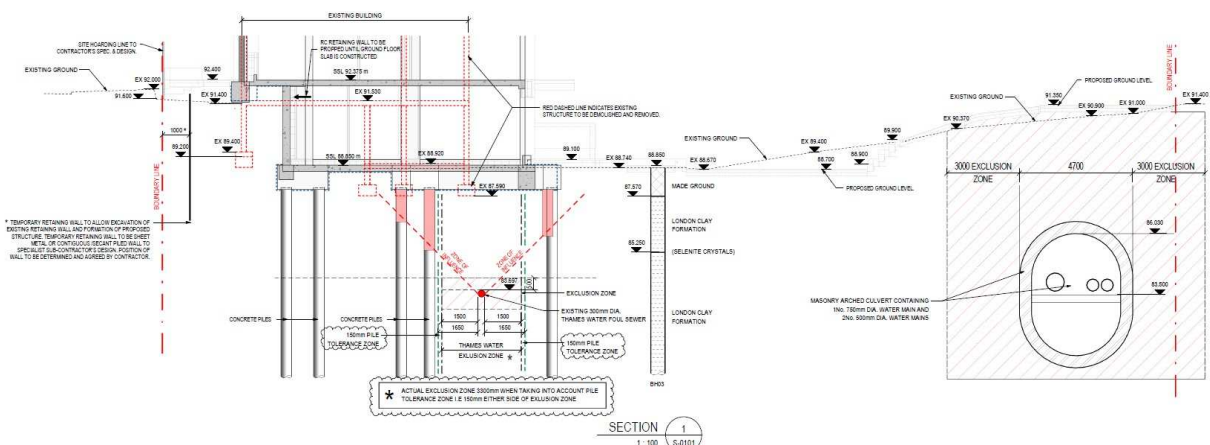
The setting out engineer is not to work in areas where piling operations are ongoing. The setting out engineer must also be included in the Rock & Alluvium site safety induction if he is present on site.

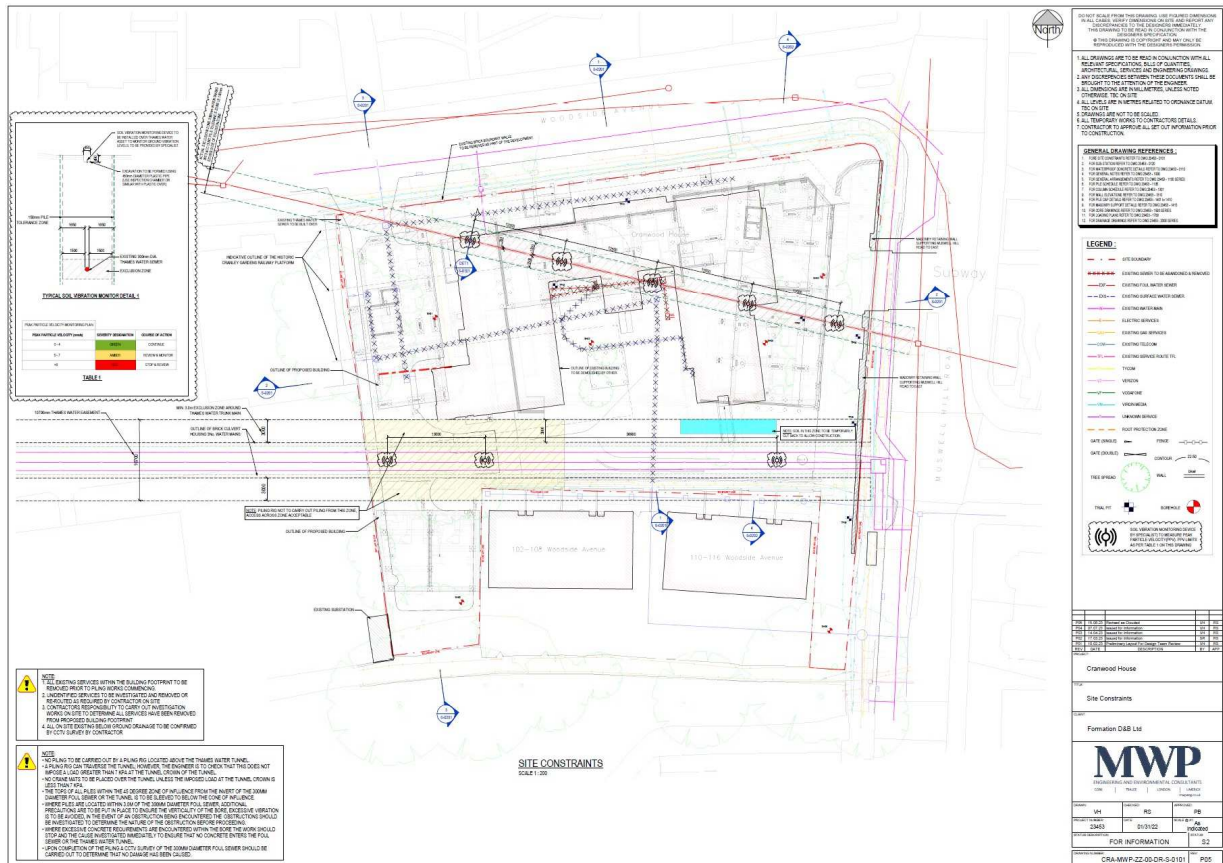
9. SERVICES

Formation Design & Build Ltd is to notify Rock & Alluvium of all known services within the piling area and to accurately mark these if they fall within 1.0m of any pile position. All redundant services are to be physically disconnected and capped off by Formation Design & Build Ltd at the site boundary.

Formation Design & Build Ltd and Rock & Alluvium are to visually check all piling areas and confirm any changes or additions to the "Permit to Work".

There are a number of key Thames Water assets that run into, through and adjacent to the site, these are all highlighted on MWP Site Constraints Drawing (CRA-MWP-ZZ-00-DR-S-0101 Rev P05), which can be found in Appendix A of this document (copy over the page), of particular interest are the 3No large diameter trunk mains (1No 750mm and 2No 500mm dia water mains) that run within a Masonry Arched Culvert through the site, which sits circa 5mbgl [internal crown level] and runs West to East through the site. There is also an existing 300mm dia Thames Water Sewer that runs diagonally from the North-West of the site through to just South of the Parkland Walk Underpass is subject to a built over agreement, this sits circa 5.5mbgl. All other existing assets are to be abandoned and removed / capped outside the proposed footprint of the new building. Sections through site showing the above assets can be found below.





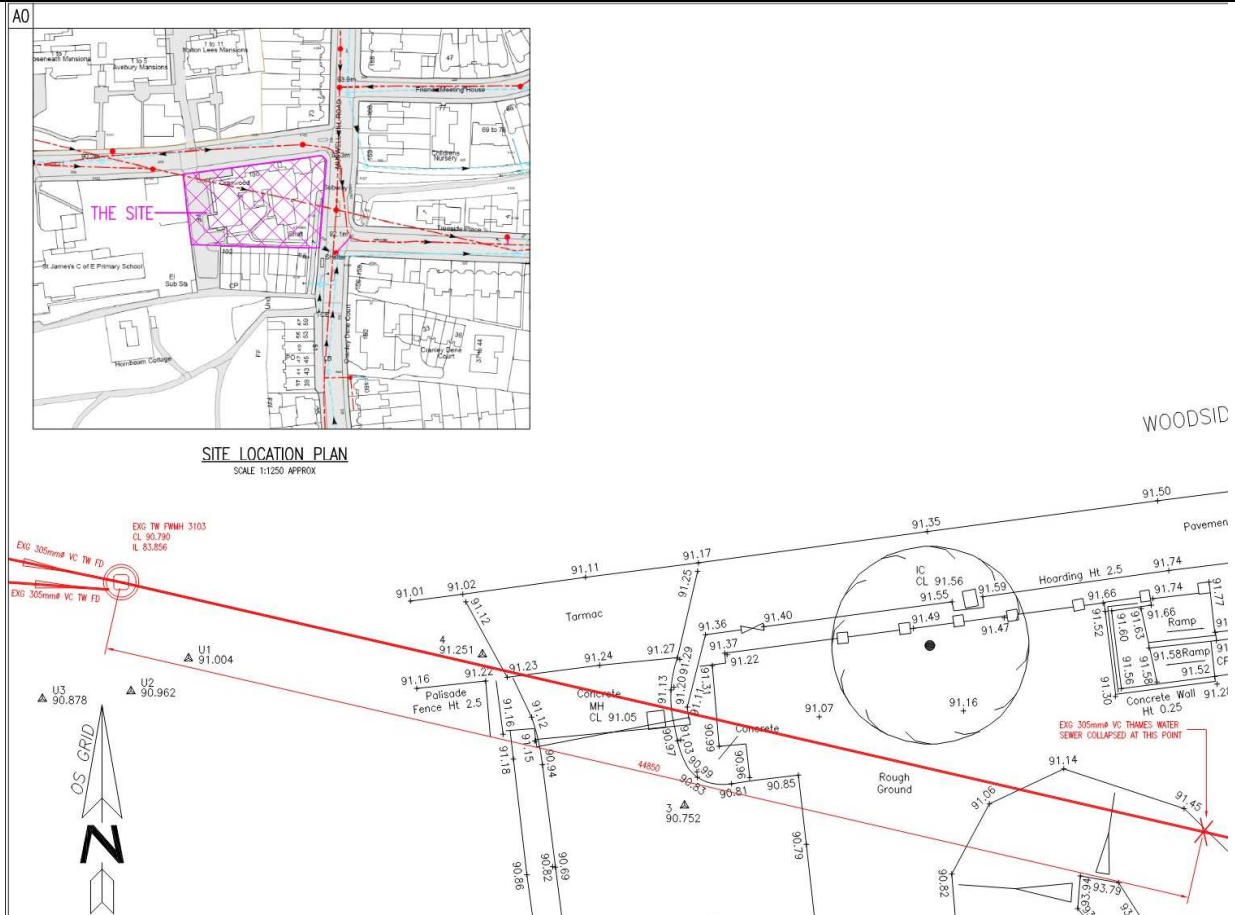
Rock and Alluvium work within the parameters outlined within the following Thames Water Documents:

- 'Guidance on piling, heavy loads, excavations, tunnelling and dewatering'
- 'Guidelines for working near our water mains and sewers'

Both the above documents outline the requirements for bored or augered piles to be at least 3m, or 1.5x the pile diameter (whichever is greatest), measured from the outside face of the pile to the outside face of the pipe, in this instance 3m is the critical dimension for the main culverted assets and 1.5m has been adopted for the 300mm asset subject to the build over agreement. It also states that a peak particle velocity of 10mm/s is the maximum that should be recorded at the face of the asset; CFA piling is regarded as the least intrusive, certainly in terms of vibration, normal CFA piling activities produce a PPV <3mm/s, hence should be regarded as the optimum piling discipline for working adjacent to any Thames water asset.

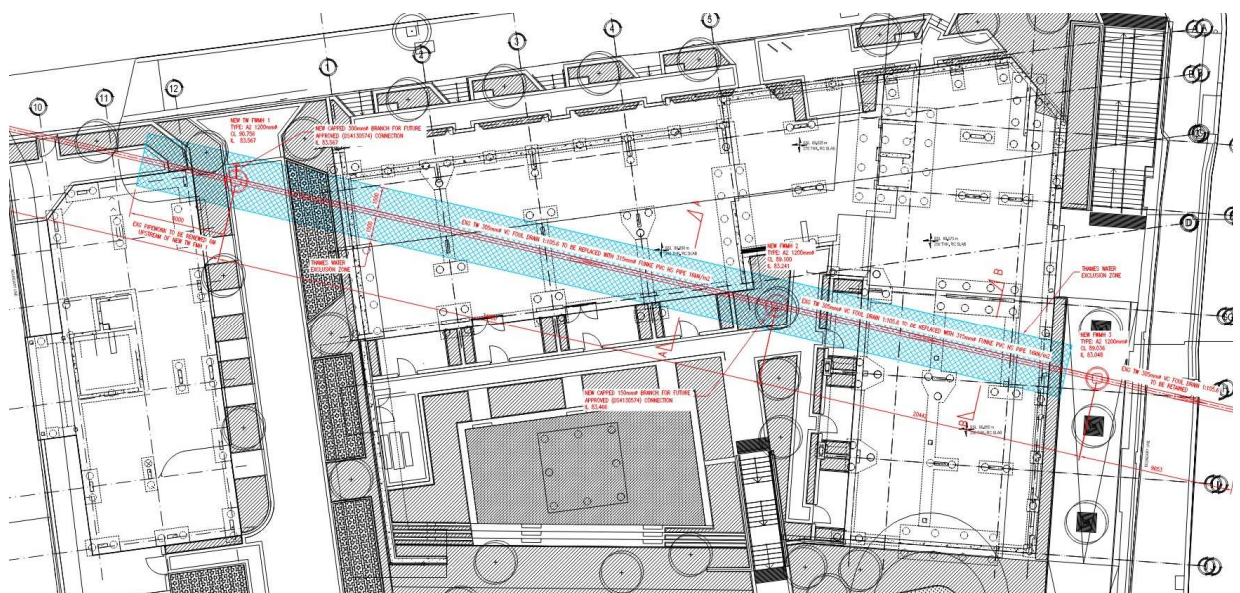
Any easement zones (to existing services) that are required around the assets, should be catered for within the pile layout drawing (by others) and any vibration monitoring (by others) required should be undertaken continuously from the point of site occupation through to a point in the construction program that can be seen to no longer produce vibrations that would be distributed into the ground.

It should be noted that the existing 300mm dia Thames Water Sewer, is to be 'replaced' due to it having collapsed at around 44.85m from existing Man Hole 3103; over the page is an extract from drawing number 1403-PL/100 Rev TW1, indicating the point of collapse. Note that copy of the full drawing can be found in Appendix B.



Extract from drawing number 1403-PL/100 Rev TW1

On the below extract from drawing number 1403-PL/101 Revision TW1 (full copy in Appendix C) the blue hatched area indicates the extent of the replacement sewer, including the construction of 3No new Man Holes.



Extract from drawing number 1403-PL/101 Revision TW1

10. SITE ACCESS

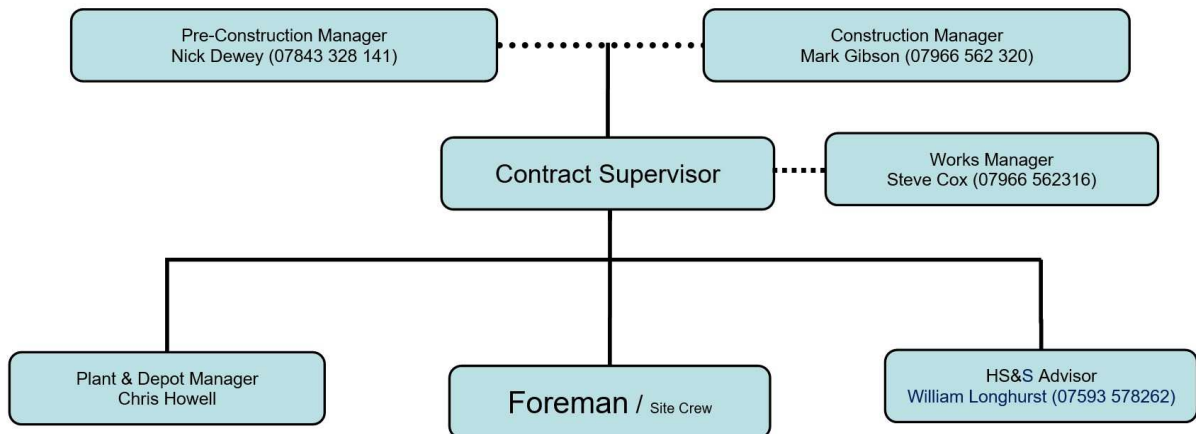
Clear unobstructed access from the road to the Rock & Alluvium work area is to be provided and maintained at all times by Formation Design & Build Ltd . Separate pedestrian access is required as indicated by current regulations

11. SITE RAMPS

All access ramps constructed by Formation Design & Build Ltd are to be a minimum of 5m wide and be at a maximum gradient of 1 in 10, unless specifically agreed in writing by Rock & Alluvium. Should the gradient be steeper than 1 in 10, it may be necessary to de-rig the piling rig and lay the mast down to travel safely up or down the ramp, causing unnecessary delay to the piling works; note that the rig should traverse the ramps with the ballast weight facing 'up-hill'.

The piling foreman is to check the access ramps and ensure that they are adequate for the purpose. In the event that the ramps are deemed inadequate then the travelling operations are to be suspended and Formation Design & Build Ltd notified.

12. SUPERVISION and ORGANISATION



The name of the Contract Supervisor / Foreman is given on the front of this Project Management Plan. Quality audits are undertaken by Operations with review by Quality Manager. Design issues are reported via Operations/Supervisor/Foreman to the Design Manager, Kayvan Kiany.

13. SAFETY MONITORING

The company Health, Safety & Sustainability Advisor will be carrying site visits on a Monthly basis and is available to deal with any matters Formation Design & Build Ltd may wish to raise, our Contract Supervisor's will carry out workplace inspections on one of their sites on a weekly basis.

14. FIRST AID

The Piling Foreman is to ensure that at least one person in his gang has been on a First Aid at Work course within the last 3 Years and that an adequately stocked First Aid kit is available. Any further first aid requirements are to be provided by Formation Design & Build Ltd .

15. WELFARE FACILITIES

These are to be provided by Formation Design & Build Ltd and are to be in line with the CDM Regulations (2015); it is anticipated that R&A will have 3-7No personnel on site per rig.

The requirements include:

- Washing facilities, including hot and cold running water, soap and drying facilities.
- Toilet facilities regularly cleaned and serviced.
- Drinking Water and drinking vessels.

- Suitable clothes changing and overnight drying facilities, including lockers for security.
- Messing area. (Food preparation and heating, and means for boiling water).

The CDM Regulations make the specific point that full welfare facilities are to be available prior to bringing subcontractors to site. No exemptions are available for small sites. If the supplied Welfare is deemed unacceptable the R&A Foreman can cease piling operations until suitable Welfare has been provided.

16. SITE ESTABLISHMENT/SEQUENCE OF WORK

Rock & Alluvium Ltd are to notify Formation Design & Build Ltd at least seven days before our intended arrival date to allow adequate time for the local residents to be notified.

- a) Men and equipment to arrive on agreed date.
- b) Sequence of work to be agreed with Formation Design & Build Ltd .
- c) Piling team sets up piling rig, concrete pump and agitator.
- d) Concrete delivered by approved supplier, normally 7 or 8 trucks daily (can be 12+).
- e) Reinforcement cages are made by steel fixers or delivered prefabricated (delivery tickets for prefabricated cages are to be checked against cage drawings).
- f) All certification records submitted to Formation Design & Build Ltd before start of works.

17. BANKSMAN

All piling rig, crane, excavator and delivery vehicle movements on site are to be controlled by trained, competent and certificated banksman / slinger / signallers. The attendant 360° operator and the R&A banksman are required to sign up to the attached pictorial guide for the safe interaction between plant and operatives.

Lifting Operations will be carried out in accordance with the Non-Crane Lift Plan given in Section 3.

The Piling Foreman is to ensure that all Lifting equipment is inspected and entered into the “Record of Inspections” LOLER Weekly, and that each item of Lifting Equipment and accessory receives a Thorough Inspection, Test and Certification every 6 months by a competent person. A copy of all the certification for the lifting equipment is kept on site by the piling foreman.

18. PILING

The piling operation will be carried out in accordance with Works Procedure 1; CFAPiling, in Section 4.

19. PILE LOGS

Pile logs will be issued via e-mail to Formation Design & Build Ltd daily; the R&A Foreman will require an ‘electronic signature’ from your site manager prior to issuing the logs.

20. PILE REINFORCING CAGES

These may be either delivered prefabricated or fixed on site by steel fixing subcontractor, who come under the direct supervision of the Rock & Alluvium Foreman.

It is Rock & Alluvium’s policy that any reinforcement cages that are a maximum of 450mm OD, up to 12m long and weigh no more than 497kg’s can be fabricated on site; cages weighing in excess of 200kg’s and less than 497kg’s, will be fabricated on site, but will require mechanical aid (attendant excavator), cages that do not meet the above criteria will be prefabricated. Prefabricated cages will be subject to random checks (above those within the ITP) against the CARES approved suppliers cage drawings by the visiting Contract Supervisor/Foreman, any non-conforming cages will be returned to the supplier.

NOTE: Cage details are provided by R&A for the supplier to produce cage drawings, these are then approved by R&A for manufacture.

Site fixing of cages will be carried out in accordance with Works Procedure 2; Steel fixing, found in Section 4 of this Project Management Plan.

De-bonding

To avoid the hazards of HAVS resulting from the manual breakdown of pile heads with percussive tools, we draw Formation Design & Build Ltd 's attention to the practice of providing de-bonding foam as per ICE tolerances (unless otherwise agreed), to enable the concrete above the cut-off level to be removed with ease. Where this is specified, the foam will be fitted as part of the cage assembly.

21. OBSTRUCTIONS

If an obstruction is encountered during the boring operation, piling will be suspended and Formation Design & Build Ltd notified and an Instruction sought from the following options:

NOTE: Generally normal CFAPiling will not drill through obstructions

- **Move to another pile position while the obstruction is cleared**
We will move to another pile position and record the abortive time spent on the obstructed pile.
- **Attempt to bore through the obstruction**

In these circumstances, we do not accept responsibility for the pile position remaining within tolerance. We will also record the time spent on boring through the obstruction and we will seek additional payment for this time and any abnormal damage to the auger flights and Piling rig.

If Rock & Alluvium can drill through the obstruction, then pile construction will proceed as before.

If Rock & Alluvium are unable to drill through the obstruction within a reasonable time, Formation Design & Build Ltd will be notified and asked for a further Instruction. The abortive time spent on pile to be recorded.

Any abandoned pile positions will be backfilled with suitable material. Formation Design & Build Ltd is responsible for backfilling any areas where obstructions have been removed. It is vital the backfilled area is properly compacted and the piling platform fully reinstated, including any geo-textile interface; the FPS Platform Certificate will require re-signing once reinstatement is completed. A number of recent piling rig over-toppling incidents have been due to inadequately backfilled excavations.

22. CONCRETE

The concrete characteristics will be as specified in the approved pile and concrete mix designs.

23. CUBE TESTING

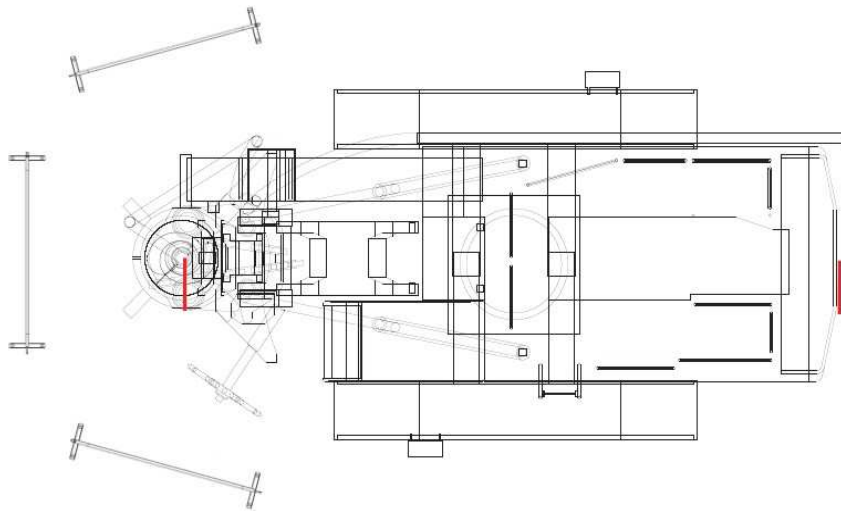
BS8500 identifies that where a standard mix is supplied by a ready-mix company their compliance testing methods will be sufficient and no site testing will be necessary. Rock & Alluvium only use QSRMC accredited suppliers who adhere to BS EN 206 having a defined conformity control procedure and are required to inform the specifier and user of any non-conformity. Site testing is therefore not necessary and identity testing will only be introduced for cases where there is doubt over the concrete.

Concrete sampling and testing, if explicitly requested will be carried out in accordance with the 2007 ICE Specification for Piling and Embedded Retaining Walls (SPERW) and Works Procedure 3; Sampling & Testing Concrete, given in Section 4, for clarity 1 set of cubes per day or per 75m³ with one being tested at seven days, two at 28 days and a spare being held in the event of failure of the 28-day result to reach the characteristic specified strength.

Where we are contracted to make on site concrete cubes, suitable concrete curing facilities are to be provided by the Principle Contractor to ensure cubes are stored in-line with the requirements of BS EN 12390-2. Key requirements are that cubes are stored inside at room temperature (15-25°C) whilst in their moulds and 24/7 power is provided for our heated curing tank. This aside, as on site cubes will not be made in laboratory conditions, we would still stress that reliance is to be placed on our QSRMC supplier to demonstrate concrete conformity and not the results of site made concrete cubes as these cannot be wholly relied upon.

24. DEMARCATION

Any demarcation problems relating to our working area will be referred to Formation Design & Build Ltd . On every pile position the exclusion zone will be set up around the front of the rig, by use of 3No crowd / chapter 8 barriers, as shown below and defined in the relevant sections (12 & 20) of the risk assessment contained within this document; there may be an element of variation in the positioning of the barriers depending on proximity to the boundary or permanent structures. It is imperative that if anyone (including trained R&A operatives) enter the exclusion zone, then the rotation of the auger must cease, entry into the exclusion zone must be agreed directly with the rig operator.



25. RISK ASSESSMENT

A Risk Assessment relating to our work has been carried out and will be passed to Formation Design & Build Ltd for review, in particular to ensure that the interface between Rock & Alluvium and other contractors are managed satisfactorily.

The Piling Platform is to be designed, installed and maintained by Formation Design & Build Ltd . All excavations are to be backfilled with suitable granular material and compacted so as not to leave any soft spots.

Formation Design & Build Ltd is to advise of any specific hazards identified/known to them so that any measures necessary to ensure the works can be carried out in a safe environment can be agreed and implemented.

Rock & Alluvium operatives are provided with the following personal protective equipment:

- Head Protection (Helmets to EN 397 / EN12492, with chin straps)
- Hearing Protection
- Protective Overalls / Hi Viz (EN 20471)
- Gloves (typically to EN388: 3121)
- Safety Glasses (EN166: FT-CE; Mandatory)
- Safety 'Goggles' (EN166: 3-4-5-BT-CE for jet-washing / blowing out operations / abrasive wheel usage / dealing with blockages)
- Safety Footwear with Mid-sole protection (Boots to EN 20345)
- Wet Weather Clothing
- The Piling Rig and Container contain fire extinguishers in case of fire

No climbing as MEWP to be used. Eye protection is also provided for appropriate tasks.

Formation Design & Build Ltd is to provide and advise of any special protective measures that may be required (for example due to any site contamination) and deal with the overall protection of site, the workforce and the general public.

PROJECT MANAGEMENT PLAN

PMP SECTION 3 – LIFTING PLAN (NON CRANE)

v4.3

Rock & Alluvium 

This **example** Lifting Plan has been drawn up to meet the requirements of the Federation of Piling Specialists (FPS) Code of Industry Best Practice guide to LOLER, the LOLER Regulations (1998) ACoP and BS7121, "Safe use of Cranes."

A FPS Platform Certificate will be requested for the site

Please note that one third of Dangerous Occurrences reported by FPS members to the HSE are related to inadequate working platforms leading to a piling rig or crane overturning, each one of which is a potential fatality. The HSE has worked closely with the FPS on this initiative and supports the principle of reducing accidents by the certification of properly designed constructed and maintained working platforms.

Work Supervisor	Site Foreman	Approved by	Andrew Ruff CPCS 40367323 (Appointed Person – Lifting Operations)
Brief Description of the Work	Loading and unloading Plant and Equipment delivered to and loaded away from the site. Lifts by lorry Hiab (specified below) and excavator. Lifting of equipment and materials during piling operations by excavator. Lifting equipment and materials using the Piling Rig auxiliary Winch. See notes regarding restrictions on this equipment. Tag lines to be used on all lifts.		

Schedule of 'Routine' Lifts

Description of load	Approx. Weight (Kg)	Load Characteristic	Method of Lifting	Centre of gravity	Lifting points/or method of slinging
Reinforcement Cages	H8, 0.40kg/m H16, 1.58kg/m H20, 2.47kg/m H25, 3.85kg/m H32, 6.31kg/m H40, 9.86kg/m (Completed cage weights as per steel schedule)	Cylindrical	Horizontal lift: two chain lift; Vertical lift: Secure lifting points to be provided. Single leg drop-chain to be used.	Central	2 leg chains / Nylon slings Vertical lift, secure at tied intersection of helical and main bar, use drop-chain.
Reinforcement (Straight bars and helical)	As above	Bundled steel bars Or Helical	Horizontal lift: two chain lift. Two chain lift.	Central	2 leg chains Chain must pass through, helicals.
Drilling Auger	1.7t max depending on diameter	Up to 6.0m long Spiral	Two chain choke lift (horizontal).	Central	2 leg chain.
Concrete pump	4.2 tonnes	Engine/hopper	Lifting point on top	Central	Chain
Agitator [Hiab lift]	6 – 9 tonne	Cylinder on frame	4No. lifting points	Central	4 leg chain
Diesel bowser	1.5 tonnes (when full)	Cube	4No. lifting points	Central to tank	4 leg chain
Generator, compressor, power-pack etc	3.5 tonnes	Steel box	Lifting Points (on top)	Central	Nylon slings or single chain
Welfare cabins and containers. [Hiab lift only]	7 tonnes	3m x 6m cabin or container	Lifting points Ensure container loads are evenly distributed and secure	Central	4 leg chains

Equipment to be used for the Lift 1) Excavator	
Make, Model, Attachments, Test Certificates, etc	Excavator supplied by Formation Design & Build Ltd . It is their responsibility for Checking all Documentation before releasing it to work to Rock and Alluvium

Equipment to be used for the Lift 2) Hi-ab (Lorry Loader – Max boom length 12.5m)	
Make, Model, Attachments, Test Certificates, etc	Hi-abs supplied by Haulage Contractor (normally Hallet Silberman) who is responsible for Checking all equipment and documentation before releasing it to work to Rock and Alluvium

Equipment to be used for the Lift 3) Piling Rig Auxiliary Hoist	
Note: The ancillary winch on the Piling Rig is designed to assist in “normal piling operations”, including assembling and de-rigging the auger string and lifting rebar cages into the bore. The manufacturer's operational capacity of the winch is as follows: SF50=2.7t; SR30=3.2t; SF65=6.5t; SR75=12.7t, SR45=6.5t. It is not designed for general craneage duties. (Ancillary rope capacities for SF50 / SR30=25.6t, SF65 / SR45=30.8t & SR75=44.6t); R&A limit operational capacities to a maximum of 1 (one) tonne.	
Date of Last inspection:	See LOLER Book / GT Form.
Date of Last Examination	Covered by Rig Annual Examination; Certification is retained by the Rig Operator or available from the Plant Yard. [01708 862121]
Max Safe Working Load (tonnes)	The manufacturer's operational capacity of the winch is as follows: SF50=2.7t; SR30=3.2t; SF65=6.5t.; SR75=12.7t, SR45=6.5t R&A limit operational capacities to a maximum of 1 (one) tonne.

Hazards Identified / Known on Site	
Refer to General Risk Assessment (FM-HSS-H03-03)	
Note: Unloading of Lorries / where crash mats are required for unloading lorry's Formation Design & Build Ltd to supply. Attach chains to load from ground where possible. Access to lorry bed by footed or fixed ladder All R&A Piling equipment to be delivered on lorries fitted with handrails and rebar to be pre-slung in 1tonne (Max) bundles.	

Operator Competence	
Excavator Driver: The competence of the driver supplied by Formation Design & Build Ltd or their subcontractor will be checked by Formation Design & Build Ltd prior to releasing the operative to attend Rock and Alluvium (must include lifting	
Hi-ab Operator. The Haulage Contractor (normally Hallett Silberman) is responsible to ensure the driver supplied is competent to operate the hi-ab on his machine.	
Rig Driver. The Rig Driver will be a holder of a CPCS or CSCS (Piling Operations) card. The card will be available from the driver	
Slinger Signaller: All the site crew involved in slinging and signalling operation will be holders of a CSCS Slinger/Signaller Card, which will be presented on request.	

A 'Schedule of Common Lifts' can be supplied to facilitate the attendant excavator provider to update their excavator lift plan accordingly.
 If an attendant Crawler Crane is required for site operations, a lift plan will be provided under separate cover.

PROJECT MANAGEMENT PLAN

PMP SECTION 4 – WORKS PROCEDURE 1; Site Mobilisation

3

Rock & Alluvium 

Contract Title: 100, Woodside Avenue. N10 3JA	Contract No:	MS Reference:
Work Package: Site Mobilisation / De-Mobilisation	9761	MS 01
Author: ND / WL	Date Produced: 09/11/2023	

Scope of Works	Site Mobilisation / De-Mobilisation
Significant HS&E Risks	Refer to Full Risk Assessments, and COSHH Register (FM-HSS-H02-02) COSHH Assessments (FM-HSS-H02-01)
Personnel No. Competency level / qualification	Rig Driver/Foreman, Pump Operator, Piling Operatives (1or 2), Low Loader Driver (& mate).
Plant, equipment and material required	Soilmec hydraulic Piling rig Trailer mounted concrete pump Concrete agitator Compressor. Bunded Vented Fuel bowser Storage container (normally 10ft/3m) Low Loader Hi-ab (rigid) delivery wagons.

	Key: R = Review, I = Inspect, H = Hold	Inspection	Responsible
	NOTE: R&A and its respective hauliers are a minimum of FORS Silver and hence are fully CLOCS compliant.		
1	Prior to Mobilisation to Site		
1.1	Access checked by R&A representative, if unsure, haulier contacted and instructed to visit site to ascertain access restrictions.	I	
2	Arrival to site – it is the responsibility of the <i>Formation Design & Build Ltd</i> to provide safe means of access to site.		
2.1	Low loader and delivery vehicles to access site via site entrance and park up on the piling mat (level firm ground). If access is not possible with low loader, refer to section 3.1.		
2.1.1	Ensure all personnel are clear of trailer prior to tractor unit to be disconnected from low loader trailer. Rig to be un-chained and tracked off trailer under full control of a certified, competent banksman.	H	
2.2	Rigid hi-ab lorries to access site and unload piling equipment. All slinging and signalling to be carried out by competent certified operatives.		
2.2.1	In the event of an 'out-of-hours' (early or late) mobilisation to site, final site set up will not be carried out until R&A operatives have attended Formation Design & Build Ltd 's site induction. We would request that these be carried out as soon as our piling operatives have arrived on site.	R	
3	If low loader cannot gain access to site.		
3.1	Low loader to be parked as close to site entrance as possible, ensuring that the road is not blocked. Traffic marshals to be provided by Formation Design & Build Ltd .	I	
3.2	Section 2.1.1 applies.		
3.3	Rig to be tracked on 'tracking boards' to the site, under full control of certified competent banksmen.		
3.4	Section 2.2 onwards apply.		
4	Sequencing		
4.1	Deliveries may be staggered to suit the constraints of the site	R	

	See Next Page for De-Mobilisation works procedure		
5	Removal from Site (for De-Mobilisation)		
5.1	Piling rig will be de-rigged by competent site team as per Rock & Alluvium RAMS Doc Ref MS-01 “PMP SECTION 5 – W/P 1; Erection & De-rigging”, ready for transportation.		
5.2	Low Loader will come on to site and park on (level firm ground). It is responsibility of Formation Design & Build Ltd to provide a safe means of access to site.	I	
5.3	Ensure all personnel are clear of trailer prior to tractor unit being disconnected from low loader trailer. Low Loader driver will bank piling rig on to trailer in their preferred orientation.	H	
5.4	Machine will be chained down securely then connected back to tractor unit where it will be banked off site.	R	

PROJECT MANAGEMENT PLAN

PMP SECTION 4 – WORKS PROCEDURE 1.1; CFA Piling

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Contract Title: 100, Woodside Avenue. N10 3JA	Contract No:	MS Reference:
Work Package: CFA Piling	9761	MS 01
Author: ND / WL	Date Produced: 09/11/2023	

Scope of Works	CFA Piling
Significant HS&E Risks	Refer to Full Risk Assessments, and COSHH Register (FM-HSS-H02-02) COSHH Assessments (FM-HSS-H02-01)
Personnel No. Competency level / qualification	Rig Driver/Foreman Pump Operator Piling Operatives (1or 2) CPCS / CSCS
Plant, equipment and material required	CFA Piling Rig Concrete Pump Concrete Agitator Air Compressor Ancillary plant as required Access Platform

	Key: R = Review, I = Inspect, H = Hold	Inspection	Responsible
1	Shift Commencement		
1.1	Prior to commencing works a daily prestart briefing will be held between all R&A operatives and attendees, statutory PUWER inspections are carried out and any required exclusions zones are checked, to ensure that they are still in place and suitable for the foreseeable works.		
1.2	The pump operator lubricates the concrete pump and pumping line		Pumpman
1.3	The foreman checks drawing and design and starts data input into the pile monitoring computer	R	Foreman
2	Set Up and Boring		
2.1	The auger set up over pile pin position by the rig operator, guided by the banksman who needs to check from the front and side of the rig. Reference pins are set up in two directions at right angles using the spacing bar.		Banksman
2.2	The concrete discharge flap at the auger tip is closed by one of the following means: - The flap at the tip of the auger is closed and secured using a short length of rope or similar material. The banksman then stands clear and signals the rig driver to lower the tip of the auger to ground level, then signals the rig driver that he can proceed with drilling. or - The flap is held in the closed position by the banksman using a rod longer than 1m in length. The banksman must remain within clear view of the rig driver. The banksman signals the rig driver to lower the auger until the flap is held closed by the ground. He then withdraws the rod and stands clear and then signals the rig driver that he can proceed with drilling. <i>Note: Side exit flights require disposable bungs.</i>		Banksman
2.3	When the foreman is satisfied all is in order, the physical exclusion zone (3No barriers) will be positioned at the front of the rig and auguring to the required depth can commence. During boring, the gates are kept in the closed position until either: - Sufficient spoil has built up at the pile head to provide a natural barrier to the auger - Construction of a deep pile necessitates the need to open the gates to allow the rig to achieve the required depth.		Rig Driver / Banksman

	3) The attendant excavator is required to remove spoil from the pile head. Before the gates are open, the offset markers are used to check the pile position; auger rotation must cease for this operation as operative required to enter the physical exclusion zone.		
2.4	One banksman is to be on duty in front of the rig at all times that it is working to ensure that all is in order and other personnel are kept clear.		
2.5	If obstructions are encountered, piling will be suspended and the procedure for obstructions followed (see Section 21, page 7, of main M/S).		Foreman
2.6	Dependant on depth and diameter of the pile, the attendant excavator may be required to remove pile arisings from the pile head at various intervals throughout the drilling phase; this must not be undertaken without being under the full control from the attending Banksman.	H	Banksman
2.7	Dependent on pile depth, it may be necessary to use the auger extension. The extension pole is deployed by the following operation: The rig driver stops the forward rotation of the auger, lowers the rotary table to unlock the rotary drive from the 'key', i.e. the weight of the auger string is transferred from the rotary table to the end of the auger string, the motors are then back screwed to fully unlock the rotary table from the key, the rotary table is then free to slide up the extension pole and is locked in to the 'key' at the top of the pole by rotating forward. Boring of the pile then continues to the required depth. The same process is followed to retract the extension pole when required during the concreting phase. To remove the risk of the auger extension falling back through the rotary table it is important to always spin the augers forward prior to raising the rotary table to ensure that the rotary drive is fully engaged with the key on the extension pole.	H	Rig Driver
3	Concreting		
	Notes: I. The Concrete pump and agitator should be set up such that clear sight lines can be maintained between the pumpman and the rig operator and/or banksman. II. Standard maximum length of flexi-hose to be limited to 72lin.m (12No, 6m sections), with an additional 2No sections available on site – these can only be added for short duration works and should be removed when no longer required.		
3.1	Prior to the commencement of concreting, whilst under the control of the banksman, the attendant excavator will clear much of the spoil from around the auger/pile head.	H	Banksman
3.2	At the target depth, the auger is rotated to allow spoil to rise and the auger is lifted a maximum of 150mm to allow concrete to exit (depending on ground conditions and auger type).	I	Rig Driver
3.3	The concrete pump is operated to supply concrete through the delivery hoses and down the auger central stem to form the pile as the auger is withdrawn. Once over-pressure is noted by the rig operator, the auger is lifted, slowly at first. In granular materials the auger is re-drilled to the scheduled depth to ensure a good 'base' is formed on the pile.		Pumpman
3.4	The concrete pressure, flow rate and overbreak percentage is monitored throughout the pile construction operation by the rig instrumentation.		Rig Driver
3.5	During withdrawal of the flight the operator operates the mechanical auger cleaner. The piling team are to ensure that the working area is kept clear of unauthorised personnel. On certain very exceptional occasions the piling gang may be required to manually clear the auger flight of all spoil to prevent this going above head		Banksman

	height; generally, should the auger cleaner not be effective, the extraction will cease and the auger advanced back into the bore until the auger cleaner is above any remaining spoil and the process recommenced. This will be under the direct control of the piling foreman and / or banksman who ensure that the auger is not rotated when it is being lifted		
3.6	As the auger reaches the surface pumping will cease		Rig Driver / Pumpman
3.7	In the event of a tip blockage (that is a blockage experienced at the commencement of the concreting phase) the rig operator will notify Formation Design & Build Ltd and ensure that any required exclusion zone (to be advised by Formation Design & Build Ltd) is in place and then back screw the auger out of the pile in a controlled manner, thus ensuring that as much spoil is replaced as possible into the bore. Bore must be covered with a board whilst the blockage is removed. <u>Refer to:</u> 1) Flow Chart at the end of this section for actions if blockage occurs 2) Section 16 of Risk Assessment for control measures while clearing the blockage	H	Foreman / Rig Driver / Banksman
3.8	The rig operator will be directed by the banksman onto the next pile position		Banksman
3.9	The attendant excavator, under control of the banksman will continue to clear the spoil and concrete slurry from the pile position to a stockpile for disposal. Once spoil has been removed, the attending excavator must rotate 90° to the pile face and place the bucket on the ground; this will expose the open driver's door to the work area, providing a greater all-round view of piling operations and will maintain clear lines of communication. The excavator will be controlled by the R&A trained banksman and will not raise his bucket until instructed to do so. 	H	Banksman
4	Reinforcement Insertion		
	Calculations are available to prove that a 'hand tied' cage, weighing up to 497kg's can be lifted if there is a minimum of 32No ties; R&A limit hand tied cages to 497kg's, any hand tied cages over 200kg's will require mechanical aid during the tying process. All lifting points on the cages will be sprayed to ensure they are lifted correctly.		
4.1	The attendant excavator will continue to clear the spoil and concrete slurry from the pile position, until the pile head can be identified by the banksman.		Banksman
4.2	The pile head will be located by the piling crew and a small amount of concrete dug out to define the pile position. The reinforcement cage is then either manually lifted into position, lowered by the excavator (if less than or equal to 11m in length) or the service crane into the wet concrete and pushed / tapped in by the attendant excavator, stepping on the helical binder to insert the cage is acceptable, in some circumstances, as long as the pressure is adjacent to a tie/weld and does not affect the spacings of the helical binder. The banksman will check the reinforcement cage on completion to ensure it is central in the pile. All reinforcement cages will be fitted with spacers (minimum 4No every 4m) to ensure correct concrete cover (standard 75mm).	I	Banksman
4.3	Cages will be installed flush with top of piling platform, as this is best practice and mitigates the associated H&S risks, unless instructed by Formation		Banksman

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	Design & Build Ltd after notifying them of the risks i.e. cage/pile damage, trip/stab/puncture hazard and restricted plant movement. Note: All reinforcing (vertical) bars are to have yellow plastic protective caps fitted, post installation, by Rock & Alluvium operatives to protect against stab, puncture and trip hazards.		
4.4	The piling rig then sets up onto a new position with the aid of the banksman and the process is repeated.		Banksman
4.5	<i>If piles are subject to high tension loads and require central tension steel; items 4.5.1 OR 4.5.2– 4.5.4 4.6 must be followed.</i>		
4.5.1	Long central tension steel should be spliced/coupled on the ground, prior to being lifted and inserted in a single lift; central bars must be lifted by aux. line on the rig or the attendant crawler (if available) and lowered to the desired level and tied off.	R	Foreman
4.5.2	If, due to site constraints, the above (4.5.1) cannot be carried out to ensure the safety of those installing these bars the following method will be used.	R	Foreman
4.5.3	First section of bar to be lifted and lowered into place with the piling rig; bar to be choked with a cloth strop (collar chain should not be used in this instance). Coupler must be attached to this bar prior to lifting into place.		Foreman / Banksman
4.5.4	Bar to be 'trapped' over the centre of the bore using the bar trapper under the coupler.		Banksman
4.5.5	Second section of bar to be lifted as per 4.5.3 and coupled to the first section. Bar is then lifted and the bar trapper removed, bar is then lowered to the desired level and tied off.		Foreman / Banksman
	<i>Note: Central bars up to 11m in length may be inserted as a single length; anything over this will be spliced.</i>		
5	Horizontal Distribution of Reinforcement on Site		
5.1	Loose straight bar (including central tension bars) will be unloaded from the delivery wagon using the pre-slung strops (certificates for these will be available from the delivery driver). These will be transported in the horizontal position to the reinforcement storage area using double chains.		
5.2	Central tension bars will be transferred from the reinforcement storage area to the piling rig horizontally by means of double chains.		
5.3	Central bars must be installed with the single (aux.) line on the piling rig or the attendant crane (if applicable). Bars must be choked with a cloth strop, lifted vertically and inserted into the centre of the pile.		
	<i>Note: The area around the 'lift' must be kept clear of non-essential personnel & tag lines to be used at all times.</i>		
6	Sequencing		
6.1	Works to be sequenced so that site traffic does not cross the concrete hose. A crossover point can be prepared (if required) by either burying the hose or by placing half sleepers / ramps on each side of the hose at the dedicated crossing point, thus minimising damage to concrete delivery hoses.	I	Foreman
6.2	Trimming of piles to cut off level should be left a minimum of 7days from casting; this may be reduced subject to cube results. It should be noted that cutting down of the piles is at the discretion of Formation Design & Build Ltd .	R	Formation Design & Build Ltd 's Site Manager
7	In the Unlikely Event of a 'Flash Set'		
7.1	Split land line and remove pipe work from rig		All R&A piling operatives
7.2	Sections of flexible concrete hose to be held vertically with the excavator (closed link collar chain to be used) to allow gravity to clear the blockage;		

PROJECT MANAGEMENT PLAN

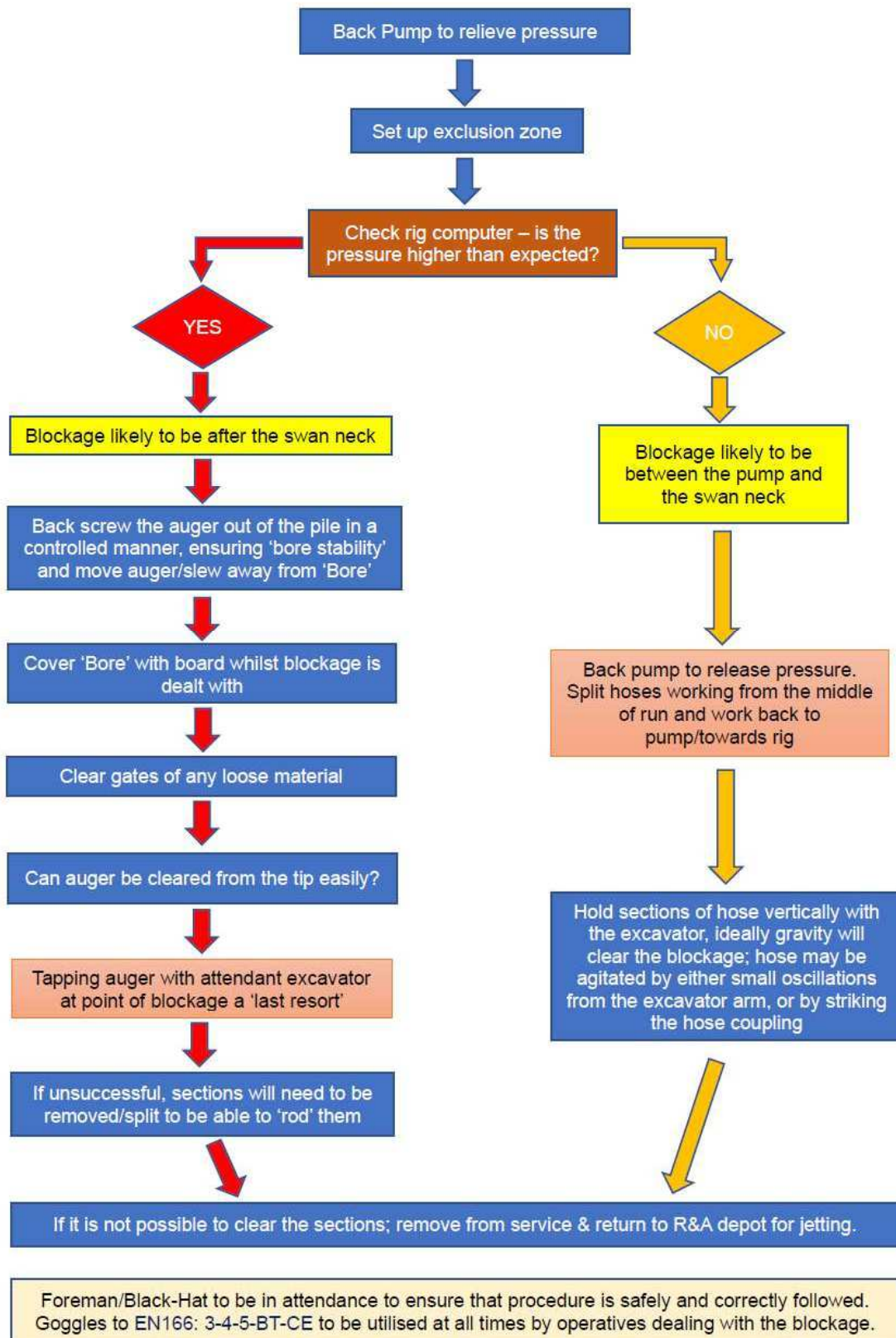
PMP SECTION 4 – WORKS PROCEDURE 1.1; CFA Piling

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	the hose may be agitated by either small oscillations from the excavator arm or by striking the hose coupling.		
7.3	Flexible hose sections that cannot be cleared will be moved to one side for disposal/jetting at R&A depot.	I	Foreman
7.4	Steel sections of pipework on the rig will be 'rodded' to try to remove the blockage, if this is not possible, they will be removed from the rig (replaced) and returned to R&A depot for jetting.		
	<i>Note: The piling schedule will outline the diameter, depth and reinforcement requirements for each individual pile; this will be submitted once the scope has been finalised.</i>		
	See next page for Concrete Blockage action flow chart.		
8	End of shift		
8.1	Ensure auger is clear and clean from all potential falling debris.	R	Foreman / Chargehand
8.2	Plant to be parked on stable level ground in an area designated by Formation Design & Build Ltd ; where practicable under CCTV coverage and / or immobilised by "strategic parking".	H	Foreman / Chargehand
8.3	Key to be removed by the Foreman / Chargehand and pump operator and stored in the lockable site toolbox	H	Foreman / Chargehand
8.4	Responsible person(s) designated for checking plant at end of shift, to ensure all items of plant are fully secured and isolated prior to leaving site.	I	Foreman / Chargehand
8.5	Toolbox key to be retained by the Foreman / Chargehand	R	

Concrete Blockage?

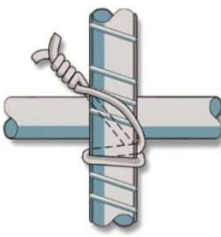


PROJECT MANAGEMENT PLAN

PMP SECTION 4 – WORKS PROCEDURE 2; Steel-fixing

v4.3

Rock & Alluvium

Contract Title: 100, Woodside Avenue. N10 3JA		Contract No:	MS Reference:
Work Package: Steel-fixing of reinforcement cages		9761	MS 02
Author: ND / WL		Date Produced: 09/11/2023	
Scope of Works	Steel-fixing (Cage Making)		
Significant HS&E Risks	Refer to Full Risk Assessments, and COSHH Register (FM-HSS-H02-02) COSHH Assessments (FM-HSS-H02-01)		
Personnel No. Competency level / qualification	Steel fixers (1-3 as appropriate)		
Plant, equipment and material required	Steel-fixing stands and Tying wire		
	Key: R = Review, I = Inspect, H = Hold	Inspection	Responsible
	Note: Any slinging for lifting of bars, helical or cages is to be carried out by a competent, certified slinger/signaller.		
1	Purchasing		
1.1	All reinforcement to be supplied by a CARES approved supplier, on the approved suppliers list.		Buyer
2	Fixing Area		
2.1	Formation Design & Build Ltd shall set aside a suitable area for the assembly of reinforcement cages, together with an adjacent area for storage of reinforcement bars, helical and completed cages. This area needs to be physically segregated from traffic by fencing (or similar) and be away from access / egress routes, to avoid danger to steel fixers or damage to cages.		
3	Cage Fixing		
3.1	The Leading Steel fixer is to be given details of the Cages required.		Foreman
3.2	The bars and helical will be assembled into cages using purpose made stands onto which bars are loaded to give stability. Bars are tied by hand with ring ties or double crown ring ties. As each cage is completed it is removed from the assembly stands either by hand in the case of lightweight cages or by excavator for cages over 200kg's, note that the lifting points are to be clearly identified.		Steel fixer
	Note: Double wire will always be used for fixing the main bars to the helical.		
	 Ring-slash or wall ties prevent bar displacement and are often used to tie smooth stirrups to main deformed bars. Ring Tie:  Crown tie, cross tie or figure-eight tie is a common tie used on main bars for setting up and tying springy bars. Crown Tie:		
3.3	After fabrication, the cages are to be stored on firm level ground, on timbers or clean hardcore to avoid contamination by soil. They should be away from access / egress routes, wedges should be used to increase stability of 'stacked' cages, which should not be more than 1.5m in height.	H	Steel fixer
3.4	Heavyweight cages need to comply with the table on the next page to ensure they are safe to move and lift. Note: Cages weighing 497kg's or over, of large diameter or length, will be prefabricated.		Operations / Design