Project Management Plan
CFAPiling

Greenwood Place, London. NW5
Revision **0**

Contract Number:	**160161**
Issue Date:	**13/09/2016**
Principal Contractor (P/C):	**Kier Construction**
P/C Main Contact:	**Matt Davis**
R & A Contract Supervisor:	**TBC**
Site Foreman:	**TBC**
Rig Type:	**SF65 (TBC)**

SECTIONS	
1	Contract Specific Details – including: 1.1 - Document Control 1.2 - Appointment of Personnel - HS&E-FRM-C01-06 (Issue 06 rev 00)
2	Method Statement – HS&E-FRM-H03-02 (Issue 06 rev 00)
3	Contract Lifting Plan – HS&E-FRM-L02-02 (Issue 06 rev 00)
4	Works Procedures for (but not limited to) Site Mobilisation CFAPiling, Steel Fixing, and Sampling & Testing concrete
5	Erection and De-rigging
6	Guidance on Pile Testing for Kier Construction
7	Inspection and Test Plan
8	Roles and Responsibilities
9	Briefing Record – HS&E-FRM-T03-01 (Issue 06 rev 00)
10	Risk Assessment - HS&E-FRM-H03-03

Subcontractor Schedule		
1	Steel fixing	Pre-Fabricated (S&J for hand tied)
2	Integrity Testing	NDT Services
3	Load Testing	NDT Services
4	Pile Setting Out	Workstream
5	Guide Walls	None

Document Control

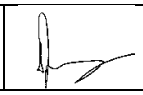
Date	R&A Revision (Template)	Revised By	Changes	Effects
01/06/11 to 13/01/15	1.0 to 1.4	ND	*Various Revisions*	Issued to site from next use
18/02/15	2	ND	RAMS general format updated Feb 2015, to be re-issued from v2 onward.	Issue from now on
30/07/15	2.1	ND	Minor formatting updates and HSEQ advisor updated.	Issue from 30/07/15
04/01/16	2.2	ND	Minor amendments made.	Issue from 04/01/16
21/01/16	2.3	ND	MS: 'Blockage procedure' updated RA: Amendments relating to same	Issued from 22/01/16
09/08/16	2.4	ND	MS: 'Erection & de-rigging' updated	Issued from 10/08/16

Date	RAMS Revision	Prepared by	Approved by	Comments
13/09/2016	**0**	**N Dewey**	N Dewey	

Site Address	**Greenwood Place, London. NW5**
Contract No.	**160161**
Business Unit	**Rock & Alluvium**
Date	**13/09/2016**

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

Pre-Construction Manager

Nick Dewey	Signature of acknowledgement	

Construction Manager

Mark Gibson	Signature of acknowledgement	

Site Supervisor

TBC	Signature of acknowledgement	

General Foreman

TBC	Signature of acknowledgement	

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 in the Company's Health, Safety and Environmental Standards. 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 he 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

Site Address: Greenwood Place, London. NW5		Contract No: 160161
Subject: CFAPiling	R&A Ref: MS/ PMP 21	Date: 13/09/2016
Scope of the Job	CFAPiling	
Site Address	**Greenwood Place, London. NW5**	
Date(s) to be carried out	Refer To Technical Package	
The risks of the work are:	As detailed in the Risk Assessment (HS&E-FRM-H03-03)	
Personnel No. **Competency level / qualification**	The personnel allocated to this contract are identified on the Labour Allocation Sheet, issued Weekly; it is anticipated that 4 – 7 No 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.	
Plant and equipment required	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 An attendant 360° tracked excavator (minimum 13 tonnes) is to be provided by Kier Construction . 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. As attendant excavator will be required to work in close proximity to Rock & Alluvium personnel the foreman is under instructions to raise with Kier Construction any doubts as to the driver's abilities or communication skills, notwithstanding any formal qualifications the driver may have.	
Materials	Ready-mixed concrete Reinforcement Oils, fuels, greases Prime-a-pump line lubricant	
Safe means of access and egress	Kier Construction 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, Kier Construction 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. If no other trades are working on site segregation may not be required	
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 CFAtechniques at the above site. R & A will be working under the instruction of our Client - Kier Construction . A copy of the F10, confirming the appointment of Kier Construction 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 Kier Construction 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) Kier Construction 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 Kier Construction)

The Contract Supervisor is to ensure that all of above are completed to their satisfaction before piling operations commence.

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 (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 Kier Construction . 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.

As attendant excavator will be required to work in close proximity to Rock & Alluvium personnel the foreman is under instructions to raise with Kier Construction 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 Kier Construction 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 Kier Construction .*

6. OTHER CONTRACTORS

All other personnel on site are to be notified of piling works by Kier Construction 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 Kier Construction to include a specific section within the site induction regarding Piling and the associated hazards; particularly with regard to hearing protection.

7. PILING PLATFORM

Kier Construction 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 Kier Construction 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 Kier Construction **.**

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 Workstream. 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

Kier Construction is to notify Rock & Alluvium of all known services 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 Kier Construction at the site boundary.

Kier Construction and Rock & Alluvium are to visually check all piling areas and confirm any changes or

additions to the "Permit to Work".

10. SITE ACCESS

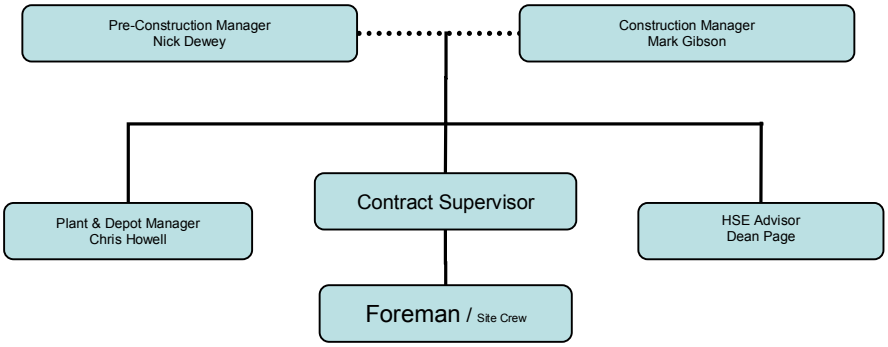
Clear unobstructed access from the road to the Rock & Alluvium work area is to be provided and maintained at all times by Kier Construction . Separate pedestrian access is required as indicated by current regulations

11. SITE RAMPS

All access ramps constructed by Kier Construction 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

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 Kier Construction 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 Safety Advisor will be carrying site visits and is available to deal with any matters Kier Construction may wish to raise.

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 Kier Construction .

15. WELFARE FACILITIES

These are to be provided by Kier Construction and are to be in line with the CDM Regulations (2015); it is anticipated that R&A will have 4-7No 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 Kier Construction 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 Kier Construction .
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.

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.

Lifting Operations will be carried out in accordance with the Lifting 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, given in Section 4.

19. PILE LOGS

Pile logs will be issued via e-mail to Kier Construction 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; whom come under the direct supervision of the Rock & Alluvium Foreman. It is Rock & Alluvium's policy that any reinforcement cage over 100kg in weight is prefabricated.

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 Kier Construction '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 Kier Construction 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.

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

If Rock & Alluvium are unable to drill through the obstruction within a reasonable time, Kier Construction 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. Kier Construction 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. 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

Concrete sampling and testing 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.

24. DEMARCATION

Any demarcation problems relating to our working area will be referred to Kier Construction .

25. RISK ASSESSMENT

A Risk Assessment relating to our work has been carried out and will be passed to Kier Construction 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 Kier Construction . All excavations are to be backfilled with suitable granular material and compacted so as not to leave any soft spots.

Kier Construction 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)
- Hearing Protection
- Protective Overalls
- Gloves (typically to EN388: 3121)
- Safety Glasses (EN166: 1F; Mandatory, EN166: 1B for blowing out operations / abrasive wheel usage).
- Safety Foot Wear with Mid-sole protection (Boots)
- Wet Weather Clothing
- The Piling Rig and Container contain fire extinguishers in case of fire

In addition a Full Body Harness is provided for use with a Fall Arrest Device should climbing of the piling rig

mast be needed. Eye protection is also provided for appropriate tasks.

Kier Construction 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.

This 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 Regulation's(1998) ACoP and BS7121, "Safe us 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	**Prepared by**	**Derek Shale 02087427/1** (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.		

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.	Central	2 leg chains / Nylon slings Vertical lift, secure at tied intersection of helical and main bar
Reinforcement (Straight bars and helical)	As above	Bundled steel bars Or Helical	Horizontal lift: two chain lift. Sling or chain hook to attach to bag handles	Central	2 leg chains Chain to pass through, helicals, bundling wires not to be used.
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	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 **Kier Construction** . 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: CM50=2.7t; CM70=4.1t; R312/SR30=3.2t; SF65=6.5t. It is not designed for general craneage duties. (*Ancillary rope capacities for CM50/R312/SR30=25.6t and CM70/SF65=30.8t)*; ***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: CM50=2.7t; CM70=4.1t; R312/SR30=3.2t; SF65=6.5t. ***R&A limit operational capacities to a maximum of 1 (one) tonne.***

Hazards Identified / Known on Site
Refer to General Risk Assessment (HS&E-FRM-H03-03)
Note: **Unloading of Lorries / where crash mats are required for unloading lorry's Kier Construction 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 **Kier Construction** or their subcontractor will be checked by **Kier Construction** prior to releasing the operative to attend Rock and Alluvium (must include lifting category)
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.

Site Address: Greenwood Place, London. NW5		
Subject: Site Mobilisation	**Doc Ref: MS 01**	**Contract No. 160161**

Scope of the Job	Site Mobilisation
The risks of the work are:	Refer to Full Risk Assessment and COSHH Assessments HS&E-FRM-H03-03 and HS&E-FRM-H02-02
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**
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 principal contractor 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 principal contractor'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 **Kier Construction** .	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	

Site Address: Greenwood Place, London. NW5			
Subject: CFA Piling	**Doc Ref: MS 01**	**Date: 13/09/2016**	**Contract No: 160161**

Scope of the Job	CFA Piling
The risks of the work are:	Refer to Full Risk Assessment and COSHH Assessments HS&E-FRM-H03-03 and HS&E-FRM-H02-02
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	The pump operator lubricates the concrete pump and pumping line		Pumpman
1.2	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. *Note: Side exit flights require disposable bungs.*		Banksman
2.3	When the foreman is satisfied all is in order, he will commence auguring to the required depth. During boring, the gates are kept in the closed position until either: 1) Sufficient spoil has built up at the pile head to provide a natural barrier to the auger 2) Construction of a deep pile necessitates the need to open the gates to allow the rig to achieve the required depth. 3) The attendant excavator is required to remove spoil for the pile head. Before the gates are open, the offset markers are used to check the pile position		Rig Driver / Banksman
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
3	**Concreting**		
3.1	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
3.2	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
3.3	The concrete pressure, flow rate and overbreak percentage is monitored throughout the pile construction operation by the rig instrumentation.		Rig Driver
3.4	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 *exceptional* occasions the piling gang will be required to manually clear the auger flight of all spoil to prevent this going above head height. 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		Banksman
3.5	As the auger reaches the surface pumping will cease		Rig Driver / Pumpman
3.6	In the event of a tip blockage (that is a blockage experienced at the commencement of the concreting phase) the rig operator will notify **Kier Construction** and ensure that any required exclusion zone (to be advised by PC) 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. Refer to section 16 of Risk Assessment for control measures whist clearing the blockage	H	Foreman / Rig Driver / Banksman
3.7	The rig operator will be directed by the banksman onto the next pile position		Banksman
4	**Reinforcement Insertion**		
4.1	The attendant excavator will clear the spoil and concrete slurry from the pile position to a stockpile for disposal		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 down by stepping on the helical binder. Should the reinforcement cage not enter the concrete by this means, the excavator will be used to press it into the wet concrete. 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	Any reinforcing bars that project above the piling platform are to have yellow plastic protective caps fitted by the Rock & Alluvium operatives to protect against stab, puncture and trip hazards. **Note:** Cages to be installed flush with ground level unless instructed by Kier Construction after notifying them of the risks i.e. cage/pile damage, trip hazard and restricts movement.		Banksman
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	***If piles are subject to high tension loads and require central tension steel; items 4.5.1 – 4.5.4 must be followed.***		
4.5.1	If there is a requirement for a central tension bar in the piles; to ensure the safety of those installing these bars the following method will be used.		Foreman
4.5.2	First section of bar to be lifted and lowered into place with the piling rig; bar to be choked with a collar chain. Coupler must be attached to this bar prior to lifting into place.		Foreman / Banksman
4.5.3	Bar to be 'trapped' over the centre of the bore using the bar trapper under the coupler.		Banksman
4.5.4	Second section of bar to be lifted as per 4.5.2 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
	Note: Central bars up to 11m in length may be inserted as a single length; anything over this will be spliced.		
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. 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 collar chain, lifted vertically and inserted into the centre of the pile.		
	Note: The area around the 'lift' must be kept clear of non-essential personnel.		
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 the use of half sleepers 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 the P/C.	R	P/C's Site Manager

Site Address: Greenwood Place, London. NW5		
Subject: Steel-fixing of reinforcement cages	**Doc Ref: MS 02**	**Contract No. 160161**

Scope of the Job	Steel fixing (Cage Making)
The risks of the work are:	Refer to Full Risk Assessment and COSHH Assessments HS&E-FRM-H03-03 and HS&E-FRM-H02-02
Personnel No. Competency level / qualification	Steel fixers (1-3 as appropriate)
Plant, equipment and material required	Steel fixing stands Tying wire

	Key: *R = Review, I = Inspect, H = Hold*	**Inspection**	**Responsible**
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	**Kier Construction** 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, 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 to be 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 heavier cages.		Steel fixer
	Note: Double wire should always be used for fixing the main bars to the helical.		
3.3	After fabrication, the cages are to be stored on timbers or clean hardcore to avoid contamination by soil	H	Steel fixer
3.4	Heavyweight cages need to have strengthened lifting points to enable them to be moved and lifted safely. This will normally consist of three turns of helical securely welded to each main bar. **Note:** *Generally cages weighing 100kg's or over, or of large diameter will be prefabricated.*		Operations / Design
3.5	Attendant excavator to be utilised to move cages from steel storage area to piling rig; reinforcement will be installed in accordance with Works Procedure 4.1.1: Part 4 / 4.1.2: Part 3.		Banks men / Steel fixer
	Note: Any slinging for lifting of bars, helical or cages is to be carried out by a competent, certified slinger/signaller.		

Site Address: Greenwood Place, London. NW5			
Subject: Sampling and Testing Concrete	**Doc. Ref: MS 03**	**Date: 13/09/2016**	**Contract No. 160161**

Scope of the Job	Sampling and testing concrete
The risks of the work are:	Refer to Full Risk Assessment and COSHH Assessments HS&E-FRM-H03-03 and HS&E-FRM-H02-02
Personnel No. Competency level / qualification	Carried out by Concrete pump operator
Plant, equipment and material required	Sampling scoop Concrete cube moulds Tamping bar Trowel Curing tank Mould oil Power supply

	***Key:** R = Review, I = Inspect, H = Hold*	**Inspection**	**Responsible**
1	**Checking the Load**		
1.1	The Foreman will be informed of the Concrete mix in the Technical pack handed over at site start-up.		Supervisor
1.2	This information will be briefed to the Pump Operator.		Foreman
1.3	When a mixer truck arrives on site, the pump operator will check the delivery ticket prior to discharge to ensure the mix is as specified.	R (Delivery Ticket)	Pump Operator / Banksman
1.4	Random trucks may have the slump checked; slump is visually assessed for each and every delivery.		Foreman
2	**Sampling**		
2.1	Concrete from the beginning and end of the load should not be used; only the middle half is to be sampled. Take scoops at regular intervals into a clean bucket.		Cube maker
3	**Cube Making**		
3.1	Check the cube moulds for damage or out of square. Ensure they are oiled to prevent adhesion.	I	Cube maker
3.2	Fill the 100mm mould in two equal layers, tamping each 25 times, starting in a corner and working your way into the centre **Note:** *A 150mm mould needs 35 tamps for each of its **three** layers; these are generally not used.*		Cube maker
3.3	Remove surplus concrete with float and smooth off.		Cube maker
3.4	Seal the top of the mould with a wet cloth and/or plastic to prevent drying out.		Cube maker
3.5	Ensure the cubes are protected from frost damage overnight in the winter as this will have implications to the strength. Frost damaged cubes should be discarded.	I	Cube maker
4	**Storage of Cubes**		
4.1	Strip the mould carefully, tapping gently to break the bond. Take care with blended concrete as it may still be weak the following day.		Cube maker
4.2	Mark the cube with the Contract no, Pile no and date cast, recording this also on the dispatch note. **Generally:** *1No to be tested at 7days, 2No at 28days and 1No to be kept as 'spare' (to be tested at 56days if 28day results are low).*		Cube maker

4.3	Place the cubes in the tank where they must be kept wet and warm, Between 18° C & 22° C as standards dictate.		Cube maker
4.4	**Kier Construction** will need to supply 24hr electric power at all times, especially during cold months, for our concrete cubes to cure correctly. **NOTE**: ***Rock & Alluvium will not guarantee cube results if there is no 24hr power supply and curing conditions are unsuitable.***		Kier Construction
5	**Dispatch**		
5.1	Cubes shall be dispatched for testing regularly and not allowed to accumulate on site. If no cubes have been collected within 4No days of piling commencing, R&A Foreman should contact the Contract Supervisor or ESG directly (01895 235235), quoting contract number and site address; generally 2No collections per week are allocated per contract..	R (Dispatch Note)	Foreman

Site Address: Greenwood Place, London. NW5		
Subject: Blowing out of CFA Piling Rig **Doc Ref: HS&E-RA-H03-10**	**Date: 13/09/2016**	**Contract No: 160161**

Scope of the Job	Blowing out of CFA Piling Rig
The risks of the work are:	Refer to Full Risk Assessment and COSHH Assessments HS&E-FRM-H03-03 and HS&E-FRM-H02-02
Personnel No. **Competency level / qualification**	Rig Driver/Foreman Pump Operator CPCS / CSCS
Plant, equipment and material required	CFA Piling Rig Air Compressor Blowing out Cannon Sponge Ball Blowing out Shield Tarpaulin

	Key: *R = Review, I = Inspect, H = Hold*	**Inspection**	**Responsible**
1	**Where to blow out**		
1.1	The piling rig should be positioned in a suitable location facing away from the site boundary; walkways; site entrance; cabins; site huts; other plant. Where possible a suitable designated blow-out area is to be agreed on site.	I	Foreman
1.2	If the only option is to blow out facing the site hoarding then the rig is to be positioned as far away as possible and the foreman is to ensure that the site boundary access is suitably protected (i.e. not heras fencing)	H	Foreman
1.3	The rig foreman or supervisor is to contact the site manager to ensure that site access and site boundaries are suitably protected and to ensure a safe work area is provided.		
2	**Preparation prior to blowing out**		
2.1	Upon completion of the last pile of the day shift, any excess concrete held in the agitator / concrete lorry will be pumped through to the piling rig.		Pumpman
2.2	The pump operator will then back pump the final hopper full of concrete to relieve pressure in the concrete hose.		Pumpman
2.3	A wet sponge blow out ball will be placed into the concrete hose at the pump which has just been disconnected.		Rig Driver / Banksman
2.4	A blow out cannon is then connected to the hose and then in turn connected to the compressor.		
2.5	The blow out shield (***shown on the right***) is to be placed around the auger base snugly and fixed to the ground with steel pins. The auger above the shield is wrapped with tarpaulin to prevent splashes from grout materials when the sponge ball exits the auger end. 		Foreman

3	**When blowing out**		
3.1	The foreman / banksman is to be located at the piling rig. The pump operator is to be located at the compressor next to the blow out cannon.	I	Rig Driver
3.2	A clear line of sight is required and must be maintained for communication between the pump operator and the site personnel attending the rig.		Pumpman
3.3	The compressor is to be started and the air is gradually released to the blow out cannon. The blow out cannon valve is then released to move the concrete along the concrete hose		Rig Driver
3.4	The air pressure is to be controlled by the pump operator to allow the sponge ball to exit the auger tip in a controlled way.		Banksman
3.5	The concrete hose is to be monitored by the banksman / foreman and when the concrete has passed through the last hose in the line, the foreman / banksman will signal the pump operator to turn off the air supply to the blow out cannon.		Rig Driver / Pumpman
3.6	When the piling rig drop hose lifts and moves, the foreman is to signal the pump operator at the compressor and blow out cannon to release the remaining air in the concrete hose through the blow out cannon release valve, maintaining enough pressure to allow the sponge ball to pass through the auger and exit the tip. Any splashing / debris will be contained by the blow out shield.	H	Foreman / Rig Driver / Banksman
3.7	The concrete hoses and augers will now be empty of concrete.		Banksman
3.8	The foreman / banksman will communicate to the pump operator that the blowing out procedure is complete.		
4	**After completion of blowing out**		
4.1	The blow out cannon is to be disconnected from the concrete hose.		Banksman
4.2	Two or three buckets of water are to be poured into the open end of the concrete hose followed by a wet sponge ball.	I	Banksman
4.3	Repeat Step **3.0** once.		Banksman
4.4	Disconnect the blow out cannon from the concrete hose		
4.5	Unpin and remove the blow out shield from the front of the auger, remove the tarpaulin and retrieve the sponge blow out balls.		
4.6	Wash down all equipment.		Banksman

Site Address: Greenwood Place, London. NW5			
Subject: Setting Out	**Doc. Ref. MS 03**	**Date: 13/09/2016**	**Contract No. 160161**

Scope of the Job	Setting out and recording of pile as-builts
The risks of the work are:	Refer to Full Risk Assessment and COSHH Assessments HS&E-FRM-H03-03 and HS&E-FRM-H02-02
Personnel No. **Competency level / qualification**	Full time setting out engineer
Plant, equipment and material required	Robotic 'total station' Setting out pins (typically H12-H16 x 300mm) Lump hammer Cemcap (plastic safety cover)

	***Key:** R = Review, I = Inspect, H = Hold*	**Inspection**	**Responsible**
1	**Prior to arrival to site**		
1.1	Client to provide (co-ordinated) AutoCAD pile layout, or excel sheet containing all pile co-ordinates (Easting and Northing).		
1.2	Drawings are imported into a CSV file format (fully automated process) and loaded into 'total station'; note that fully automated process mitigates the potential for human error through data input.		
2	**Upon arrival to site**		
2.1	Existing site survey control information to be provided; minimum requirements are 3No base control stations; co-ordinates and height to be provided, these must lie within the site boundary. All site issued documents to be recorded.	I	
2.2	The 3No base stations are to be checked for accuracy; any deviations to be recorded & signed off by site manager.		Engineer
2.3	Piling platform level 'spot checks' to be carried out and verified with R&A foreman.		
	Note: Permit to dig must be in place prior to any pins being driven into the ground		
3	**Setting out**		
3.1	Engineer sets up total station (with reference to the base stations/site control) and by use of the 'stake out' mode on the total station commence setting out.		
3.2	With the engineer working at the 'prism end' the pile position is located to within 20mm accuracy.		
3.3	Setting out pin is driven into the ground. Pin position is recorded on the total station.		
3.4	Pile number is clearly written on plastic safety cap which is placed on the setting out pin.		
4	**As-builts**		
4.1	The as-built location of the pile is carried out directly after the cage has been surged into the pile. This is done by one of two methods; either by a 'six point circumference' or a template to record the centre of the pile. It is important that the platform level is recorded at the time of the pile as-built to ensure that the platform is not deteriorating through excessive scraping of pile arisings from the head of the pile. If the as-built shows a pile to be out of tolerance (75m in plan) or the platform level is more than 50mm low R&A foreman must be informed.	H	Engineer / R&A Foreman

4.2	If pile as-built is more than 75mm out of position, R&A foreman is to contact head office as soon as possible to ensure that pile is suitable for inclusion into permanent works.		Foreman
4.3	All 'as-built' pin and pile positions (including height) are to be e-mailed to R&A on a weekly basis at minimum. **Note that final as-built is ideally required prior to rig leaving site,**		
	In the case of rotary piling the casing position and height must be taken.		
5	**Sequencing**		
5.1	Pile setting out to be in accordance with R&A foreman's requirements; generally a maximum of 6 – 10 pile positions ahead of the rig.		

Site Address: Greenwood Place, London. NW5		
Subject: Erection and De-rigging of Piling Rig	Doc Ref: MS 01	Contract No. 160161

Scope of the Job	Erection and de-rigging of Soilmec Piling Rig
The risks of the work are:	Refer to Full Risk Assessment and COSHH Assessments HS&E-FRM-H03-03 and HS&E-FRM-H02-02
Personnel No. **Competency level / qualification**	Rig Driver/Foreman, Pump Operator, Piling Operatives (1or 2).
Plant, equipment and material required	Soilmec hydraulic Piling rig MEWP

	Key: *R = Review, I = Inspect, H = Hold*	**Inspection**	**Responsible**
1	**Introduction**		
1.1	This method statement has been written to assist piling operatives in the safe erection of a Soilmec SF65 piling rig.		
1.2	It is geared towards piling operatives that have limited knowledge of the piling rig and details the sequenced operations that have to be followed to ensure that the rig is erected both correctly and safely.		
1.3	It will also act as a refresher course for experienced operatives who may have been badly trained or ill advised in the past.		
2	**Preparation of the Area**		
2.1	Locate the Rig in an area of the site that is firm, level and clear of all other construction operations. This area will need to be at least 27m long and 9m wide to allow the top mast section to be swung round.	I	Rig Driver
2.2	Remove the track retaining pins, extend tracks using switch in cab. Tracks move out parallel to rig. Replace track retaining pins.		
2.3	Operative to remove mast securing bolt using MEWP		
2.4	Connect 2 no hydraulic pipes from the Near Side rig panel to the hydraulic fittings below the mast hinge using a MEWP Operative & MEWP move to a safe distance from the piling rig		
3	**Unfold and Lock Upper Mast Section**		
3.1	Open the NS rear compartment door on the piling rig, change switch over to enable the remote to be used & plug in the remote control unit		
3.2	The top section of the mast can then be hydraulically swung round to close up the gap on the mast hinge. Care is to be taken to ensure that all operatives keep hands and arms clear of all crush zones, care should be taken to ensure ropes cannot be nipped, crushed or twisted.		
3.3	Operative to access up to the side of the hinge using the MEWP and inserts the 4 securing bolts which are provided; ensuring nuts face towards the cab, hydraulic pipes can then be disconnected from the mask hinge using the MEWP (ensure both mast sensors on either side of the mast hinge are aligned perpendicular to length of mast)		
3.4	Hydraulic pipes are then connected to the fitting located near the cat head using a MEWP. Operative & MEWP move a safe distance from piling rig		
3.5	Hydraulically lift cat head into position no securing pin required / remove hydraulic pipes from cat head		
3.6	Using the MEWP the ropes can now be taken off the securing points on the underside of the mast and clamps removed on the top side of the mast		
3.7	Disconnect hydraulic ram & pipes; switch control back to rig		

4	**First Stage Mast Elevation**		
4.1	Check that all of the ropes are free and they cannot be nipped, crushed or twisted when the mast is being raised.		
4.2	Operator to raise the mast form the cab to approximately 30^{O} from horizontal, then slide inner mast section out to enable the main mast section to meet the foot section, continue to raise mast until mast and foot sections meet (at approximately 45^{O} from horizontal)		
5	**Final Mast Elevation**		
5.1	Switch control in rear panel back over to operate remote control & connect the hydraulic pipes to the ram between the foot section & parallelogram extend ram so mast & foot section meet, fit 2 no securing pins.		
5.2	Mast then raised to the vertical position ensuring pipes / ropes are free from trapping		
5.3	Lift sheave wheel from front of rotary table using the auxiliary winch and secure at rear of rotary table insert pin		
5.4	Raise rotary table above foot section remove red rotary travel frame		
6	**De-rigging**		
6.1	The de-rigging procedure is the reverse of the above.		
7	**Augers**		
7.1	Augers section to be placed in front of the piling rig using hiab / excavator ensuring the female couplings are facing the front of the piling rig	R	All Ops
7.2	Banksman to take spare line hook from the rig and place on the ground next to the female auger couplings.		
7.3	Collar chain connected to 1 no section of auger minimum of 500 mm from top of section spare line hook connected to collar chain.	H	Banksman
7.4	Once secure Banksman to signal to rig driver to start to lift section of the ground to approximately 1.2 meters. Banksman to check female coupling for any debris.		
7.5	Debris removed if required using suitable tools		
8	**Lifting Auger section into place**		
8.1	Ensure motors on rig are at a suitable height from the ground to take the auger section	I	Banksman
8.2	Rig gates to be opened manually / hydraulically depending on rig type		
8.3	Banksman to stand in a safe are to the side of the piling rig and signal driver to lift the auger section into place. Once auger section is vertical gates to be closed around the auger section. Spare line lowered enough to enable hook to be removed / auger rotated.	H	Banksman
8.4	MEWP to be moved into position next to the piling rig. IPAF operator to raise cherry picker up to the auger section / motors. Ensuring the MEWP basket is a minimum of 1 metre from the auger.		
8.5	Banksman / MEWP operator to signal rig driver to lower / spin auger as required to enable male & female couplings to be connected and lowered into position		

	Note: There is no requirement for the auger to be touched, should this be necessary then the stem should be held; under no circumstances should the extremities of the flights be held.		
8.6	Once in position MEWP operator moves the cherry picker basket next to the auger section and insert 2 no pins using a club hammer to secure the section.	H	Banksman
8.7	MEWP operator / Banksman to remove spare line from collar chain & collar chain from auger section. MEWP moved away from piling rig and lowered to ground		
	Above steps followed to install additional sections as required		

Site Address: Greenwood Place, London. NW5		
Subject: De-Rig Augers	**Doc Ref: MS 01**	**Contract No. 160161**

Scope of the Job	The safe removal of flights from the extension (in an un-locked/extended position) on a Soilmec CM50/SF50
The risks of the work are:	Refer to Full Risk Assessment and COSHH Assessments HS&E-FRM-H03-03 and HS&E-FRM-H02-02
Personnel No. **Competency level / qualification**	Rig Driver/Foreman, Pump Operator, Piling Operatives (1or 2)
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**
	The new safe operating procedure for removing the flights from the extension (in an un-locked/extended position) on a Soilmec CM50		
1	Locate safe position agreed by Principal Contractor and R&A to position flight in the ground	I	Rig Driver
2	Set rig over position and proceed to drill auger into the ground until the top 6m auger section coupling is accessible from ground level.		
3	Lower motors and unlock extension		
4	Raise motors	H	Banksman
5	Remove retaining pins from the lower coupling on the top 6m section		
6	Lift motors to separate top section and extension from auger string drilled in the ground.		
7	Track rig to safe position for removing auger section		
8	Lower auger to the floor for pin removal		
9	Gain access to the top section joint (6m) using a MEWP and remove pins. Rotate auger to enable pin removal if necessary (pins can only be driven out from one direction).		
10	Raise collar chain up to operative using the auxiliary winch. Choke auger with collar chain and re connect to auxiliary winch. Take slack out of auxiliary winch and collar chain		
11	Raise motors to separate 6m section from unlocked extension. Lower section of flight to floor using auxiliary winch and remove collar chain taking care to avoid drop hose.		
12	Re-position rig over auger already drilled into the ground and re-connect augers with retaining pins	I	Banksman
13	Extract and back screw auger clear of bore		
14	Ensure that the open bore is backfilled, compacted and cordoned off in case of any settlement.		
15	Move machine to safe position to remove remaining augers		
16	Proceed to remove auger starting with cutting head		

17	Auger lowered to the ground		
18	Rotate auger so that the pins can be removed from the cutting head (can only be removed in one direction).		
19	Remove pins using punch and club hammer		
20	Choke cutting head with collar chain and connect to auxiliary winch using collar chain		
21	Take slack out of auxiliary winch and collar chain, lift augers to part cutting head from lower auger section and lower cutting head to floor using auxiliary winch		
22	Lower auger to floor to enable the pins to be removed from the next coupling joint (at height of 6m)		
23	Gain access to the first coupled joint (6m) using a MEWP and remove pins. Rotate auger to enable pin removal if necessary (pins can only be driven out from one direction).		
24	Raise collar chain up to operative using the auxiliary winch.		
25	Choke auger with collar chain and re connect to auxiliary winch		
26	Take slack out of auxiliary winch and collar chain		
27	Lift auger to separate 6m section from remaining auger section and attached extension		
28	Lower section of flight to floor using auxiliary winch and remove collar chain taking care to avoid drop hose.		
29	Repeat process items 22-28 to remove last auger section from extension.		
30	Lower auger extension with motors to the floor.		
31	Run motors down auger extension but not completely to the stops of the mast.		
32	Move the rig to plumb the extension and guide pole to vertical		
33	Remove location pin on guide pole		
34	Using MEWP attach auxiliary winch to guide pole and remove and set down on ground		
35	Spilt concrete hose at joint		
36	Access top of extension using MEWP and attach auxiliary winch to lifting point on back of swan neck ensuring that the winch is positioned correctly between main winch ropes.		
37	Take off slack in auxiliary winch, lower motor to mast stops and lift extension through rotary table and lower to ground. Care to be taken when lifting extension to ensure it is clear of rotary table and winch ropes		
38	De-rig machine as per Soilmec Use and Maintenance manual and R&A document PMP Section 5 – W/P _; Erection & De-rigging CM50/SF50.		
NB: If site constraints dictate that the auger cannot be drilled into the platform then the auger **must only be rotated forward** to ensure that the locking mechanism on the extension pole remains locked.			
Please also note that the backfilling of any residual void left from the above de-rigging procedure must be carried out in accordance with section 23 of the CFA risk assessment; document reference HS&E-FRM-H03-03.			

Business Unit	Rock & Alluvium	**Site Address**	**Greenwood Place, London. NW5**	**Principal Contractor (P/C)**	**Kier Construction**	**Con. No:**	**160161**
HSE Assessor	Dean Page	**Operation**	**RIGGING & DE-RIGGING OF PILING RIG**	**Date:**	**13/09/2016**	**Ref. No:**	Revision 2.3 Issued 22/01/16

This Risk Assessment relates to Method Statements MS-30, MS-31, MS-32 and MS-33.
The Rigging and de-rigging procedures must be adhered to at all times.

HAZARDS	PERSONS AFFECTED	RISK			CONTROL MEASURES (List control measures that are provided and those required)	RISK		
		L	S	R		L	S	R
Site Specific Hazards: (additional site specific hazards identified below, if any)								
ADD ADDITIONAL SITE SPECIFIC RISKS ***Please see next page***								

Section	HAZARDS	PERSONS AFFECTED	RISK			CONTROL MEASURES (List control measures that are provided and those required)	RISK		
			L	S	R		L	S	R
1	Instability of ground	Rig team	2	4	M	Rig to be rigged and de-rigged on suitable piling mat, copy of the working platform certificate to be signed and design must be available on site prior to commencement of rigging.	1	4	L
2	Rig failure due to mechanical or operator error	Rig team	3	4	H	Operators to be qualified and competent; equipment to be checked and certified regularly. Rigging and de-rigging procedure to be followed.	1	4	L
3	Rig Instability	Rig team	2	3	L	Mast not to be fully erected beyond 45 deg until track extension pins inserted	1	3	L
4	Use of MEWP (CFA rigs)	Refer to Main Site Risk Assessment where this is covered							
5	Fitting Augers	Rig team	2	4	M	Augers to be slung using spare line and fitting pins inserted into each joint before next section added. Procedures outlined in section 5.1 Rigging and de-rigging to be followed.	1	4	L
6	Ladder slipping	Ladder user	2	3	L	Ladder to be footed at all times in use; most duties that require the use of a ladder (ensuring that '3points of contact' are maintained) will be carried out by using the MEWP.			
7	Rig may slip off low loader during loading / off-loading	Rig team and low-loader operators	3	3	M	Use ramps and stand clear of the low loader bed during the operation. If on public highway ensure public is kept clear of the operation; PC should provide suitable loading / off-loading area with appropriate traffic management.	2	3	L
'LIVE RISKS' TO BE RECORDED BELOW									

High Risk Operation NO	Temporary Works NO If Yes – refer to HS&E-STD-T01	The above control measures have been implemented Workplace Manager …… Date ……

Amendment Log

Revision	By	Amendment	Date
1	ND	Format revised and sections updated	01-05-14
2	ND	Reviewed; no update required.	18-02-15
2.1	ND	HS&E advisor updated and general review	30-07-15
2.2	ND	General review, no amendments required	04-01-16
2.3	ND	Revisions to other sections, no changes to this document required.	22-01-16
2.4	ND	Section 5 amended to coincide with updates to section 5.1	10-08-16

RISK RATING = Likelihood (L) x Severity (S)		HAZARD SEVERITY (S)				
		1	2	3	4	5
		Negligible Negligible injury, no absence from work	**Slight** Minor injury requiring first aid treatment	**Moderate** Injury leading to a lost time accident	**High** Involving a single persons serious injury/death	**Very High** Multiple serious injuries/death
1	**Very Unlikely** A freak combination of factors would be required for an incident / accident to result	LOW	LOW	LOW	LOW	LOW
2	**Unlikely** A rare combination of factors would be required for an incident /accident to result	LOW	LOW	LOW	MEDIUM	MEDIUM
3	**Possible** Could happen when accidental factors are present but otherwise unlikely	LOW	LOW	MEDIUM	HIGH	HIGH
4	**Likley** Not certain to happen but an additional factor may result in an incident/accident	LOW	MEDIUM	HIGH	HIGH	HIGH
5	**Very Likely** Almost inevitable that an incident / accident would result	LOW	MEDIUM	HIGH	HIGH	HIGH

LOW RISK (Score 1-6)	**May be acceptable, however, review task to see if risk can be reduced further**
MEDIUM RISK (Score 8-10)	**Task should only proceed with appropriate consultation with specialist personnel and HS&E team. Where possible the task should be refined to take account of the hazards involved or the risks should be reduced further prior to task commencement**
HIGH RISK (Score 12-25)	**Task must not proceed. It should be redfined further control measures put in place to reduce risk. The controls should be re-assessed for adequacy prior to work commencement.**

Likelihood
How often could the hazard occur? Consider the task, frequency, duration, method of work, employees involved.

Severity
How serious would the hazard's effects be if realised? Consider the type of hazard, biological, ergonomic, physical and chemical.

Risk = Likelihood x Severity

E.g. Likelihood (4) X Severity (3) = 12 **HIGH RISK**

Pile Load Testing and Integrity Testing

Guidance for Kier Construction

1 Pile Load Testing

Introduction

The piling work on this site may include one or more pile load tests. These tests can be one of two types:

- **Preliminary Tests**: This is a test carried out in advance of the main piling work. The pile is usually tested until it fails and the results are used to refine the design of the subsequent working piles. If a test can be left for a long period of time (4-5 weeks) better results will be obtained.

- **Working Pile Test**: This is a test on a working pile and the test load is usually limited to 50% over the design load to avoid overstressing the pile or ground. This test is to check that the piles are capable of bearing the loads imposed on them. It is not intended as a check on workmanship, but on design.

The piles and anchorages for the test will be installed by Rock and Alluvium Ltd. The loading test will be carried out by a specialist subcontractor from our Approved List. After installation, the piles are left for a minimum period of 14 days or longer to enable the concrete to gain sufficient strength (minimum period subject to 7 day cube results).

Pile Protection between Installation and Testing

Between installation and testing, the test pile and anchors must be protected from damage and interference, specifically:

- The anchor piles are reinforced with “Dywidag bars” which protrude from the piles to allow connection to the test beams. The bars are formed from high grade steel which can be damaged by heat or bending. The test area must therefore be **barriered off** from plant movement and no hot work allowed in the vicinity. In the unfortunate event of a bar being bent, it must never be straightened, but we should be informed so we can re-end the bar.
- No excavations must take place around the anchors as these have been designed assuming ground level remains undisturbed. Excavations or loosening of the ground can cause the anchors to pull out, stopping the test. A repeat test will severely disrupt your program

Pile Test

The test contractor will need road access from the public road to the test location for his lorry which contains his test beams and data-logging cabin. The lorry needs to be able to park adjacent to the test pile to enable the data cables run from the data cabin to the test assembly without interference. The lorry will also need to be able to park a safe distance from the pile test assembly under load.

The area around the test must be made suitable for the technician to safely work, i.e. levelled, hard-cored and without trip hazards or excavations.

During the test, the area about 2m from the beam will need to have a barrier around it. This zone becomes a no-go area for all personnel, except those directly involved with the testing procedure.

During the test, no work that could cause vibration should be carried out adjacent to the test as the settlement of the pile under load is measured by accurate electronic instrumentation that is easily disrupted.

Kier Construction can usually mitigate the disruptive effects of complying with the above requirements by careful selection of the pile(s) to be tested.

Overnight Unmanned - Static Pile Load Testing

The Engineer's Specification for the load testing requires the load to be maintained with measurements taken continuously from the commencement through to the completion of the test; over a period of approximately 19 hours for a working test pile and a period of approximately 27 hours for a Preliminary or Expendable test pile. This will invariably mean that automatic monitoring will continue overnight. This type of testing is monitored remotely at our Sub-Contractors office. Should any problems arise during out of hours an alarm will notify the office and the test will be terminated.

All relevant Method Statements and Risk Assessments shall be issued to Kier Construction prior to mobilisation of the testing Sub-Contractor; please note that it is the responsibility of Kier Construction to induct the technician prior to allowing testing to commence.

2 Integrity Testing

It is normal practice to carry out a test on the integrity of the piles after they have been trimmed to cut-off level. To enable this test to be carried out, Kier Construction needs to note:

- The pile need to be trimmed down to cut-off level.
- A safe access needs to be provided for the test technician to gain access to the head of each pile.
- The pile cap/ground beam excavations must be clear of any standing water.
- The pile cap or ground beam reinforcement must not be in place.
- Although a thin layer of blinding can be in place around the pile, it must neither cover the pile nor be greater than 75mm thick.

Relevant Method Statements and Risk Assessments shall be issued prior to the first visit, it is the responsibility of Kier Construction to ensure that technician is inducted prior to allowing works to commence.

Notes:

- Integrity testing of wall piles is not required.
- **Three** working days' notice is required to book the testing technician.

R&A contact for Sonic Integrity Testing: Fiona Cheesman (01372 389333)

Appendix 6
Inspection and Test Plan
CFA Piling

Key: W – Work available to be witnessed; **R** – Review Documents; **I** – Implement Test or Inspection; **A** – Approval Granted

No	Construction Stage	Spec / Standard Ref	Inspection or Test	Acceptance criteria	Frequency	Procedure Ref / Method of testing	Person Responsible	Type of Record	RA Inspection	Remarks
A	**Preliminary**									
A1	Subcontractor approval	BS 4449 BS EN206 / BS8500	Check approved subcontractors and suppliers list	On list	Prior to commencement		Buyer	Correspondence	R	
A2	Steelfixing s/c start up		Check operatives competency	CPCS/CSCS Card	Prior to commencement		Foreman	Inspect	R	
A3	Approval of material suppliers		Check approved subcontractors and suppliers list	On list	Prior to commencement		Buyer	Correspondence and Certificates	R	Steel to be from CARES Approved Supplier; Concrete to be from QSRMC Approved Depot
A4	Approval of testing laboratory	ICE B19.8	UKAS Accredited	On list	Prior to commencement		Buyer	Correspondence and Certificates	R	Test Lab to be UKAS Registered
A5	Concrete mix	Contract Spec / ICE B19.3	Inspect test results	Clients Engineer to not disapprove	Prior to commencement of main works		Buyer	Cube test result		Mix Design to be Approved Prior to Commencing the Works
B	**Site Start up**									
B1	Check for services and utilities		Check Service Drawings and Scan Area	Permit to Work to be received from P/C	Prior to commencement		Principal Contractor / Client	Permit to work / dig	R	PC/Client to issue Permit to Work
B2	Platform	FPS Guidance Notes / BRE 470	Check Platform has been Constructed Correctly for Relevant Plant	Firm and Level and Designed to withstand bearing pressures of rig - provided	Daily informal Inspection, minimum weekly sign off on FPS cert.		R & A Foreman	Working Platform Certificate	R	Piling Platform to be Designed and Installed correctly and Working Platform Certificate must be signed prior to commencing work
B3	Setting out	ICE B1.8.1	Engineering check	Within +/- 10mm, tagged with pile no.	Each pile		Engineer / Surveyor	As-built survey / Surveying book	A	Calibration Certificate for Instrument to be obtained

No	Construction Stage	Spec / Standard Ref	Inspection or Test	Acceptance criteria	Frequency	Procedure Ref / Method of testing	Person Responsible	Type of Record	RA Inspection	Remarks
C	**Site Construction**									
C1	Positioning rig	ICE B1.8	Check verticality and position of rig mast	ICE table B1.4	Each pile		Front Man		I	Position and verticality to be corrected until within tolerance
C2	Sequence of work	ICE B1.13.3	Ensuring not boring near a recently cast pile	No damage to adjacent piles	Each structure / part of structure		Foreman		I	Nearby piles to be monitored during pile construction.
C3	Pile Positioning	ICE B1.8	Check Auger Position	Within 25mm	Each Pile	Use of Reference Pegs	Banksman		R	Position to be corrected until within tolerance.
C4	Depth at toe	ICE B4.4.1, B4.4.4 & B4.5.1	Pile depth to be checked at completion of boring	Toe level to be at or below target depth	Each pile	Rig Instrumentation	Rig Driver	Pile Log / Electronic Rig Printout	I	Checked against pile schedule
C5	Concrete delivery	ICE B19.5	Check delivery ticket before acceptance.	Correct mix	Each delivery		Pump man	Delivery Ticket	R	If nonconforming reject
C6	Workability	ICE B4.4.5.1	Visual inspection *(Flow/slump tests can be carried out upon request by supplier)*	BS 8500-1 table B.1 (180mm +/- 30mm)	Each delivery		Pump Man *(Contract Supervisor to arrange testing)*		I	If nonconforming reject
C7	Delivery or Assembly of pile cages	ICE B19.9	Visual inspection	Steel not excessively rusted. Cage sturdily constructed	Each batch		RA Foreman	Delivery Ticket	I	Cages checked against Technical Package / Cage Drawings
C8	Cage type		Dimensional check, length, bar diameter, no bars	Compliance with Technical Package /Cage Drawings	Each cage		Banksman		I	Check pile schedule
C9	Spacers / cage formers	ICE B19.9.4	Visual inspection	min 4 no every 4m	Each cage		Front man		I	If possible use 1No spacer per vertical bar and additional spacers at the top
C10	Cage installation	ICE B4.4.7, B9.4.4 & B10.4.4	Check cage has been installed at the correct level (PPL) and is centralised.	+150/-50mm	Each pile		R & A Foreman	Pile Log	I	Check pile schedules, cages placed to Ground level (PPL critical)

No	Construction Stage	Spec / Standard Ref	Inspection or Test	Acceptance criteria	Frequency	Procedure Ref / Method of testing	Person Responsible	Type of Record	RA Inspection	Remarks
D	**Concrete Sampling and Testing**									
D1	Strength	ICE B19.2, B19.8.3 (BS EN12390 Part 2)	Concrete to be sampled and four cubes made	BS EN12390 (Part 2)	As Per SPERW (2007)		Cube maker		W	
D2		ICE B19.2, B19.8.3 (BS EN12390 Part 2)	Cubes stripped from moulds, labelled and stored in heated (20°C +/- 2°C) cube tank	BS EN12390 (Part 2)	Daily		Cube maker	Dispatch paperwork		Cubes to be collected promptly and not allowed to accumulate
E	**Instrumentation**									
E1	Depth Indicator	ICE B4.4.9	Manual check with tape, and/or check against mast increments	At full auger length +/- 100mm	Start of each contract		Foreman		I	
E2	Concrete Flow	ICE B4.4.9	Pass a known volume through the system	+/- 5%	Once during contract		Foreman		I	
E3	Instrumentation - failure	ICE B4.4.9.2	In case of Instrument failure, pile to be completed if concreting has commenced, otherwise aborted and auger backscrewed out of ground. Supervisor to be contacted and instructions sought		Every instrument breakdown		R & A Foreman		I/S	Pile construction not to commence if electronic instrumentation is not working
F	**Post Construction**									
F1	All piles cast	Drawings and Pile Schedule	Check all piles have been constructed	Drawing/Schedule	End of piling		Foreman	Note in diary and on pile logs		
F2	Post Construction Survey	Pile Layout drawing	Resurvey of pile positions	Within Tolerance (normally 75mm)	Once piles have been exposed		Principal Contractor	As built Schedule		Copy to be sent to Client for O&M Manual

No	Construction Stage	Spec / Standard Ref	Inspection or Test	Acceptance criteria	Frequency	Procedure Ref / Method of testing	Person Responsible	Type of Record	RA Inspection	Remarks
F3	After piles trimmed		Integrity Testing	No defects	Each pile	As NDT Procedure	Principal Contractor responsible for arranging through R&A	Integrity Test Report		Copy to be sent to Client for O&M Manual
G	**Load testing (working & preliminary)**									
G1	Anchor Construction	Anchor Layout Drawing	Piles to be constructed to correct depth. Correct, cage, tension bars and Dwyidag bars to be installed	As per layout drawing and technical pack	Each Pile		Foreman			Anchor and test piles to be left a minimum of 14 days before loading. This may be superseded by the strength requirement
H	**Screw Jointed Bars**									
H1	Use of screw jointed anchor bars	R&A RAMS, Section 4 – Works Procedure 1.1 (CFA Piling)	Bar joint to be inspected for tightness	No further movement between sections	Each bar joint	Wrench	Banksman		I	

KEY

W	Work available to be Witnessed
R	Review documents
I	Implement Test or Inspection
A	Approval (authorise)

Roles and Responsibilities

Foreman's Responsibilities

Form Number	Form Title	Completed by	Comments
Start of project:			
HS&E-FRM-P01-01	Plant checklist and authorised user	Rig foreman/competent person when non R&A plant is brought onto site	
Daily:			
RA-FM-01-082	Morning Brief (TBT)	Rig foreman	To include everybody that is included in piling activities
RA-FM-01-P01-03	Mobile Plant daily checklist – Rig / Cherry Picker	Plant operator	
HS&E-FRM-C03-11	Safety Behavioural Discussions	Rig foremen	Ops and management to also completed each site visit.
Weekly:			
WPC4 (Oct 2011) page 2	Piling Platform Regular Check	Client	Weekly as a minimum.
RA-FM-01-082	Toolbox Talk	Rig Foreman	1No Environ. Toolbox Talk every 4 weeks.
HS&E-FRM-L02-04	Lifting Equipment inspection	Rig foreman	Can delegate to competent person but remains ultimately the foreman's responsibility
HS&E-FRM-P01-02	Mobile Plant and equipment inspection form	Rig foreman	Can delegate to competent person but remains ultimately the foreman's responsibility
HS&E-FRM-P01-07	Work Equipment Inspection	Rig foreman	Can delegate to competent person but remains ultimately the foreman's responsibility
HS&E-FRM-W03-06	Harness Inspection	Rig foreman	Can delegate to competent person but remains ultimately the foreman's responsibility
Monthly:			
HS&E-FRM-F02-01	The First Aid Check sheet	Rig foreman	Can delegate to competent person but remains ultimately the foreman's responsibility
No number – on same sheet as fire and first aid check	Spill Kit check	Rig foreman	Can delegate to competent person but remains ultimately the foreman's responsibility
HS&E-FRM-F01-04	Fire Extinguisher Check	Rig foreman	Can delegate to competent person but remains ultimately the foreman's responsibility

Supervisors Responsibilities

Form Number	Form Title	Completed by	Comments
Start of project:			
HS&E-FRM-H03-02	Project Management Plan (incorporating Method Statement)	R&A operations supervisor and R&A rig foreman	Reviewed and accepted by client.
HS&E-FRM-P04-02	Environmental Management Plan	Client and R&A	Client to sign
WPC4b (Apr 2013)	Platform Certificate	Client	See below; page 2 must be signed at minimum, weekly to confirm piling platform is being checked and maintained if required.
RA-FM-07-032	Permit to Work	Client and R&A	To be signed off by Client and R&A Contract Supervisor, Foreman.
HS&E-FRM-H03-03	Risk Assessments		To be signed off by R&A Contract Supervisor.
HS&E-FRM-T03-01	Record of HS&E briefing	To be signed by R&A operatives, steel fixers, engineers, attendant excavator and dumper operators etc	

Business Unit:	Rock and Alluvium	Contract Number:	**160161**
Contract Name:	**Greenwood Place, London. NW5**		
Briefing Type:	Risk Assessment / *Method Statement / *Toolbox Talk *(*Delete as Required)*		
Other *(Please State)*:			
Briefing Title(s) / Reference(s):			
Briefing Delivered By:			

Name	Date & Start Time	Piling Crew	Sub-Con.	Other *(Please Specify eg Company Name)*	Signature

… Continued on next page

… Continued from previous page

Name	Date & Start Time	Piling Crew	Sub-Con.	Other *(Please Specify eg Company Name)*	Signature

Business Unit	Rock & Alluvium	**Site Address**	**Greenwood Place, London. NW5**	**Principal Contractor (P/C)**	**Kier Construction**	**Con. No:**	**160161**
HSE Assessor	Dean Page	**Operation**	**PILING**	**Date:**	**13/09/2016**	**Ref. No:**	Revision 2.4 Issued 10/08/16

Notes: If any of the following situations apply, append the relevant Risk Assessment.
Adjacent to Rail: No **Contaminated Ground: No**

HAZARDS	PERSONS AFFECTED	RISK			CONTROL MEASURES (List control measures that are provided and those required)	RISK		
		L	S	R		L	S	R
Site Specific Hazards: (additional site specific hazards identified below, if any)								
No Additional Site Specific Hazards identified ***Please see next page***								

Section	HAZARDS	PERSONS AFFECTED	RISK			CONTROL MEASURES (List control measures that are provided and those required)	RISK		
			L	S	R		L	S	R
1	Site Access / Egress	Piling Crew, visitors and other operatives on site	3	4	H	P/C to erect suitable pedestrian barriers to reduce the interaction between vehicles / plant and any site operatives and/or the general public. Employees to conform to site segregation rules and not block walkways. R&A operatives to Supervise and direct the piling rig and piling equipment delivery vehicles across public footpaths and access routes; PC to provide Traffic Marshals. P/C to provide security at site entrance to prevent unauthorised persons gaining access to the site and supervise delivery vehicles entering and leaving the site. Security Container to be positioned away from traffic routes. **HS&E Standard H01 is to be complied with in full.**	1	4	L
2	Congested Working	Piling Crew, visitors and other operatives on site	2	4	M	Equipment that is not required for current piling operations is to be stored outside of the piling area. Where spoil is to be loaded away, this is to be moved away from the piling rig before loading vehicles.	1	4	L
3	Use of Mobile phones or other mobile devices causing a distraction from site hazards	Piling Crew, visitors and other operatives on site	2	2	L	Foreman who uses mobile phone are only to do so in a place of safety and when safe to do so. Mobile phones must not be used when engaged in activities where distraction could pose a risk, e.g. rig manoeuvring. When using a Mobile phone, all operatives should move to a place of safety, such as a designated area.	1	2	L
4	Storage and Security	Piling Crew, visitors and other operatives on site	3	3	M	R&A operatives to stack piling equipment & materials in such a way as to not become unstable when moved / used. P/C to provide a secure site with lockable gate and provide, erect & maintain suitable boundary fencing (hoarding) to prevent unauthorised access at all times. P/C to provide site security to guard against loss/theft of property and machinery. **HS&E Standard S01 is to be complied with in full.**	2	3	L

Section	HAZARDS	PERSONS AFFECTED	RISK			CONTROL MEASURES (List control measures that are provided and those required)	RISK		
			L	S	R		L	S	R
5	Striking services, electric cables, gas mains, telecoms, water supply and drainage.	Piling crew, visitors and other operatives on site Nearby residents if gas main	2	4	M	P/C to review service drawings P/C to scan for, locate, expose, divert, protect as necessary all existing underground services prior to the start of any piling operations and issue "Permit to Dig". R&A to notify P/C of any pressure loss / anomalies whilst drilling / injecting piles. All works to cease if electric cable strike suspected – Rig operator to stay in cab or Jump well clear,	1	4	L
6	Slips, trips and falls	Piling Crew, visitors and other operatives on site	2	3	L	Site and all walkways to be kept clear and tidy, with particular attention to designated pedestrian routes. Materials to be stacked and stored properly. P/C to provide background safety lighting in periods of darkness in areas used by R&A, including walkways and access routes	1	3	L
7	Drowning when working near deep water	Piling Crew, visitors and other operatives on site	2	4	M	P/C to provide, install and maintain suitable fencing and/or guard rails to prevent R&A operatives from falling in to adjacent water. P/C to provide life jackets and rescue plan. **HS&E Standard W04 is to be complied with in full.**	1	4	L
8	Electrocution	Piling Crew	3	4	H	All portable electrical equipment to be a maximum voltage of 110volts dc. All portable electrical equipment to be checked before it is used and thoroughly inspected every 3 months by a competent person. PAT testing is required see MS/047 for colour coding test schedule. Damaged / Faulty equipment to be removed from use. **HS&E Standard E01 is to be complied with in full.**	1	4	L

Section	HAZARDS	PERSONS AFFECTED	RISK			CONTROL MEASURES (List control measures that are provided and those required)	RISK		
			L	S	R		L	S	R
9	**Lifting operations.** Falling plant and materials, Collisions with plant, persons and Overhead services Failure of lifting appliance	Piling Crew, visitors and other operatives on site	3	4	H	Lift Plan to be followed at all times (PMP Section 3) Only Fully Trained Banksman / Slingers are to control lifting operations on site and ensure that the loads are properly slung prior to any lift commencing. Banksmen to ensure that the lift path / route is clear of other site operatives and overhead services in particular H.V Cables and overhead pipe racks. Whilst lifting augers (during rigging), ensure that the 'female' coupling is facing the rig and the lift path is clear; do not pick up augers when 'male' coupling is facing the rig. Plant Manager to ensure that all rigs receive their 12-monthly thorough examination and that any defects are corrected Foreman to ensure rig is inspected after rigging and LOLER register completed. R&A foreman is to ensure that all Lifting Accessories have been given an examination every 6 months and certificates available. Banksman / Slinger to assess all loads before they are lifted to ensure that the Safe Working Load of the lifting equipment is not exceeded at any point during the lift Damaged slings to be cut-up and not used/discarded **HS&E Standard L02 is to be complied with in full.**	1	4	L
10	Use of attended excavator Accidental unlatching of bucket using "quick hitch " attachment mechanism	Piling Crew, visitors and other operatives on site	2	4	M	Foreman to check that bucket and excavator are a "matching pair" (many systems are in use). All excavators' operators must have received training on the type of quick hitch being used. Driver must be competent to operate system supplied, by demonstration if required. Where a locking pin is specified in the system, it must be in fitted in the correct place by the excavator Operator (R&A site team to check). **HS&E Standard P01 is to be complied with in full.**	1	4	L

Section	HAZARDS	PERSONS AFFECTED	RISK			CONTROL MEASURES (List control measures that are provided and those required)	RISK		
			L	S	R		L	S	R
11	Plant / Vehicle operation Contact between plant and persons such as to cause injury.	Piling Crew, visitors and other operatives on site	4	4	H	P/C to erect suitable signage and barriers to prevent any unauthorised site operatives gaining access into the piling area. R&A to cease all piling operations if any unauthorised persons enter the piling area Foreman to check all plant, machinery and equipment to ensure that guards are secured in place to prevent any physical contact with moving parts. P/C or R&A to design platform, P/C to Install & Maintain Piling Platforms to safely support bearing pressure of piling rig in its Working Mode. The FPS Working Platform Certificate provided by Rock & Alluvium is to be signed by the Principal Contractor and/or the Planning Supervisor and returned prior to Piling Operations commencing; confirming the design is in order and the platform construction is in accordance with the design. All excavations to remove existing foundations / underground obstructions should be backfilled with suitable material and compacted in accordance with the design. Rock & Alluvium personnel are not permitted to unsecure any load, handle or unfold concrete chutes of concrete delivery vehicles. In line with Plant Standards P01, red card rig operators to be assessed by R&A employer or blue card operator **HS&E Standard P01 is to be complied with in full.**	1	4	L

Section	HAZARDS	PERSONS AFFECTED	RISK			CONTROL MEASURES (List control measures that are provided and those required)	RISK		
			L	S	R		L	S	R
12	**Use of Abrasive Wheel Cutter (Stihl Saw).** **Cutting Rebar only**	Piling Crew, visitors and other operatives on site	2	2	L	Only persons holding a Competence Certificate to use saw or change wheel. Additional PPE. Goggles to BS EN 166 B must be worn. Suitable gloves and ear protection to be worn. Use of this type of tool is to be limited to 1 hour per day. Tools must not to be used near combustible materials. If any fuel spillage on clothing, tool must not to be used. **HS&E Standard P01 is to be complied with in full.**	1	2	L
13	**Working at Height** (Ladders may be used by fitters)?	Piling Crew, visitors and other operatives on site	4	4	H	Ladders are not to be used on site, MEWP to be used at all times. If ladder required, it must be Industrial Class 1 EN131 (Blue Label), it must be inspected for damage prior to use, be adequately footed and three points of contact to be maintained at all times. **HS&E Standard PW03 is to be complied with in full.**	2	4	M
14	Loading and off-loading Vehicles	Piling Crew, visitors and other operatives on site	2	2	L	Lifting chains to be prefixed to Containers. Piling Equipment, Rebar or Cages to be delivered in vehicles with side rails and pre-slung with slings easily accessible from ground level. R&A to use unloading bay when available on site Where possible, items to be slung/un-slung from ground level. Where vehicle's flatbed is to be accessed, use appropriate access point. After slinging load, operative to dismount the vehicle's bed or stand at the headboard. Fall protection must be used.	1	2	L

Section	HAZARDS	PERSONS AFFECTED	RISK			CONTROL MEASURES (List control measures that are provided and those required)	RISK		
			L	S	R		L	S	R
15	Rig instability / platform failure	Piling crew	2	4	M	Copy of the FPS Working Platform Certificate to be signed and pile mat design must be available on site along with material grading certification prior to commencing work. Weekly piling platform inspections must be carried out and the FPS platform certificate is to be signed off weekly by P/C. P/C is responsible for backfilling any areas where obstructions have been removed, it is vital that the area is fully reinstated in accordance with the piling platform design and the platform certificate is to be signed off.	1	4	L
16	Auger tip blockage, extracting the augers after boring, pile shaft filled with disturbed material. Bore may become unstable.	Third parties and piling crew	4	4	H	Pre-charge the concrete line to a maximum of 15bar, if tip has not opened then stop pumping and back pump. Back screw the augers out of the bore until the tip can be accessed. All spoil and debris to be removed from the gates by piling operative using a grafter, once loose material has been removed the gates can then be opened. Any remaining spoil within the gates to be removed using the grafter. Once all material is removed & there is no risk of falling debris the Operative can then access the auger tip to remove the blockage using a pin to clear the blockage from the tip. Once clear the tip is closed and auger secured within the gates, during this operation additional operative is to have a watching brief at front of rig. Re-drill pile 500mm beyond its scheduled design depth. All tip blockages shall be recorded. The pump operator and rig operator must maintain eye contact at all times during pre-charging of the augers.	2	4	M

Section	HAZARDS	PERSONS AFFECTED	RISK			CONTROL MEASURES (List control measures that are provided and those required)	RISK		
			L	S	R		L	S	R
17	Manual handling muscular-skeletal injuries. Note this applies to levering, pulling lifting and other manual tasks.	Piling Crew, visitors and other operatives on site	4	3	H	Manual Handling is to be reduced to a minimum by the use of the attendant excavator provided by P/C and R&A Hiab delivery vehicles or other mechanical means. Should the above not be possible**;-** Heavy loads are to be split into loads that the operative is comfortable with lifting. If this is still not possible**;-** The loads are to be lifted by multiple operatives ensuring that all operatives are aware what is required of them and that the weight of the item does not exceed the ability of the person lifting. If there are any manual handling tasks, ensure sufficient numbers of operatives are used, to spread the load. Operatives to "walk the route" before they carry any loads to ensure that there are no trip hazards / uneven surfaces / width restrictions / vehicle crossing points that could impede the Manual Handling Operations, muddy and slippery areas are to be avoided where possible. Operatives to wear protective equipment provided by R&A, this includes gloves suitable for the task being undertaken, typically to EN388: 3121. **HS&E Standard M01 is to be complied with in full.**	3	3	M
18	Contact with rotating auger	Piling Crew and other operatives on site	2	4	M	Guarding to the CFA rig is to be in accordance with the FPS / HSE Guidance on PUWER (Regulations 11 & 12), section 4.1; i.e. the bottom of the guard/gates to be no more than 750mm above ground level and top of the guard to typically be 1.8m from ground level. In accordance with the above guidance (section 3.3) the guard/gates need to be opened to allow the piling rig to achieve its full depth; this is acceptable if the auger rotation stops when anyone has to enter the 'danger zone'; the banksman must police the area in front of the rig.	1	4	L

Section	HAZARDS	PERSONS AFFECTED	RISK			CONTROL MEASURES (List control measures that are provided and those required)	RISK		
			L	S	R		L	S	R
19	**Control of Substances Hazardous to Health (COSHH), particularly Ready-mixed Concrete.** **[Full COSHH Assessments available as Separate Document.]** **Fire risk**	Piling Crew, visitors and other operatives on site	4	2	M	**<u>Wet Concrete can cause cement burns to the skin</u>** Operatives to avoid direct contact. PPE listed on COSHH assessment is to be worn. Should any operative come into contact with wet concrete – they should thoroughly wash skin and clothing immediately. Should there be any eye contact with dust / concrete – the affected eye should be thoroughly irrigated with cold clean water preferably a proprietary eyewash solution. Flammable substances (mainly fuels, oils & greases) to be returned to and secured in the COSHH cage, particularly during out of hours. **HS&E Standard H01 is to be complied with in full**	2	2	L
20	Noise [Noise Assessments are available for all Piling Plant]	Piling Crew, visitors and other operatives on site and persons working nearby during working day	4	3	H	R&A operatives are provided with hearing protection and have been instructed they are to be worn when working near piling rig, pump or agitator. Piling rig / equipment is to be kept in good working order. **HS&E Standard N01 is to be complied with in full**	2	3	L
21	**Injury from Soil falling from auger flights, gates and auger cleaner.**	Piling Crew, visitors and other operatives on site	4	4	H	Mechanical Auger cleaner to be used, this is approximately 2m (head height) from ground level to minimise the risk. R&A operatives are to ensure that there is no spoil / concrete / debris taken up on the flight and that the gates/auger cleaner remain clear from excessive build-up of spoil (clean off with grafter). **[Refer to FPS/HSE Guidance on the Guarding and Cleaning of Augers]**	1	4	L
22	**Piling Work – Protection of adjacent premises and personnel when working near site boundary**	Piling Crew, visitors and other operatives on site **MEMBERS OF PUBLIC**	3	2	L	When piling operations are in close proximity to the site boundary, the Principal Contractor is responsible for providing any exclusion/protection measures necessary to protect the general public. P/C to provide, erect & maintain polythene sheeting / debris netting to perimeter walls / fencing to prevent Mud / Concrete / Slurry splashing members of the public; strictly in accordance with FPS / HSE Guidance on PUWER (Regulations 11 & 12), section 4.3 ***CFA Piling: Exception*** **HS&E Standard S01 is to be complied with in full.**	2	2	L

Section	HAZARDS	PERSONS AFFECTED	RISK			CONTROL MEASURES (List control measures that are provided and those required)	RISK		
			L	S	R		L	S	R
23	Creation of open bore caused by use of additional bore to park auger string where two diameters being used	Piling Crew, visitors and other operatives on site	2	4	M	Where a redundant bore has been created after parking an auger string not in use; it should be drilled in over half the full length of the string. Empty bores must be covered whilst on site and backfilled before leaving site. The area must be thoroughly checked after the backfilling has been carried out and the area must be left at a similar level to the piling platform to ensure that the empty bore has been suitably filled and not just masked by spoil	1	4	L
24	Bursting of concrete hoses and or Hose joints causing damage and injury during concrete pumping	Piling Crew, visitors and other operatives on site	2	3	L	Hoses to be inspected by pump man daily at start of shift. Damaged sections are to be replaced. All concrete hoses fitted to the mast of the piling rig must have whip checks fitted at all times. Joints to be secured by R Clips or Split Pins. Rig “drop hoses” to be fitted with sleeved hoses for additional protection. Newer sections of hoses are to be used adjacent to the rig and pump. Hose runs to be planned to minimise trafficking over hoses. Hoses to be buried under road.	1	3	L
25	Clearing concrete pumping lines and auger at the end of a shift by compressed air.	Piling Crew, visitors and other operatives on site	2	3	L	All blowing out operations are to be under direct control of a trained Foreman, Foreman to remain at piling rig during procedure, banksman to control the compressor. Rig lines to be blown out away from the perimeter fencing at all times. Foreman to monitor concrete lines as the concrete moves through the lines, when the ball passes the back of the piling rig the air flow should be turned of and surplus air released through the exit valve. All persons not involved in this operation to be kept at a safe distance. Whip-checks to be used at all air hose joints including at both compressor and the blow-out gun. Operator to check adaptors are clear of debris before fitting to hose. **Refer to Section 5 of PMP (HS&E-RA-H03-10 Blowing-Out of CFA Piling Rig.)**	1	3	L

Section	HAZARDS	PERSONS AFFECTED	RISK			CONTROL MEASURES (List control measures that are provided and those required)	RISK		
			L	S	R		L	S	R
26	Dealing with blockages in the concrete pumping lines	Piling Crew, visitors and other operatives on site	3	3	M	Where the sponge ball will exit other than down the auger, a ball catcher must be fitted to the free end of the hose run. To prevent the hose end "whipping", it must be restrained by fixing a strop to the pipe and securing it e.g. the excavator lifting point or the rig. Holding the hose down with an excavator bucket is not effective and should not be used as the only means of restraint, although it can be used in addition to the strop. Before releasing a joint, pressure should be released where possible by back-pumping. Eye protection to BS EN 166 B goggles or full face protection must be worn to protect eyes from injury. Helmet visors are not adequate for this operation.	2	3	L
27	Falling from rig mast	Person climbing	2	4	M	MEWP to be used. Operator to have IPAF or CPCS Card and wear short restraint lanyard Rigs are not to be climbed even if mast has a fixed ladder.	1	4	L
28	Fall from tracks.	Person climbing onto/ off tracks	2	3	L	Do not climb tracks unnecessarily. When both climbing and descending, use proper step.	1	3	L
29	'Steel-fixing' of rebar cages for piling	Piling Crew, visitors and other operatives on site 'Steel-fixer'	3	3	M	'Steel-fixing' Area to be demarked off and segregated from trafficked areas. Heavy cages to be prefabricated off-site. Correct lifting ring or secured helical to be used to hoist the cages into the vertical position for insertion into the bore.	2	3	L

Section	HAZARDS	PERSONS AFFECTED	RISK			CONTROL MEASURES (List control measures that are provided and those required)	RISK		
			L	S	R		L	S	R
30	Use of Mobile Elevated Work Platform (MEWP), Risk of over-turning and 'crushing'	Piling Crew, visitors and other operatives on site MEWP operator	3	4	H	Only person qualified with an IPAF or CPCS certificate are to use MEWP. Full harness with short restrain lanyard to be used and attached to correct attachment point. Only stand on the platform floor, not on the rails. Check for presence of ramps, trenches, slopes, manhole covers, ground obstructions, overhead cables, building projections, vehicles etc. Before travelling MEWP ensure platform is in recommended travel position. Only travel with an appointed banks-man and at correct speed Before raising the boom, check that the machine is level and on firm surface; crush protection not required as there are no 'overhead obstructions'. Do not overload the platform or use it for lifting duties. In the event of rescue of MEWP operator required, trained (IPAF/CPCS) MEWP operator to lower the basket by use of the controls on the body of the plant. **HS&E Standard P01 is to be complied with in full.**	1	4	L
31	Risk of 'falling' into fresh pile	Piling Crew and other operatives on site	3	3	M	Piling platform to be maintained and cleared of surplus water/slurry by P/C, access to the immediate piling area to be controlled by the piling crew; recently constructed piles to be covered by boards or cones, work to be sequenced to minimise the risk.	1	3	L
'LIVE RISKS' TO BE RECORDED BELOW									

High Risk Operation NO	Temporary Works NO If Yes – refer to HS&E-STD-T01	The above control measures have been implemented (Original signature required) Workplace Manager …… Date ……

ENVIRONMENTAL RISK ASSESSMENT

Section	HAZARDS	ENVIRONMENTAL IMPACT	RISK			CONTROL MEASURES	RISK		
			L	S	R		L	S	R
E1		Environmental Noise	2	2	L	Piling Rig and ancillary equipment is to be kept in good mechanical order. Where damage or wear to silencing system occurs, maintenance to receive priority.	1	2	L
E2	Ecological damage	Damage to protected trees	2	2	L	Trees needing protection to be fenced off by P/C with relevant signage.	1	2	L
E3	Water Pollution	Contamination of watercourse from silt laden groundwater generated by piling process	3	3	M	P/C to install a protective bund to prevent water/slurry from entering watercourse.	1	3	L
E4	Air pollution from exhaust gasses	Degeneration of air quality	2	2	L	Plant to be kept in good mechanical order, machines to be switched off when not in use; avoid long idle times.	1	2	L
E5	Vandalism of hydrocarbons storage	Ground and water pollution	3	3	M	All lubricants to be locked in COSHH cage within the container when not in use, overnight and at weekends. Bunded Diesel bowser to be lockable, including lockable hose storage. To be locked outside site hours and when not in use	1	3	L
E6	Spillage of fuels and oils during recharging	Ground and water pollution	3	3	M	Fuel only to be stored in lockable bunded bowser or 205 litre (45 gallon) drums on spillage trays. Refuelling to be via siphon delivery hose from rig; engine to be switch off during refuelling. Oil and lubricants to be filled by funnel. Spill Kit to be available in case of spillage.	2	3	L
E7	Inadequate waste Management	Visual Intrusion of litter	3	1	L	R&A foreman to ensure that all general rubbish is placed in the skips provided by P/C. P/C to set up, Site Waste Management Plan, and brief to R&A personnel	1	1	L
E8	Washing out ready-mixed concrete and clearing out pump and concrete delivery hoses at end of shift	Ground and water contamination.	3	3	M	**T**he P/C is to construct/provide a lined pit/skip into which ready-mixed concrete trucks can wash off their delivery chutes. P/C or R&A to construct an area of approximately 5m x 8m with heavy gauge visqueen under 300mm of crushed for the pump & agitator set-up; additional use of large drip tray for sensitive sites.	2	3	L

Section	HAZARDS	ENVIRONMENTAL IMPACT	RISK			CONTROL MEASURES	RISK		
			L	S	R		L	S	R
'LIVE RISKS' TO BE RECORDED BELOW									

Amendment Log

Revision	By	Amendment	Date
1 to 28	WL	*Various Revisions*	03-11-08 to 04-08-09
29 to 38	ND	*Various Revisions*	06-11-09 to 12-01-15
2	ND	RAMS general format updated Feb 2015, to be re-issued from v2 onward.	18-02-15
2.1	ND	HS&E advisor updated and general review.	30-07-15
2.2	ND	General review, HS&E advisor contact details updated.	04-01-16
2.3	ND	Sections 16 & 21 updated.	22-01-16
2.4	ND	General review, no amendments required	10-08-16

RISK RATING = Likelihood (L) x Severity (S)		HAZARD SEVERITY (S)				
		1	2	3	4	5
		Negligible Negligible injury, no absence from work	**Slight** Minor injury requiring first aid treatment	**Moderate** Injury leading to a lost time accident	**High** Involving a single persons serious injury/death	**Very High** Multiple serious injuries/death
1	**Very Unlikely** A freak combination of factors would be required for an incident / accident to result	LOW	LOW	LOW	LOW	LOW
2	**Unlikely** A rare combination of factors would be required for an incident /accident to result	LOW	LOW	LOW	MEDIUM	MEDIUM
3	**Possible** Could happen when accidental factors are present but otherwise unlikely	LOW	LOW	MEDIUM	HIGH	HIGH
4	**Likley** Not certain to happen but an additional factor may result in an incident/accident	LOW	MEDIUM	HIGH	HIGH	HIGH
5	**Very Likely** Almost inevitable that an incident / accident would result	LOW	MEDIUM	HIGH	HIGH	HIGH

LOW RISK (Score 1-6)	**May be acceptable, however, review task to see if risk can be reduced further**
MEDIUM RISK (Score 8-10)	**Task should only proceed with appropriate consultation with specialist personnel and HS&E team. Where possible the task should be refined to take account of the hazards involved or the risks should be reduced further prior to task commencement**
HIGH RISK (Score 12-25)	**Task must not proceed. It should be redfined further control measures put in place to reduce risk. The controls should be re-assessed for adequacy prior to work commencement.**

Likelihood
How often could the hazard occur? Consider the task, frequency, duration, method of work, employees involved.

Severity
How serious would the hazard's effects be if realised? Consider the type of hazard, biological, ergonomic, physical and chemical.

Risk = Likelihood x Severity

E.g. Likelihood (4) X Severity (3) = 12 **HIGH RISK**

5.1 Site Address	Greenwood Place, London. NW5

5.2 Location(s) of Spill Response Equipment	
Spill Kit	Site Security Container

5.3 Spill Response Equipment Trained / Competent Person(s)	
All site crew	

5.4 Frequency of Spill Tests:	N/A	Issue Date:	N/A
Completed by:	-	Position:	-

Client / Landowner	Principal Contractor

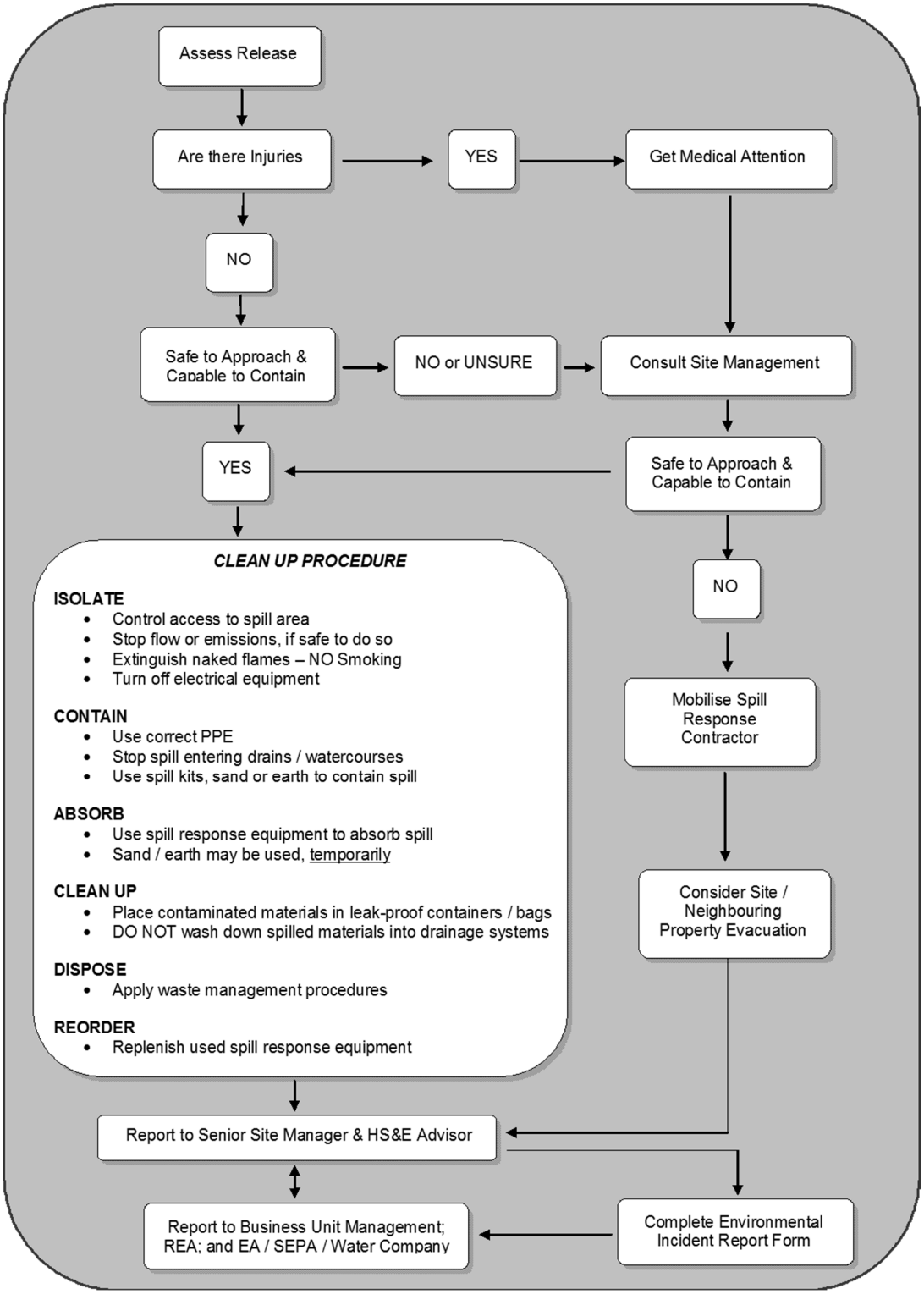
5.5 Spill Response Contractor	**0800-592-827** Adler & Allan Ltd.	**Membership Number:** CM191

5.6 Environment Agency	**0800 80 70 60** (24 hr Emergency Hotline)
Local EA / SEPA Office	Refer to Rock and Alluvium Area Office

5.7 Local Authority	Not Applicable

5.8 Additional Contact(s)	**Dean Page, HSE Advisor, 01372 389 333**
	Peter Ward, Plant Manager, 07966 562317
	Contract Supervisor, see documentation

5.9 Rock and Alluvium / Galliford Try Contacts	
Pre-Construction Manager	Nick Dewey: 07843 328 141
Construction Manager	Mark Gibson: 07966 562320
Regional Office	Head Office - Leatherhead: 01372 389 333
Regional HS&E Advisor	Dean Page: 07423 453533
Regional Environment Advisor	Amit Patel: 07976 361 119


Assess Release
Are there Injuries
YES
Get Medical Attention
NO
Safe to Approach & Capable to Contain
NO or UNSURE
Consult Site Management
YES
Safe to Approach & Capable to Contain
NO
CLEAN UP PROCEDURE
ISOLATE
Control access to spill area
Stop flow or emissions, if safe to do so
Extinguish naked flames – NO Smoking
Turn off electrical equipment
CONTAIN
Use correct PPE
Stop spill entering drains / watercourses
Use spill kits, sand or earth to contain spill
ABSORB
Use spill response equipment to absorb spill
Sand / earth may be used, temporarily
CLEAN UP
Place contaminated materials in leak-proof containers / bags
DO NOT wash down spilled materials into drainage systems
DISPOSE
Apply waste management procedures
REORDER
Replenish used spill response equipment
Mobilise Spill Response Contractor
Consider Site / Neighbouring Property Evacuation
Report to Senior Site Manager & HS&E Advisor
Report to Business Unit Management; REA; and EA / SEPA / Water Company
Complete Environmental Incident Report Form

IF IN DOUBT OR YOU REQUIRE ASSISTANCE CONTACT YOUR REGIONAL ENVIRONMENTAL ADVISOR

- **Assess Release** – Determine the size of the spill and whether there are any injuries to any person(s) involved.
    - If there are injuries medical attention should be sought and the most senior person on site informed
    - If there are no injuries, an assessment should be made as to whether the spillage is safe to approach and contain. If there is doubt, the most senior person on site should be consulted
    - Consideration should be given of the need to evacuate the site and / or neighbouring buildings. If necessary, the police and / or fire service should be contacted
    - If the competent or trained person cannot handle the hazardous material spill then the Company's spill response contractor should be contacted.
- **Isolate**
    - Control access to spill
    - Do not allow unauthorised access to spillage area
    - Identify the source of pollution and stop the flow or emissions as quickly as possible, if it does not endanger the health and safety of people
    - Switch off or suppress any potential sources of ignition
    - Extinguish naked flames and ensure there is no smoking
    - Turn off electrical equipment.
- **Contain**
    - Ensure the correct PPE is used
    - If the incident involves liquids, steps should be taken to stop it spreading, using earth, sand, or impervious material such as polythene
    - If the incident involves liquids, the flow should be diverted from drains and / or watercourses
    - Consideration should be given to the use of absorbent materials and / or booms, as a precaution, in environmentally sensitive locations
    - Use absorbent materials (sand or earth, as an alternative) to assist spill containment.
- **Absorb**
    - Spill response pads, sheets, booms and granules should be used to absorb the spilt material
    - Sand and earth may be used, as a temporary alternative.
- **Clean Up**
    - Contaminated sand, earth or absorbent materials should be placed into sacks or leak-proof containers, as appropriate
    - Spilled materials should **not** be washed into the drainage system.
- **Dispose**
    - Waste contaminated materials should be disposed of appropriately, refer to HS&E-PRO-W01; Waste Management
    - All used absorbent materials are classified as hazardous waste.
- **Reorder**
    - Replace used spill response equipment supplies.

Client specific spill response procedures should be adhered to when working on client site(s) or when stipulated in the contract.