## METHOD STATEMENT

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<th>Contract / Enquiry Name</th>
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<td>Contract / Enquiry No.</td>
<td>P36114</td>
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<td>Technique</td>
<td>C. F. A. Piling</td>
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<td>Method Statement for</td>
<td>CFA Piling To Contiguous Retaining Wall and Bearing piles.</td>
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<td>Method Statement No.</td>
<td>MS/ P36114</td>
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MS written by: Terry Mundy .......................................................... Date: 31/01/14 ..........

MS approved by: M. Walpole .......................................................... Date: 31/10/14 ............
(Operations Manager)

Client approved by: .............................................................. Date: ......................
(when required by the contract):

### Distribution

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Form: QA30 05/12/00
CFA Piling

Method Statement Contents

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1. Site Organisation and Control

Simplex Westpile (SW) will undertake the responsibilities for the management of this operation and any associated operations, such as lifting.

This method statement is critical to the health and safety of the activities it relates to. It is strictly to be adhered to; any deviation must first be authorised by the Site Foreman.

Refer to the Contract Plan (available on request) for the Organogram. On this project the Site Safety Supervisor will be the Site Foreman.

Site Foreman:- tbc Contact:-
Contracts Manager:- tbc Contact:-

During pile installation process, SW site team will also consist of 1nr piling rig operator, 1nr concrete pump operator and 1nr piling rig banksman and 1nr steel fixer (part time). The Site Foreman is working in a Supervisory/Management capacity and full time on site. Static load testing/Integrity testing will be carried out by 1nr Technician. For setting out of pile positions, 1nr full time engineer will also be required.

2. Scope of Works

Visit 1.

Contiguous Retaining Wall, 600mm dia. at nominal 750mm centres. 105lin. m. to Block F & 59lin. m. to Block E.

Visit 2.

Bearing piles, Block F 61no. 600mm dia. & 11no. 750mm dia. Block E 27no. 600mm dia.

Max. pile length 27.5m.

Piling to be carried out from a level of 15.2m AOD.

2no. maintained load tests.

SW are responsible for design of all bearing and Contiguous wall piles. Pile Design Calculations will be issued under separate correspondence.

Supply and fix de-bonding foam to all rebar cages. Foam lagging will be set 150mm above pile cut off level and first helical will affixed at 150mm below pile cut off level. Tolerance are +/- 150mm.

100% integrity testing of all cfa bearing piles using sonic echo method of testing. PMC Ltd will also carry out these works. See Appendix I for further details. SW require 2 x clear days
notification by UHL when integrity testing is required. Contact SW Contracts Administrator Joanne Pool on telephone number 01276 674800 for all bookings.

Setting out of pile positions from co-ordinated stations on site, provided by UHL. Also “as built survey” of pile positions at piling platform level only.

3. Proposed Plant & Equipment

For the construction of the piling works, it is proposed to utilise the following plant, the technical specification of which are shown in Appendix E.

CM700 Piling Rig or similar 1 No.
Putzmeister BSA 1406 Trailer Concrete Pump or similar 1 No.
Ritemixer Concrete Storage Drum or similar 1 No.
Bunded Fuel Tank 1 No.
Container Toolbox (6.1m x 2.4m) 1 No.
Compressor 1 No.
Diesel Jetwash 1 No.
MEWP 1 No.

Sundry Equipment provided by Client

13t Tracked Excavator/ Dumper (or equivalent) provided by Client 1 No.
Office/ mess provided by Client 1 No.

Mess, Drying Room and Welfare in accordance with current legislation (toilets and washing facilities including hot running water) to be provided by UHL.

4. Mob / Demob

The piling rig will be delivered on a low loader (approx. 17m. in length) All sundry plant will be delivered on artic wagons which will be unloaded by a mobile crane. Access to the site is off. See Appendix I for Method Statement for Crane Lift, Lift Plan & Risk Assessment and Berthing Study.
5. Method of Work

Where not carried out by the main contractor then prior to commencing works on site with the piling rig an exclusion zone with warning notices (see photos below) will be set up around the rig with a minimum clearance of 3m though preferably greater where practical.

Cones and bunting

Alternatively crowd barriers, scaffolding etc can be used to demarcate the exclusion zone.

5.1 Modus Operandum

Prior to the commencement of piling works each day, the concrete pipeline will be adequately lubricated with a grout/primer mix. The cement grout/primer will be mixed with water in a tub to a fairly thick consistency. The lubricating mix will be poured directly into the pipeline, and the concrete will follow immediately. The concrete will be pumped slowly through the lines until it flows freely. All concrete pipes will be connected with couplings secured with safety clips.
The piling rig is moved on the firm, dry, level all-weather piling platform (prepared by others) and is positioned over the pile location, defined by a 400mm length of reinforcing bar driven into the ground. The auger will then be brought onto pile position, before auger penetration commences the mast will be checked for verticality by observing attached levelling aids.

Augering of the pile will then proceed until the required depth is reached (as required by the pile design calculations)

Once the auger has been confirmed to have attained its required depth on the operator's console, it will then be withdrawn slightly to allow the opening of the delivery valve on the base.

Concrete will then be pumped through the delivery lines and down the centre of the auger. The rate of concrete delivery, pressure and concrete column will be recorded and displayed on the operator's console. Auger withdrawal will then commence and proceed until the bore has been fully concreted, and the pile formed. The rate of auger withdrawal will be determined by Bachy Soletanche (being dependent on auger size, ground conditions etc.) to ensure an oversupply of concrete compared with theoretical pile volume.

Borespoil is removed from the auger by mechanical auger cleaner (where practicable) during extraction of the auger. Borespoil arisings and excess concrete is removed from the pile head by the attendant excavator.

The piling rig then moves to the next planned pile position which would generally be a minimum of 5 pile diameters away.

Steel reinforcement as specified in the pile design will be placed directly into the concreted pile bore by either the auxiliary winch line on the rig or by the attendant excavator or by hand (dependent on cage weight). The bottom 2m of any cage may be tapered for ease of installation.

For constructing permanent works, rigs are fitted with electronic instrumentation and data loggers. Analysis of the recorded data is carried out on a personal computer by Bachy Soletanche off-site. Where required printouts can be obtained for the majority of piles; electrical faults and human error occasionally result in the non-availability of data.

Piles will be constructed to the following tolerances.

- +/- 75mm on plan at piling platform level
- 1:75 verticality

At the end of piling works each day the storage mixer drum and concrete pump are washed out using the diesel jet wash. Also the concrete pumpline and auger string is ‘blown out’ using the compressor into a ‘Guard Box’. All excess concrete is removed using the attendant excavator.
5.2 Pile Construction - Concrete

The concrete placed within piles will be supplied by a ready mixed concrete company locally batched and complying with QSRMC/BSI standards.

Delivery advice notices will be checked by our pump operator against the notified mix designs and accepted or rejected as applicable. Material will be received on site, and discharged into the pump hopper, or storage drum prior to pumping. Concrete will not be held for a period greater than the life of the retardation additive utilised.

Cube samples of concrete will be taken at the interval of one set of four per 25m³ per day. After adequate site curing, the cube samples will be collected by a nominated NAMAS testing facility. Strengths will be obtained for seven and twenty eight day stages. Spare cubes shall be retained for delayed crushing or inspection as required.

5.3 Pile Construction - Reinforcement Steel

Reinforcement steel for the works will be delivered direct to site from a CARES supplier, with all appropriate certificates being supplied under separate cover.

Reinforcement will be tied using soft annealed tying wire with sufficient ties to allow handling and placement. Fabricated reinforcement may be moved from the fabrication area by hand or with the aid of the attendant excavator.

Heavy pile reinforcement cages may be prefabricated off site and delivered to site on articulated lorries. These cages would be offloaded using the service crane/forklift/attendant excavator. See Appendix I for Method Statement for Crane Lift, Lift Plan & Risk Assessment and Berthing Study.

5.4 Pile Trimming

CFA piles are by necessity concreted up to piling platform level. Due to the possibility of frost damage and/or laitence at the pile head the piling platform should be prepared to a level that allows a minimum of 450mm of the pile to be trimmed off the pile to ensure sound concrete at the specified cut-off level.

Trimming of the piles is the responsibility of UHL. Responsibility for the piles is deemed to have passed to UHL upon commencement of excavation adjacent to and/or breaking down the piles (including preparation for integrity testing).

We recommend that excavation be planned and executed so as to avoid imposing lateral loads on exposed or partially exposed piles from contractors plant and vehicles or surcharge from unsupported soil faces.

We further recommend that extreme care be exercised during the pile trimming process to avoid damaging the piles.
5.5 Pile Testing - Load Testing

Load testing will be carried out as requested by the Engineer. Tension piles will be used to provide the reaction system and will be fully reinforced with Dywidag bars. A minimum of 7 days must elapse between installation of test pile and commencement of testing. The testing of the piles will be carried out by Precision Monitoring and Control Ltd (PMC Ltd) who will require 24hr access to the pile being tested. See Appendix I.

5.6 Pile Testing - Integrity Testing

Integrity testing will be carried out by Messrs PMC Ltd using the sonic echo method of testing. The trimming of piles to cut-off level (no earlier than 5 days after installation) and preparation of pile heads is by others. Care should be taken when excavating and trimming piles to prevent damage. See Appendix I.

6. Quality Assurance and Environmental Management Systems

Refer to the Contract Plan for the relevant procedures, documents, inspection / test schedule and check list. (Available on request). SW are accredited to ISO 9001:2008 and ISO 14001:2004 and members of the Federation Of Piling Specialists, amongst others.

7. Safety Management

The Safety Supervisor detailed in Section 1 will carry out an induction of all personnel affected by this Method Statement on the day the contract commences and whenever new personnel arrive on site. This will be recorded a SAF 16. The Safety Supervisor will also complete a weekly Field Inspection Checklist which will be recorded on a SAF 11. Daily Start Of Shift Brief (SOS) will also be instigated by Safety Supervisor and recorded on a SAF34 and weekly tool box talk.

All Bachy Soletanche Company Supervisory Staff have received formal training. All operatives are experienced in this type of work and have received training to perform their duties safely.

Hard hats, boots, overalls, gloves, eye and hearing protection will be available and will be worn whenever necessary in accordance with the requirements of the Risk, COSHH and Noise assessments detailed in the following appendices. A mandatory wearing of eye protection policy is in place with the exception of where wearing eye protection may increase the risk of accidents i.e. wet weather working under artificial lighting.

COSHH Assessments are available for those hazardous substances taken to site. All Bachy Soletanche Company personnel will be informed and instructed as to the precautions necessary when handling these substances.

The equipment used has been monitored on other sites and has been found to be mainly below the second action level 85 dB “A” 8 hour LEQ. Hearing protection is available on request, however the concrete pump operator must wear hearing protection whilst operating the pump.
In addition all personnel within 15m of operating plant (piling rig, concrete pump) should wear hearing protection.

The lifting appliance operator is responsible for weekly inspection of his machine and will record any observations on Bachy Soletanche plant inspection forms.

All plant will comply with PUWER 1998 and LOLER 1998 (where relevant) and relevant test certificates will be available including Bachy Soletanche plant inspection forms.

All lifting gear is inspected on a three monthly basis and colour coded.

The Safety Supervisor will appoint a designated Banksman / Slinger Signaller for each rig/lifting appliance who will have sole responsibility for that rig/lifting appliance with the exception of emergency stop situations.

The 1st aider will be Site foreman and the 1st Aid box will be kept in the stores container.

Fire extinguishers will be sited in the stores container, office and piling rig.

UHL will be responsible for providing safe access to the works and a safe, level piling platform following the minimum FPS requirements i.e. Working Platform Certificate (FPS/WPC/4). UHL will also ensure that all pile positions are clear of any overhead / underground services and will issue a ‘Permit to Dig’ - any areas not free of services will be clearly marked out both on the permit and on site.
Appendix A

Health & Safety, Quality and Environmental Policy
BACHY SOLETANCHE HOLDINGS (EUROPE) LIMITED (BSHEL)

POLICY FOR

HEALTH AND SAFETY AT WORK

First Published: October 1987

Last Revision: January 2013
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Safety Management Manual Section 3 Page 2 Issue 16
COMPANY POLICY FOR
HEALTH AND SAFETY AT WORK

PART 1

1. INTRODUCTION

The Health and Safety Policy of the Company is required by the Health and Safety at Work etc. Act 1974, Section 2 (3), and these documents are prepared to comply with the Act. The Directors of Bachy Soletanche Holdings (Europe) Ltd (BSHEL) and its subsidiary companies; Bachy Soletanche Ltd, Simplex Westpile Ltd and Soil Engineering Geoservices Ltd, believe that the most valuable asset of the Company is the employees, along with stakeholders and third parties. They are therefore committed to ensuring that the highest possible standards of health and safety, which it is reasonably practicable to obtain, are achieved in their operations.

This BSHEL Health and Safety Policy is adopted in its entirety by each of its subsidiaries; Bachy Soletanche Ltd, Simplex Westpile Ltd and Soil Engineering Geoservices Ltd.

2. AIM

It is the aim of the Company to prevent accidents and incidents of ill health, as far as is reasonably practicable, and to maintain the health and safety of all personnel and members of the public that may be affected by its operations.

3. LEGAL AND OTHER CONTRACTUAL OBLIGATIONS

The Company will ensure the observance of the requirements of Part 1 of the Health and Safety at Work etc. Act 1974, existing enactment's set out in Schedule 1 of the Act, and any Regulations applying to the operation thereof. For work within the rail industry, the Company will ensure compliance with applicable Railway Group Standards and Network Rail Company Standards.

This statement of company policy is applicable to all contracts and places of work. For overseas work this policy will be amended where necessary to conform to local regulations. Where there is no relevant legislation, standards will be maintained at the level required by that of the UK.

4. POLICY

This statement of policy should be read in conjunction with the Company Management Procedures manuals and should be brought to the attention of all company employees.

All employees have a legal obligation under the Health and Safety at Work Act to co-operate with management in the implementation of this Statement of Company Policy.
5. **TRAINING**

Safety training will form part of the Company’s general training programme. This training will include the requirements of the Health and Safety at Work etc. Act 1974, other relevant statutory instruments, Regulations and Orders, approved Codes of Practice, Guidance Notes, British Standards, Railway Group Standards, Network Rail Company Standards and Company Procedures.

Management and all other employees will receive, as soon as is reasonably practicable, such training in health and safety matters as is deemed necessary to enable them to operate in a safe and efficient manner.

6. **JOINT SAFETY CONSULTATION**

It is the policy of the Company to encourage joint consultation on matters of health and safety at work. The Company will co-operate with recognised trade unions and abide by national agreements reached between employers’ organisations and recognised trade unions concerning the appointment of Safety Committees where applicable to the Company’s operations. The Company will continue to consult at all levels of the business through the established company working groups.

7. **SAFE WORKING PRACTICES**

Sections 9 and 10 of the Safety Management Manual contain information and guidance to assist in the establishment of safe working practices. This will ensure compliance with the statutory requirements and Parts I and II of the Company Policy.

8. **SELF-REGULATION**

The Company operates a robust system of self-regulation that involves health and safety inspections, safety tours, audits and continual monitoring in line with best practice and HSE recommendations on Successful Health and Safety Management contained in HS (G) 65.

9. **CONTINUAL IMPROVEMENT**

The Company understands that whatever the level of health and safety performance, improvements are always possible, therefore each year the Company sets health and safety objectives that support:

- The health and safety needs of the organisation and it’s staff
- The requirements of improving industry best practice
- The Railway Group and Network Rail Company safety plan

Progress against objectives will be measured and reported to the Company executive.
10. **SUB-CONTRACTORS**

All Sub-Contractors will be required to pre-qualify by demonstrating their competence by completing the Company Pre-qualification questionnaire and will also be requested to provide a copy of their Company Safety Policy and the name of their Company Safety Advisor. The Sub-Contractors own Health and Safety Policy will be strictly adhered to. Prior to the commencing of any work activities the Sub-Contractor will submit, for approval, detailed Method Statements and Risk Assessments pertinent to their operations.

Sub-Contractors will be continually monitored for health and safety as part of the Company safety monitoring procedure during the currency of their works. Performance will be recorded as part of the preferred supplier procedure which forms part of the Company Management System.

11. **MANUFACTURERS, SUPPLIERS**

The manufacturer, importer, designer, supplier, erector or installer of any article used in the Company’s operations must provide adequate information to ensure the safe use of the article. The Company will ensure that the information is communicated to the user.

12. **ORGANISATION AND RESPONSIBILITIES FOR HEALTH AND SAFETY**

The Director with special responsibility for health and safety in BSHEL is Mr Martin Pratt. The Directors responsible for Health and Safety in each of the subsidiary companies are:

- Bachy Soletanche Limited – Mr Philip Hines
- Simplex Westpile Limited – Mr Chris Merridew
- Soil Engineering Geoservices Ltd – Mr Chris Merridew

Management at all levels will be responsible for providing an advisory service throughout the Company and monitoring of cogency of the policy.

At all work places where required under the Provisions of the Act, or where deemed necessary by Management, a Health and Safety Supervisor will be appointed. This person will be responsible to the Safety Department.
HEALTH & SAFETY ORGANOGRAM

MANAGING DIRECTOR

GROUP HEALTH AND SAFETY MANAGER

DIRECTOR

DIRECTOR RESPONSIBLE FOR HEALTH AND SAFETY

SENIOR MANAGERS

HEALTH AND SAFETY MANAGER

EMPLOYEES

SAFETY ADVISORS

Safety Management Manual Section 3 Page 6 Issue 16
13. THE ENVIRONMENT

The Company recognises the importance of the environment and the right of future generations to an environment in which they, in turn, can sustain an adequate quality of life. The Company further recognises it’s responsibility to conduct it’s day to day activities and operations with due consideration for environmental issues and legislation. To underline this commitment the Company has established an Environmental Management System in accordance with ISO 14001. Full details are given in the Company Environmental Manual and associated documentation.

14. INSPECTION AND AMENDMENT

The Company policy for Health and Safety at Work will be available at each work place. The policy will be formally reviewed at least annually and otherwise amended as necessary and any revisions will be notified to those affected by the changes.

Signed: ___________________________ Date: ------------18/01/2013------------------

P. Hines
Group Managing Director
COMPANY POLICY FOR
HEALTH AND SAFETY AT WORK
PART II

1. INTRODUCTION
In order to minimise confusion in respect of the responsibilities of individuals or companies with regard to the Health and Safety Policy, it is necessary to clearly identify those individuals and clarify their specific responsibilities.

2. MANAGING DIRECTOR
Main responsibilities are to: -

A. Promote an interest and enthusiasm for health and safety throughout the Company.

B. Administer the policy himself or appoint a senior member of staff to do so.

C. Cause the Health and Safety Policy to be effectively actioned throughout the Company.

D. Make adequate financial provision to ensure the effectiveness of the policy.

E. Instigate proper reporting, investigation and costing of injury, damage and loss, and promote action to prevent recurrence.

F. Set a personal example.
3. DIRECTORS

Main responsibilities are to:

A. Promote an interest and enthusiasm for health and safety throughout the Company.

B. Ensuring that in tendering, planning and production, sufficient resources have been allocated for welfare facilities, equipment and safe systems of work, to avoid injury, damage or loss.

C. Ensure that all employees under their control receive adequate training in health and safety related matters.

D. Make certain that all supervisory staff clearly understand the importance of their role in the successful management of safety within the Company’s activities and that failure to discharge that duty will result in disciplinary action.

E. Set a personal example on site visits. This includes the wearing of appropriate protective clothing and equipment.

4. SAFETY DEPARTMENT

4.1 Director with special responsibilities for Health, Safety and Training

Will be directly responsible to the Managing Director for the operation of the Health, Safety and Training Department and advise management at all levels on matters concerning accident prevention.

Main duties will be to:

A. Promote an interest and enthusiasm for health and safety throughout the Company.

B. Monitor the safety performance of the Company and take such steps as may be necessary to improve the performance.

C. Periodically review the Company Policy on Health and Safety, and amend it when necessary.
4.2 Group Health and Safety Manager

Will be responsible, to the Director, for the operation of the Health, Safety and Training Department and advise management at all levels on matters concerning accident prevention.

Main duties include:

A. Promote an interest and enthusiasm for health and safety throughout the Company.
B. Monitor the safety performance of the company and take such steps as may be necessary to improve performance.
C. Give advice and guidance on all health and safety matters to the Directors.
D. Ensure company compliance with all relevant legislation.
E. Oversee investigation and reporting of RIDDOR accidents and incidents.
F. Give advice and guidance to continually improve the health and safety performance within the company.

4.3 Safety Manager

Will be directly responsible to the Group Health and Safety Manager responsible for the operation of the Health, Safety and Training Department and advise management at all levels on matters concerning accident prevention.

Main duties will be to:

A. Promote an interest and enthusiasm for health and safety throughout the Company.
B. Initiate and maintain measures to improve the Company’s safety record.
C. Carry out inspection of all work places necessary to ensure that the Company’s Health and Safety Policy is being adhered to. Prepare reports for management and project staff.
D. Ensure a full knowledge of all relevant health and safety legislation, Codes of Practice and Guidance notes, and communicate that information as required.
E. Liase with Health and Safety Executive inspectors, local authorities, fire authorities and Clients’ safety departments.

F. Where appropriate maintain contact with Safety Supervisors, Safety Representatives and Safety Committees.

G. Investigate and record information on accidents and dangerous occurrences, and to report to the appropriate authority as required under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations, 1995.

H. Assist with training at all levels of employees.

I. Advise and assist management in their duty to assess, control and effectively manage risk to health and safety.

J. Advise and assist in the preparation of contract safety plans, method statements and ensure that review and modification is carried out as required.

K. Ensure all sub-contractors are competent and have allocated sufficient resources to enable the work to be carried out in accordance with the safety plan and current legislation.
4.4 Safety Advisor

Will be directly responsible to the manager responsible for the operation of the Health, Safety and Training Department and advise management at all levels on matters concerning accident prevention.

Main duties will be to:

A. Promote an interest and enthusiasm for health and safety throughout the Company.

B. Initiate and maintain measures to improve the Company’s safety record.

C. Carry out inspection of all work places necessary to ensure that the Company’s Health and Safety Policy is being adhered to. Prepare reports for management and project staff.

D. Ensure a full knowledge of all relevant health and safety legislation, Codes of Practice and Guidance notes, and communicate that information as required.

E. Liaise with Health and Safety Executive inspectors, local authorities, fire authorities and Clients’ safety departments.

F. Where appropriate maintain contact with Safety Supervisors, Safety Representatives and Safety Committees.

G. Investigate and record information on accidents and dangerous occurrences, and to report to the appropriate authority as required under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations, 1995.

H. Assist with training at all levels of employees.

I. Advise and assist management in their duty to assess, control and effectively manage risk to health and safety.

J. Advise and assist in the preparation of contract safety plans, method statements and ensure that a review and modification is carried out as required.

K. Ensure all sub-contractors are competent and have allocated sufficient resources to enable the work to be carried out in accordance with the safety plan and current legislation.
4.5 Health and Safety Supervisors

Where necessary management will appoint in writing a suitably trained Heath and Safety Supervisor. He/she will be functionally responsible to the Safety Department through the Company Safety Advisor.

5. DESIGNERS

Main duties are to:

A. Where appropriate ensure that the Client has been made aware of his duties under the Construction (Design and Management) Regulations 2007.

B. Identify the significant health and safety hazards and risks of the design.

C. Ensure elimination of hazards and reduction of risks from the start of the design process.

D. Give adequate regard to the hierarchy of risk control.

E. Provide adequate information and inform others of significant or unusual risks which remain.

F. Co-operate with others (all projects) and the CDM Co-ordinator (notifiable).
6. **PLANT DEPARTMENT**

6.1 **Depot / Plant Manager**

A. Ensure that all plant machinery, equipment and systems of work in the department conform to the requirements of the relevant legislation.

B. Ensure that all plant machinery and equipment sent to site is safe and is maintained to the requirements of the relevant legislation.

C. Check that all plant operators within the Depot are trained and where necessary are in possession of an appropriate licence to operate that category of plant.

D. Ensure that all employees have sufficient training, information and equipment to work effectively within the requirements of the policy and relevant legislation.

E. Ensure that periodic statutory tests and examinations are carried out and that copies of certificates are readily available.

F. Ensure that a qualified first aider and all items of first aid equipment, as required by current legislation, are available and their location known to all employees within the Depot.

G. Investigate and report all accidents and dangerous occurrences within the Depot to prevent a recurrence.

H. Ensure that suitable and adequate welfare facilities (e.g. first aid, canteen, and toilets) are provided and maintained with the depot.

I. Ensure all plant and equipment reported as unsafe by employees is not permitted to be used until such time as it is made safe.
6.2 **Work Shop Supervisors**

In addition to those duties delegated under 6.1, to: -

A. Supervise the carrying out of workshop and site repairs, maintenance, fabrications, inspections etc., as directed by the Plant Manager and to ensure that the work is carried out in a safe and efficient manner.

6.3 **Field Service Engineer**

In addition to those duties delegated under 6.1, to: -

A. Ensure that all Company plant is inspected, maintained and repaired in accordance with statutory requirements and that appropriate records are maintained.

B. Ensure that all hired lifting appliances have been inspected in accordance with statutory requirements and that they comply with both those statutory and any additional company requirements.

7. **CDM CO-ORDINATOR (When The Company is appointed to the Role)**

When the Client has made an appointment the Director responsible for Safety will nominate a suitably qualified person. The main duties of the CDM Co-ordinator will be to: -

A. Advise the Client on the health and safety aspects of the design.

B. Ensure designers co-operate and comply with their duties.

C. Prepare the pre-tender health and safety plan and advise the Client on the Principal Contractor’s Health and Safety Plan.

D. Ensure the health and safety file is prepared.
8. **PURCHASING MANAGER**

Main responsibilities are to: -

A. Ensure that as far as is reasonably practicable all articles and substances supplied to the Company for use at work will be safe and without risk to health.

B. Make arrangements with the supplier to gain sufficient information to ensure the articles and substances will be without risk to health when correctly used.

C. Make arrangements to ensure that all information required to ensure the safe use of substances and articles is communicated on to the user.

D. Communicate to suppliers, Sub-Contractors and hauliers the conditions of the Company’s policy that will be adhered to, when on the Company’s premises or premises under the Company’s control.

9. **OFFICE ADMINISTRATORS**

Main responsibilities are to: -

A. Ensure that as far as is reasonably practicable, the equipment and premises under their control are safe and without risk to health and safety.

B. Ensure that the office welfare facilities are adequate and maintained.

C. Ensure that all employees under their control know the first aid and emergency procedures.
10. OPERATIONS MANAGEMENT

Main responsibilities are to:

A. Identify the hazards which are, or may arise, on the contract and carry out an assessment of the risk to the health and safety of those who may be affected.

B. Communicate the information and instructions of how to eliminate, control and minimise those hazards and risks as appropriate.

C. Know the requirements of the Health and Safety Act, other relevant legislation, Codes of Practice etc., to allow them to monitor and enforce those requirements and cause the work to be carried out without risk to health and safety.

D. Arrange that adequate welfare facilities, first aid facilities and supplies of protective equipment are provided and maintained.

E. Ensure that all employees and Sub-Contractors strictly adhere to Method Statements and approved safe systems of work.

F. Make certain that all operatives under their control have sufficient training to work efficiently and without risk to health and safety.

G. Ensure that supervisors and operatives where necessary are released for on-site or off site safety training.

H. Set a personal example. This includes wearing of protective clothing and equipment. Commend those who maintain high standards.

I. Monitor health and safety by an active regime of inspections and audits.

J. Investigate and report all accidents and dangerous occurrences and ensure that appropriate remedial measures are taken to prevent recurrence. In the event of a fatal or major injury, accident or notifiable dangerous occurrence, or on the serving of a prohibition or improvement notice, the following should be notified immediately.

See section 9 of this manual.

K. Immediately take unsafe plant and equipment out of service and ensure that fault is reported to the supplier or plant department.
11. PROJECT MANAGER (When we are Principal Contractor)

When The Company has been appointed as Principal Contractor the Project Manager will: -

A. Develop and implement the Health and Safety Plan.

B. Ensure that Sub-Contractors are competent and comply with their duties in this policy.

C. Review Method Statements and Risk Assessments.

D. Ensure the co-operation and co-ordination of Sub-Contractors.

E. Make arrangements for the discussion and communication of health and safety matters for all personnel on site.

F. Pass information to the CDM Co-ordinator for the health and safety file.

G. Permit access to site for authorised personnel only.

H. Display notification details (F10).

I. Ensure that provision is made for adequate and suitable welfare facilities at the start of the construction phase.

J. Provide all involved on the project(s) with suitable and adequate induction, information and where necessary training to ensure the safety of all employees.
12. SUPERVISORS, FOREMEN

Main responsibilities are to:

A. Have sufficient knowledge of the relevant legislation and systems of work, to be able to ensure the safety at work of those under direct control including Sub-Contractors.

B. Co-operate with the Principal Contractor and other contractors and comply with the rules in the Health and Safety Plan.

C. By example discourage horseplay, restrain others from taking risks and ensure the full and correct use of safety equipment.

D. Check that all plant and equipment is maintained in a safe condition and any unsafe plant and equipment is taken out of service and that all defects reported are promptly rectified.

E. Maintain all facilities for welfare in a clean and safe condition.

F. Maintain all safety equipment and ensure its free availability.

G. Maintain an organised tidy and safe working area.

H. Ensure that others, including the general public, are protected from our works.

I. Ensure that the site is left in a safe condition (plant immobilised, piles covered, excavations protected, dangerous substances secured).

J. Set a personal example, this includes the wearing of protective clothing and equipment.

K. Ensure that all employees are aware of action to be taken in an emergency.

L. Report all accidents and near misses.
13. **ALL EMPLOYEES**

A. Have a statutory obligation to take care of yourself and others who may be affected by your acts and omissions.

B. Have a statutory obligation to co-operate with the employer in discharging the employer's obligations.

C. Have a statutory obligation not to interfere or misuse anything provided in the interests of health and safety welfare.

D. Should develop a real concern for safety, suggest ways of eliminating hazards and avoid taking risks.

E. Not engage in horse play. Restrain others from taking risks and ensure full and correct use of PPE and safety equipment.

F. Report all accidents and near misses.
1.0 Policy Statement

Bachy Soletanche Holdings Europe Ltd (BSHEL) include Bachy Soletanche Ltd, Simplex Westpile Ltd and Soil Engineering Geoservices Ltd who are specialist geotechnical contractors carrying out ground investigation, foundation work and specialist geotechnical work for the construction industry. Main contracting and joint ventures are also undertaken wherever specialist geotechnical and foundation works are key to overall contract performance or programme.

The aims of BSHEL with regard to quality management are as follows:

- to meet the specified requirements of the Client;
- to provide value for money by means of good workmanship and the use of approved materials;
- to complete all work within the agreed construction programme and at the agreed price;
- to continually improve the effectiveness of the QA System, and consequently the overall performance of the company and the satisfaction of our customers.

In order to achieve these aims, Bachy Soletanche Ltd, Simplex Westpile Ltd and Soil Engineering Geoservices Ltd operate a mandatory quality management system in conjunction with other management controls. The Quality Manual describes the quality system which meets the requirements of BS EN ISO 9001 : 2008.

Signed: ......................................  Date: 24 January 2013

Chris Merridew
Managing Director
Environmental Policy

1.1 Environmental Policy

Bachy Soletanche Holdings Europe Ltd. (BSHEL) incorporates Bachy Soletanche Ltd, Simplex Westpilte Ltd and Soil Engineering Geoservices Ltd. These companies most valuable asset, their employees, along with other stakeholders and third parties have to live and work within the environment. As a result of this, all companies recognise the importance of our environment and the right of future generations to an environment in which they, in turn, can sustain an adequate quality of life.

Combining skills of geotechnical and environmental engineering Bachy Soletanche Ltd, Simplex Westpilte Ltd and Soil Engineering Geoservices Ltd make a positive contribution to improving the environment. The Companies further recognise their responsibility to conduct day to day activities and operations with due consideration for environmental issues.

To underline commitment to continually improving these companies environmental performance, BSHEL has established an Environmental Management System in accordance with the framework of ISO 14001.

Consequently:

Bachy Soletanche Ltd, Simplex Westpilte Ltd and Soil Engineering Geoservices Ltd will comply with all applicable environmental legislation, regulations, approved codes of practice and will furthermore co-operate fully and maintain open relationships with all regulatory authorities.

As contractors they:

- wherever possible and appropriate, use construction methods, equipment and techniques that minimise impact on the environment whilst fulfilling contractual obligations - this includes a commitment to preventing pollution;
- aim to minimise the waste of materials, resources and energy and dispose responsibly of any waste products arising from our activities;
- seek to influence other contractors and client contractors in environmental matters.

As designers they:

- design with the efficient use of materials, resources and energy held in mind;
- where appropriate seek to influence clients and other designers in areas where solutions could be adopted that are more environmentally considerate.

As employers they:

- consistently seek to increase the awareness of employees and sub-contractors of our aim to conserve and, where possible, enhance the environment.

Bachy Soletanche Ltd, Simplex Westpilte Ltd and Soil Engineering Geoservices Ltd have developed and regularly review environmental objectives and targets which are monitored to measure commitment to continually improving environmental performance.

Signed: [Signature]
Date: 18 January 2013

Chris Merridew
Managing Director
Appendix B

Risk Assessments
### Risk and Working Environment Assessment

#### Activity Mobilise/Demobilise/Deliveries

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Associated Hazard</th>
<th>Persons affected</th>
<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Truck movements.</td>
<td>All personnel in immediate work area.</td>
<td>Personal injury. In extreme circumstances death. Damage to property and or equipment.</td>
<td>2 5 10</td>
<td>Manoeuvre all trucks using a trained banksman. Keep all delivery vehicles on designated haul roads and loading areas.</td>
</tr>
<tr>
<td>2</td>
<td>Falls from height.</td>
<td>All personnel in immediate work area.</td>
<td>Personal injury. In extreme circumstances death.</td>
<td>2 5 10</td>
<td>Use of mobile scaffold towers fitted with handrails, toe boards, outriggers and safety harness. Use of a man rider / mobile elevated working platform where practicable. Only trained personnel to operate and erect the equipment. All persons working above ground level without edge protection shall wear a full body harness with shock absorbing lanyard and with a lockable karabiner that has been fixed to a suitable and secure fixing point. All harnesses shall be supplied with certification. Where required edge protection shall be installed by a competent person prior to commencement of work. See Lift Plan and Method Statement.</td>
</tr>
</tbody>
</table>

#### Risk Assessment Key

<table>
<thead>
<tr>
<th>Severity Score</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Low</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Medium</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3 High</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
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</table>

#### Likelihood Key

<table>
<thead>
<tr>
<th>Score</th>
<th>Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unlikely</td>
</tr>
<tr>
<td>2</td>
<td>May Happen</td>
</tr>
<tr>
<td>3</td>
<td>Likely</td>
</tr>
<tr>
<td>4</td>
<td>Very Likely</td>
</tr>
<tr>
<td>5</td>
<td>Certain</td>
</tr>
</tbody>
</table>

#### Severity Key

<table>
<thead>
<tr>
<th>Score</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Minor Injury (First Aid)</td>
</tr>
<tr>
<td>2</td>
<td>Minor Injury (Hospital Treatment)</td>
</tr>
<tr>
<td>3</td>
<td>Three Day Injury (Time Lost)</td>
</tr>
<tr>
<td>4</td>
<td>Major Injuries</td>
</tr>
<tr>
<td>5</td>
<td>Death</td>
</tr>
</tbody>
</table>

Revised 13/08/2012
## Activity Unloading Lorries  RAC No 044

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Associated Hazard</th>
<th>Persons affected</th>
<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Working on the trailer without edge protection.</td>
<td>Operative on the trailer.</td>
<td>Death or serious injury caused by a fall to ground level.</td>
<td>3 5 15</td>
<td>No operative will access or work on the trailer without fall prevention measures in place. The following hierarchy of measures must be implemented: Wherever possible loads should be pre-slung to avoid the need for access. An alternative means of lifting can be employed if cranes are not available e.g. Forklifts. If not possible, (TEPS) trailer edge protection system should be erected on the trailer. If not possible air bags or mats should be put along side the vehicle. If not possible, fall arrestors and harnesses should be used attached to proprietary equipment.</td>
<td>1 5 5</td>
</tr>
<tr>
<td>2</td>
<td>Working in close proximity to heavy equipment.</td>
<td>Operative on the trailer.</td>
<td>Death or serious injury caused by being struck or trapped by heavy equipment.</td>
<td>2 5 10</td>
<td>Operatives will climb down from the trailer and/or move clear before all loads are lifted from the trailer.</td>
<td>1 5 5</td>
</tr>
<tr>
<td>3</td>
<td>Falling loads from lifting operations.</td>
<td>Site personnel</td>
<td>Death or serious injury caused by being struck or trapped by heavy equipment.</td>
<td>2 5 15</td>
<td>Only a trained and authorised slinger signaller will work in proximity to the operation. The slinger signaller will control and maintain the work area at all times. All loads will remain chocked until lifted. All long loads will be controlled with ropes.</td>
<td>1 5 5</td>
</tr>
<tr>
<td>4</td>
<td>Using ladders or steps to access/egress the trailer.</td>
<td>Operative accessing the trailer.</td>
<td>Serious injury caused by slips, trips or falls from ladders or steps.</td>
<td>3 4 12</td>
<td>Ladders must be in good condition and regularly inspected. Ladders must be secured or footed at all times. A three point contact must be maintained at all times by the operative.</td>
<td>1 4 4</td>
</tr>
</tbody>
</table>

Revised 10/08/2012
## Risk and Working Environment Assessment

### Activity: Piling Rig Rigging / De-Rigging

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Associated Hazard</th>
<th>Persons affected</th>
<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Working at height.</td>
<td>All personnel at height and in the immediate area.</td>
<td>Falls resulting in Major injury or death. Falls of tools and equipment on to personnel below causing injury.</td>
<td>3</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>Working with lifting equipment and loads in close proximity for positioning.</td>
<td>All personnel in immediate area.</td>
<td>Death or major injury from crushing, failure of lifting equipment, unstable loads or trapping between loads and fixed objects. Pinch injuries to operatives whilst positioning loads precisely.</td>
<td>3</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>Use of hand held tools.</td>
<td>Personnel using the tools.</td>
<td>Pinch or entrapment injuries to operatives whilst using or manipulating tools.</td>
<td>3</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>Collapse or failure of piling plant and machinery.</td>
<td>All personnel in immediate area.</td>
<td>Death or major injury from crushing due to collapse or failure of piling equipment.</td>
<td>2</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>
## Activity Working At Height RAC No 035

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Associated Hazard</th>
<th>Persons affected</th>
<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Likelihood</td>
<td>Severity</td>
<td>Risk Rating</td>
</tr>
<tr>
<td>1</td>
<td>Fall of person.</td>
<td>Person performing task.</td>
<td>Falls resulting in Major injury or death.</td>
<td>2</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Fall of materials and or equipment.</td>
<td>The general public and all people in vicinity of activity.</td>
<td>Death or major injury.</td>
<td>2</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>
# Risk and Working Environment Assessment

## Activity: Concrete Pumping
### RAC No 005

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Associated Hazard</th>
<th>Persons affected</th>
<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cement burns.</td>
<td>All personnel in the immediate area.</td>
<td>Cement burns.</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Burst hoses and/or pipelines.</td>
<td>All personnel in the immediate area.</td>
<td>Cement burns. Ingress to eyes. Ingestion / inhalation.</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Failure of hose and/or pipeline joints.</td>
<td>All personnel in the immediate area.</td>
<td>Cement burns. Ingress to eyes. Ingestion / inhalation. Physical harm if hit by flailing pipe.</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Moving parts on concrete mixer drum.</td>
<td>Pump operator.</td>
<td>Entrapment.</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Slips / trips.</td>
<td>All personnel in the immediate area.</td>
<td>Personal injuries.</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>Reversing delivery / 'muck away' vehicles.</td>
<td>Site personnel.</td>
<td>Personal injuries. Death by crushing injuries.</td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>Noise from concrete pump during pumping operation.</td>
<td>Pump operator and other personnel within 15m radius.</td>
<td>Noise induced hearing loss.</td>
<td>1</td>
<td>4</td>
<td>4</td>
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</tbody>
</table>
## Activity Blowing Out Using Compressed Air  Continued  RAC No 043

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Hazard Description</th>
<th>Persons Involved</th>
<th>Consequence</th>
<th>Likelihood</th>
<th>Severity</th>
<th>Risk Rating</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Manual handling of heavy hoses and the blow out adaptor. Manipulation of the sponge ball into the hose.</td>
<td>All personnel involved in the operation.</td>
<td>Sprains and Strains, Musculoskeletal disorders, Hand injuries.</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>Use mechanical aids wherever possible to lift hoses. Share the load by team lifting when necessary. Adopt the correct posture when lifting. Use the correct hand tools when placing clips and pins. Wear suitable gloves when handling equipment.</td>
<td>1 2 2</td>
</tr>
<tr>
<td>2</td>
<td>Accidental contact with vehicles and equipment in close proximity to the operation.</td>
<td>All personnel involved in the operation.</td>
<td>Crushing/Entrapment Major Injuries</td>
<td>3</td>
<td>5</td>
<td>15</td>
<td>Area must be controlled by a trained and competent signaller. Only a competent person to operate the compressor. Use clear hand signals and ensure a good standard of communication.</td>
<td>1 3 3</td>
</tr>
<tr>
<td>3</td>
<td>Contact with Concrete when handling the pump and the hoses. Struck by concrete when the ball and air blows through.</td>
<td>All personnel involved in the operation.</td>
<td>Concrete burns Eye injuries</td>
<td>3</td>
<td>4</td>
<td>12</td>
<td>Ensure a 10m exclusion zone when blowing takes place (where possible). Area to be controlled by a competent person. Only competent people to carry out work. Correct use of PPE. (ie. Gloves, Goggles Full length sleeve overalls.) No bare arms.</td>
<td>1 3 3</td>
</tr>
<tr>
<td>4</td>
<td>Exposure to high noise levels from the air compressor.</td>
<td>All personnel involved in the operation.</td>
<td>Noise induced hearing loss.</td>
<td>3</td>
<td>4</td>
<td>12</td>
<td>Ensure the compressor is used in accordance with the manufacturer’s instructions. Close all hatches / doors. Ensure that the compressor has been regularly maintained. Operatives using the compressor must wear hearing protection at all times</td>
<td>1 2 2</td>
</tr>
<tr>
<td>5</td>
<td>Equipment or materials projecting off whilst using highly compressed air pressure.</td>
<td>All personnel involved in the operation.</td>
<td>Major Injuries</td>
<td>4</td>
<td>4</td>
<td>16</td>
<td>Correct use of whip checks, Hose Clips and pins. Ensure that the Blow out adaptor is fault free. Installed and operated by a trained by a trained and competent person.</td>
<td>2 2 4</td>
</tr>
<tr>
<td>6</td>
<td>Being struck by the ball as it clears the hose or auger.</td>
<td>All personnel involved in the operation.</td>
<td>Minor injuries</td>
<td>4</td>
<td>4</td>
<td>16</td>
<td>Area to be controlled by a trained and competent banksman. A 5m min. exclusion zone to be in place, and enforced by the banksman. A ball catcher must be fitted to the hoses to control the escape of the cleaning ball. Compressed air to be released down the line under control of a trained operative. Banksman / operative to stand to the rear of the exit when pressure is applied to the line. Place the excavator bucket/arm on the end of the line to avoid movement and fix a restraining sling to the excavator. A low out chamber must be in place beneath the auger stem to catch the escaping ball. Boards can be placed between the tracks of the rig and against the base of the mast to prevent splashes toward the operator’s cab. All hose joints must have clips correctly fitted with retaining pins. All joints must be fitted with whip checks.</td>
<td>1 2 2</td>
</tr>
</tbody>
</table>
### Risk and Working Environment Assessment

**Activity:** Concreting  
**RAC No:** 010

<table>
<thead>
<tr>
<th>Risk Assessment Key</th>
<th>Likelihood</th>
<th>Severity</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
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<tbody>
<tr>
<td><strong>Severity Score</strong></td>
<td><strong>Likelihood Score</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>Low</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>2</td>
<td>Medium</td>
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</tr>
<tr>
<td>3</td>
<td>High</td>
<td>1</td>
<td>2</td>
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#### Likelihood Key

<table>
<thead>
<tr>
<th>Score</th>
<th>Likelihood</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Unlikely</td>
</tr>
<tr>
<td>2</td>
<td>May Happen</td>
</tr>
<tr>
<td>3</td>
<td>Likely</td>
</tr>
<tr>
<td>4</td>
<td>Very Likely</td>
</tr>
<tr>
<td>5</td>
<td>Certain</td>
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#### Severity Key

<table>
<thead>
<tr>
<th>Score</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Minor Injury (First Aid)</td>
</tr>
<tr>
<td>2</td>
<td>Minor Injury (Hospital Treatment)</td>
</tr>
<tr>
<td>3</td>
<td>Three Day Injuries (Time Lost)</td>
</tr>
<tr>
<td>4</td>
<td>Major Injuries</td>
</tr>
<tr>
<td>5</td>
<td>Death</td>
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### Risk and Working Environment Assessment Table

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Associated Hazard</th>
<th>Persons affected</th>
<th>Consequence</th>
<th>Likelihood</th>
<th>Severity</th>
<th>Risk Rating</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cement Burns</td>
<td>All personnel in immediate work area.</td>
<td>Sensitisation of skin. Development of dermatitis.</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>Correct use of PPE (see COSHH assessments).</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Eye damage from splashes.</td>
<td>All personnel in immediate work area.</td>
<td>Loss of eye sight. Damage to eyes and skin.</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>Correct use of eye protection (see COSHH assessments).</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Trapping by concrete lorries.</td>
<td>All personnel in immediate work area.</td>
<td>Personal injuries. Death by crushing injuries.</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>Banksman to control all reversing vehicles associated with works.</td>
<td>1</td>
</tr>
</tbody>
</table>
## Risk and Working Environment Assessment

### Activity Piling Rig Operations  RAC No 004

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Associated Persons affected</th>
<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Likelihood</td>
<td>Severity</td>
<td>Risk Rating</td>
</tr>
<tr>
<td>1</td>
<td>Rig overturn. Operator, banksman and site personnel.</td>
<td>Major injuries or death. Damage to property and/or equipment.</td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Tail swing trapping. Operator, banksman and site personnel.</td>
<td>Major injuries or death. Damage to property and/or equipment.</td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Falling spoil. Operator, banksman, other site personnel and the general public.</td>
<td>Injuries to person struck by falling material. Contamination of clothing and or person, walkways and thoroughfares. Potential slip/trip injuries. Ingress of debris into eyes or ingestion of contaminants.</td>
<td>2</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>
# Risk and Working Environment Assessment

**Activity:** CFA Piling  
**RAC No:** 028

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Associated Hazard</th>
<th>Persons affected</th>
<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Movement of the rig or auger while placing the auger plug.</td>
<td>Piling Operative.</td>
<td>Death or serious injury caused by being crushed by the moving piling rig.</td>
<td>3 5 15</td>
<td>The rig operator will ensure the rig is idle, brakes are applied and no movement of auger. The rig operator will not perform any function until instructed by the rig banksman.</td>
<td>1 1 1</td>
</tr>
<tr>
<td>2</td>
<td>Entrapment or entanglement in the moving or rotating auger.</td>
<td>Persons in close proximity.</td>
<td>Death or serious injury caused by being crushed by the moving piling rig and auger.</td>
<td>4 3 12</td>
<td>The piling gates will remain closed at all times. The banksman will maintain an exclusion zone with cones and barriers to control work area and prevent access to unauthorised personnel. Auger not to be cleaned manually.</td>
<td>1 2 2</td>
</tr>
<tr>
<td>3</td>
<td>Falling material from the auger or gates.</td>
<td>Persons in close proximity.</td>
<td>Death or serious injury caused by being struck by falling spoil and material from height.</td>
<td>4 5 20</td>
<td>The auger will be cleaned mechanically, by auger cleaner and/or attendant machine as the auger is extracted from the ground. All spoil arisings will be removed from the auger. Auger not to be cleaned manually!</td>
<td>1 1 1</td>
</tr>
<tr>
<td>4</td>
<td>Freshly concreted open bores.</td>
<td>Site personnel.</td>
<td>Serious chemical burns caused by a fall into concrete containing lime. Injury from cuts and abrasions from the steel cage in the pile.</td>
<td>3 4 12</td>
<td>All fresh bores will be covered as soon as practicable. Marker paint will be used to identify the position. All exposed steel rebar will be clearly marked.</td>
<td>1 1 1</td>
</tr>
<tr>
<td>5</td>
<td>Exposed reinforcement bars from concreted piles or set out pile positions.</td>
<td>Site personnel.</td>
<td>Death or serious injury caused by falling onto exposed steel re-bar.</td>
<td>4 5 20</td>
<td>Hi visibility protective caps will be placed on protruding steel bars. An exclusion zone on the piling mat will be established and maintained.</td>
<td>1 1 1</td>
</tr>
<tr>
<td>6</td>
<td>Movement of piling rig between piling positions.</td>
<td>Site personnel.</td>
<td>Death or serious injury caused by being crushed by the moving piling rig. Damage to plant and equipment due to collision with other machinery.</td>
<td>4 5 20</td>
<td>A Banksman will direct and control all movement of the piling rig. The Banksman will maintain an exclusion zone with cones and barriers to keep all unauthorised personnel clear of the operation.</td>
<td>1 1 1</td>
</tr>
</tbody>
</table>
## Risk and Working Environment Assessment

### Activity Pile Load Test  RAC No 016

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Associated Hazard</th>
<th>Persons affected</th>
<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Test rig instability - collapse.</td>
<td>All personnel in immediate work area.</td>
<td>Major injuries or death. Damage to property and/or equipment.</td>
<td>1 5 5</td>
<td>A compact, level area must be maintained below and in immediate area of testing rig. Only competent and trained personnel to erect reaction system.</td>
<td>1 5 5</td>
</tr>
<tr>
<td>2</td>
<td>Failure of stressing jacks, hoses etc.</td>
<td>All personnel in immediate work area.</td>
<td>Major injuries or death. Damage to property and/or equipment.</td>
<td>1 5 5</td>
<td>All equipment to be serviced to manufacturers recommendations. Before use, equipment to be cleaned and inspected for damage. Stressing jack to be operated solely by authorised test engineer.</td>
<td>1 3 3</td>
</tr>
<tr>
<td>3</td>
<td>Failure of tendon bars or pile head.</td>
<td>All personnel in immediate work area.</td>
<td>Personal injury.</td>
<td>1 3 3</td>
<td>Maintain signed exclusion zone. All unnecessary plant and personnel to be kept clear of area.</td>
<td>1 3 3</td>
</tr>
</tbody>
</table>

### Risk Assessment Key

<table>
<thead>
<tr>
<th>Severity Score</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Low</strong></td>
<td><strong>Medium</strong></td>
<td><strong>High</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Likelihood Score</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Unlikely</strong></td>
<td><strong>May Happen</strong></td>
<td><strong>Likely</strong></td>
<td><strong>Very Likely</strong></td>
<td><strong>Certain</strong></td>
</tr>
</tbody>
</table>

### Severity Key

<table>
<thead>
<tr>
<th>Score</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Minor Injury (First Aid)</td>
</tr>
<tr>
<td>2</td>
<td>Minor Injury (Hospital Treatment)</td>
</tr>
<tr>
<td>3</td>
<td>Three Day Injuries (Time Lost)</td>
</tr>
<tr>
<td>4</td>
<td>Major Injuries</td>
</tr>
<tr>
<td>5</td>
<td>Death</td>
</tr>
</tbody>
</table>

Site Name
Shoreditch
Bouygues.
## Risk and Working Environment Assessment

### Activity: Steelfixing  RAC No 017

<table>
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<tr>
<th>Risk No.</th>
<th>Associated Hazard</th>
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<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unsecured cages.</td>
<td>All.</td>
<td>Death from falling cages or steel reinforcement bars.</td>
<td>4</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>Pinch points and trapping hazards.</td>
<td>All personnel in immediate work area.</td>
<td>Injury to hands and feet caught between the cage bars.</td>
<td>4</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>Projecting Steel Tie Wire.</td>
<td>All personnel in immediate work area.</td>
<td>Cuts and jabs from projecting wires.</td>
<td>4</td>
<td>3</td>
<td>12</td>
</tr>
</tbody>
</table>
## Activity Crane Rigging/Derigging  RAC No 009

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Hazard</th>
<th>Associated Persons affected</th>
<th>Consequence</th>
<th>Likelihood Assessment</th>
<th>Severity Assessment</th>
<th>Risk Rating</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Working at height or poor housekeeping.</td>
<td>All personnel in immediate work area.</td>
<td>Falls resulting in Major injury or death.</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>Erection and dismantling must only be undertaken by trained and competent crew. Where possible all work performed at height shall be performed from Mobile Elevating Work Platforms. All operators using Mobile Elevating Work Platforms shall have undertaken and successfully completed accredited training. All persons working above ground level without edge protection shall wear a full body harness with shock absorbing lanyard and with a lockable karabiner that has been fixed to a suitable and secure fixing point. A good standard of house keeping is essential to keep the area tidy. All harnesses shall be supplied with certification. Where required edge protection shall be installed by a competent person prior to commencement of work. Hoist ropes should be run out at ground level, not by walking struts. Instruction manual must be available, and understood by erection crew.</td>
<td>1 2 2</td>
</tr>
<tr>
<td>2</td>
<td>Working with lifting equipment and loads in close proximity for positioning.</td>
<td>All personnel in immediate work area.</td>
<td>Death or major injury from crushing, failure of lifting equipment, unstable loads or trapping between loads and fixed objects. Pinch injuries to operatives whilst positioning loads precisely.</td>
<td>3</td>
<td>5</td>
<td>15</td>
<td>All lifting accessories must be safe and sufficient. Pre-use checks must be carried out and current colour coding displayed. All lifting accessories must be tested and certified and be thoroughly examined periodically. All loads must be assessed for weight and stability. A qualified slinger signaller must control the lifting process.</td>
<td>1 1 1</td>
</tr>
</tbody>
</table>
## Risk and Working Environment Assessment

### Activity: Crane Operations  RAC No 006

<table>
<thead>
<tr>
<th>No.</th>
<th>Hazard</th>
<th>Persons affected</th>
<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Crane overturn</td>
<td>All personnel in immediate work area</td>
<td>Major Injuries or death. Damage to property and or equipment</td>
<td>2 5 10</td>
<td>A suitable piling platform must be constructed to FPS/CIRIA standards and a handover certificate issued. Continuing maintenance of the platform is essential. Keep plant and equipment clear of all excavations and boreholes. Ensure that all boreholes are clearly identified and protected. Only authorised operators to operate plant. All out riggers to be fully deployed in accordance with manufacturers recommendations. Pressure pads used under jacking legs.</td>
<td>1 2 2</td>
</tr>
<tr>
<td>2</td>
<td>Tail swing trapping</td>
<td>All personnel in immediate work area</td>
<td>Major Injuries or death. Damage to property and or equipment</td>
<td>2 5 10</td>
<td>600mm clearance to be maintained. Adequate lighting in work area. Banksman to control work area.</td>
<td>1 2 2</td>
</tr>
<tr>
<td>3</td>
<td>Falls of equipment</td>
<td>All personnel in immediate work area</td>
<td>Major Injuries or death. Damage to property and or equipment</td>
<td>2 5 10</td>
<td>All lifting operations to be controlled by qualified Crane Supervisor. All slinging operations to be carried out by qualified slinger/signaller. Large or unwieldy loads to be controlled by tag line. All lifting equipment and accessories to comply with the lifting operations, lifting equipment regulations 1998 (LOLER).</td>
<td>1 1 1</td>
</tr>
</tbody>
</table>

### Likelihood Key

<table>
<thead>
<tr>
<th>Score</th>
<th>Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unlikely</td>
</tr>
<tr>
<td>2</td>
<td>May Happen</td>
</tr>
<tr>
<td>3</td>
<td>Likely</td>
</tr>
<tr>
<td>4</td>
<td>Very Likely</td>
</tr>
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<td>5</td>
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</tr>
</tbody>
</table>

### Severity Key

<table>
<thead>
<tr>
<th>Score</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Minor Injury (First Aid)</td>
</tr>
<tr>
<td>2</td>
<td>Minor Injury (Hospital Treatment)</td>
</tr>
<tr>
<td>3</td>
<td>Three Day Injuries (Time Lost)</td>
</tr>
<tr>
<td>4</td>
<td>Major Injuries</td>
</tr>
<tr>
<td>5</td>
<td>Death</td>
</tr>
</tbody>
</table>
### Activity Lifting Operations Cranes/Rigs  RAC No 032

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Associated Hazard</th>
<th>Persons Affected</th>
<th>Consequence</th>
<th>Likelihood</th>
<th>Severity</th>
<th>Risk Rating</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Improper planning of lifting operations.</td>
<td>All personnel in immediate work area.</td>
<td>Fatality or Major Injuries, damage to property and or equipment.</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>All lifting operations should be planned to ensure that they are carried out safely and that all foreseeable risks have been taken into account. Planning of lifting operations should be carried out by an Appointed Person who has the appropriate knowledge for the lift being undertaken. All lifting should be carried out in accordance with BS 7121.</td>
<td>1 5 5</td>
</tr>
<tr>
<td>2</td>
<td>Rigging / De-rigging operation</td>
<td>All personnel in immediate work area.</td>
<td>Fatality or Major Injuries, damage to property and or equipment.</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>Only competent, qualified, trained plant fitters should undertake the assembly, erection and dismantling of the crane/rig, in accordance with the manufacturer's instructions. Where two or more fitters are required, one should take control as the 'erector in charge' to control the operation.</td>
<td>1 5 5</td>
</tr>
<tr>
<td>3</td>
<td>Unsafe / unauthorised operation of crane.</td>
<td>All personnel in immediate work area.</td>
<td>Fatality or Major Injuries, damage to property and or equipment.</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>Crane operators should be 18 years old, physically fit with particular regard to eyesight, hearing and trunk movements. All operators should be authorised and trained for the particular type of crane being used.</td>
<td>1 5 5</td>
</tr>
<tr>
<td>4</td>
<td>Failure of lifting equipment.</td>
<td>All personnel in immediate work area.</td>
<td>Fatality or Major Injuries, damage to property and or equipment.</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>All lifting equipment must be fully certified, regularly checked by a competent person and be capable of safely lifting the load. A Crane Supervisor must perform the necessary checks outlined in the lift plan.</td>
<td>1 5 5</td>
</tr>
<tr>
<td>5</td>
<td>Failing loads, materials when being lifted.</td>
<td>All personnel in immediate work area.</td>
<td>Fatality or Major Injuries, damage to property and or equipment.</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>All slinging tasks shall be undertaken by a qualified and competent slinger/signaller using lifting equipment that is fit for purpose, in good condition with valid test/inspection certification. Avoid lifting over people.</td>
<td>1 5 5</td>
</tr>
<tr>
<td>6</td>
<td>Attempts at modifying parts of the crane/rig leading to possible structural weakness during operation.</td>
<td>All personnel in immediate work area.</td>
<td>Fatality or Major Injuries, damage to property and or equipment.</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>Modifications to any structure, control system or other part of a crane/rig should only be carried out with written approval of the manufacturer. Where the manufacturer is no longer in existence, a competent engineer familiar with the design of the crane/rig.</td>
<td>1 5 5</td>
</tr>
<tr>
<td>7</td>
<td>Directing crane/rig movements</td>
<td>All personnel in immediate work area.</td>
<td>Fatality or Major Injuries, damage to property and or equipment.</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>All crane/rig movements should be controlled by a trained, competent banksperson, easily identifiable with the wording 'BANKSPERSON' displayed on the rear of high visibility jacket or vest.</td>
<td>1 5 5</td>
</tr>
<tr>
<td>8</td>
<td>Lifting in adverse weather conditions likely to affect lifting operations i.e. high winds, heavy rains, poor visibility, snow/ice.</td>
<td>All personnel in immediate work area.</td>
<td>Fatality or Major Injuries, damage to property and or equipment.</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>Lifting should not be carried out in wind speeds beyond those specified in the machine operating manual. A suitable means of communication should be provided to ensure the safe operation during periods of</td>
<td>1 5 5</td>
</tr>
<tr>
<td>Activity</td>
<td>Description</td>
<td>Risk</td>
<td>Probability</td>
<td>Consequence</td>
<td>Control Measures</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>----------</td>
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<td>------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Proximity hazards such as overhead electric lines, buried services, other cranes, vehicle movements etc.</td>
<td>All personnel in immediate work area.</td>
<td>Fatality or Major Injuries, damage to property and or equipment.</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>Steps should be taken by the Appointed Person to ensure all power supplies are isolated by a competent electrician. Where this cannot be achieved then the guidance provided in the HSE GS 6 guidance note should be followed. Measures should be in place to protect any buried services against damage. Exclusion zones and clearly defined routes should be established when other cranes/vehicles are present.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Leaving the crane/rig unattended with suspended loads.</td>
<td>All personnel in immediate work area.</td>
<td>Fatality or Major Injuries, damage to property and or equipment.</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>Never leave the crane/rig unattended with a suspended load; ensure all loads are removed from the lifting attachment/accessory even for short periods of time.</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Lifting loads without tag lines.</td>
<td>All personnel in immediate work area.</td>
<td>Fatality or Major Injuries, damage to property and or equipment.</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>Suitable tag lines should be used by the slinger/signaller to control any suspended loads.</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Slips, trips and falls due to poor housekeeping / maintenance activities</td>
<td>All personnel in immediate work area.</td>
<td>Minor Injury (Hospital Treatment)</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>Keep working/storage areas in a clean and tidy condition. A good standard of housekeeping is essential. Ensure that the load path is clear of obstructions for the slinger and the load. Where a person is required to be present on any part of the lifting equipment, e.g. for operational, maintenance or inspection purposes, suitable fall prevention measures should be provided e.g. handrails or use of safety harnesses.</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Lifting of loads on gradients/uneven ground conditions.</td>
<td>All personnel in immediate work area.</td>
<td>Fatality or Major Injuries, damage to property and or equipment.</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>Proper planning of site deliveries and lay down points which provide suitable access for cranes to lift from the side where ever possible. Where this cannot be achieved a specific risk assessment should be conducted.</td>
<td></td>
</tr>
</tbody>
</table>
## Risk and Working Environment Assessment

### Activity Manual Handling  RAC No 030

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Hazard Description</th>
<th>Associated Persons affected</th>
<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lifting, lowering, pushing, pulling, levering, manipulating, twisting, holding supporting etc.</td>
<td>All people involved in manual handling operations.</td>
<td>Sprains and strains mainly to the lower back and upper torso. Musculoskeletal disorders.</td>
<td>5</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>Poor housekeeping, wet surfaces, uneven floors, obstructions.</td>
<td>All people involved in manual handling operations.</td>
<td>Injuries associated to slips, trips and falls – Sprains, fractures, contusions, lacerations.</td>
<td>5</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>Sharp edges, rough surfaces.</td>
<td>All people involved in manual handling operations.</td>
<td>Injuries associated to handling objects – Sprains, fractures, contusions, lacerations.</td>
<td>5</td>
<td>4</td>
<td>20</td>
</tr>
</tbody>
</table>
## Risk and Working Environment Assessment

### Risk Assessment Key

<table>
<thead>
<tr>
<th>Severity</th>
<th>Likelihood Score</th>
</tr>
</thead>
<tbody>
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<td>1</td>
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</tr>
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<tbody>
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<td>Minor Injury (First Aid)</td>
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<td>4</td>
<td>Major Injuries</td>
</tr>
<tr>
<td>5</td>
<td>Death</td>
</tr>
</tbody>
</table>

### Activity: Overhead and Underground Services  RAC No 029

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Associated Hazard</th>
<th>Persons affected</th>
<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Contact with underground services.</td>
<td>All personnel in immediate work area.</td>
<td>Death, burns or serious injury due to contact with live electrical cables. Explosions due to contact with gas mains.</td>
<td>5 5 25</td>
<td>All relevant information regarding the presence of underground services must be provided to contract management prior to mobilisation. Trial Holes must be dug to confirm the location of services affected by piling operations. All services must be located, marked and fenced off. A 'Permit to Dig' must be implemented and must clearly state the pile locations that can be bored. Areas on hold must be clearly stated on the permit with the pile numbers affected. The setting out of pile positions should not proceed until a permit to dig has been issued. The site drawing indicating the location of underground services must be attached to the permit to dig. The presence of services must be marked on the rig operator’s pile schedule and pile layout drawing. The pile schedule and pile layout drawing will be attached to the permit to dig. A copy of the permit to dig will be issued to the rig operator and will be kept in the cab. Should contact with services occur, operatives must notify the principal contractor immediately. No operatives will work in the vicinity until the area has been made safe.</td>
<td>1 5 5</td>
</tr>
<tr>
<td>Activity</td>
<td>Personal Protective Equipment</td>
<td>RAC No 033</td>
<td></td>
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<tr>
<td><strong>Risk Assessment</strong></td>
<td><strong>Personal Protective Equipment</strong></td>
<td><strong>RAC No 033</strong></td>
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<td><strong>Risk Assessment Key</strong></td>
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<td><strong>Severity Key</strong></td>
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<td>Score</td>
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<td>Score</td>
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<tr>
<td>1</td>
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<td>Minor Injury (First Aid)</td>
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</tr>
<tr>
<td>2</td>
<td>May Happen</td>
<td>2</td>
<td>Minor Injury (Hospital Treatment)</td>
<td></td>
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<td></td>
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<td>3</td>
<td>Likely</td>
<td>3</td>
<td>Three Day Injuries (Time Lost)</td>
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<tr>
<td>4</td>
<td>Very Likely</td>
<td>4</td>
<td>Major Injuries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Certain</td>
<td>5</td>
<td>Death</td>
<td></td>
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<td><strong>Risk Assessment</strong></td>
<td><strong>Control Measures</strong></td>
<td><strong>Residual Risk</strong></td>
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<td><strong>Activity</strong></td>
<td><strong>Persons affected</strong></td>
<td><strong>Consequence</strong></td>
<td><strong>Risk Assessment</strong></td>
<td><strong>Control Measures</strong></td>
<td><strong>Residual Risk</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Head, eye, hearing, foot and hand injuries.</td>
<td>All personnel in immediate work area.</td>
<td>Major or Minor injuries. Specified diseases or death.</td>
<td>4</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Risk No.</td>
<td>Activity</td>
<td>Hazard</td>
<td>Associated Persons</td>
<td>Consequence</td>
<td>Risk Assessment</td>
<td>Control Measures</td>
</tr>
<tr>
<td>---------</td>
<td>----------</td>
<td>--------</td>
<td>-------------------</td>
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<td>----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>1</td>
<td>Decanting flammable fuels and gases.</td>
<td></td>
<td>The operative and people in close proximity.</td>
<td>Death or serious injury from fire and explosion of fuels or gases, burns to skin and clothing. Skin disorders from prolonged contact with substances.</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Escape of noxious/hazardous fumes and gases.</td>
<td></td>
<td>The operative and people in close proximity.</td>
<td>Death or loss of consciousness from being overwhelmed by fumes or gases, burns to skin and clothing. Respiratory disorders from prolonged exposure with substances.</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Accidental spillage of fuels.</td>
<td></td>
<td>The operative and people in close proximity.</td>
<td>Death or serious injury from fire and explosion of fuels or gases, burns to skin and clothing. Skin disorders from prolonged contact with substances. Environmental damage from spillage of hazardous substances.</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Access to the fuel reservoir filler cap at height.</td>
<td></td>
<td>The operative.</td>
<td>Death or serious injury from a fall from height.</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>
## Risk and Working Environment Assessment

### Activity: Fire Prevention  RAC No 002

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Hazard Description</th>
<th>Risk Associated Persons</th>
<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Malicious ignition.</td>
<td>All personnel in immediate work area.</td>
<td>Danger of loss of life. Extensive damage to property and surrounding buildings. General public and others put at risk. Environmental impacts.</td>
<td>1 5 5</td>
<td>Ensure site is safe and secure. If necessary a security guard should be employed when site is closed and over evening /week-end periods.</td>
<td>1 4 4</td>
</tr>
<tr>
<td>2</td>
<td>Diesel bowsers.</td>
<td>All personnel in immediate work area.</td>
<td>Danger of loss of life. Extensive damage to property and surrounding buildings. General public and others put at risk. Environmental impacts. Damage to and loss of plant and equipment.</td>
<td>1 5 5</td>
<td>All tanks/bowsers to be locked after use and have drip trays and are properly bunded.</td>
<td>1 4 4</td>
</tr>
<tr>
<td>3</td>
<td>Smoking.</td>
<td>All personnel in immediate work area.</td>
<td>As above.</td>
<td>1 5 5</td>
<td>“No smoking” signs must be displayed where necessary. “No Smoking” signs must be displayed where necessary.</td>
<td>1 4 4</td>
</tr>
<tr>
<td>4</td>
<td>Burning waste materials.</td>
<td>All personnel in immediate work area.</td>
<td>As above.</td>
<td>1 5 5</td>
<td>Good housekeeping should be of the utmost importance. All waste materials eg. Rags, oils, grease cartridges etc. should be placed in suitable skips/containers and disposed of appropriately.</td>
<td>1 4 4</td>
</tr>
<tr>
<td>5</td>
<td>Hot work.</td>
<td>All personnel in immediate work area.</td>
<td>As above.</td>
<td>1 5 5</td>
<td>A “permit to work” system should be adopted where necessary. Area of works to be thoroughly checked before and after work is completed.</td>
<td>1 4 4</td>
</tr>
<tr>
<td>6</td>
<td>Electrical faults.</td>
<td>All personnel in immediate work area.</td>
<td>As above.</td>
<td>1 5 5</td>
<td>All electrical appliances must be installed, inspected, tested and commissioned by competent / qualified persons. Certificates of next testing dates must be supplied.</td>
<td>1 4 4</td>
</tr>
<tr>
<td>7</td>
<td>Fires.</td>
<td>All personnel in immediate work area.</td>
<td>As above.</td>
<td>1 5 5</td>
<td>Adequate numbers of suitable types of portable extinguishers must be available throughout the site and identified to site personnel.</td>
<td>1 4 4</td>
</tr>
</tbody>
</table>
## Activity Operating the Concrete Storage Drum  RAC No 038

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Associated Hazard</th>
<th>Persons affected</th>
<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>R/R</td>
<td>L</td>
</tr>
<tr>
<td>1</td>
<td>Locating the Storage drum on poor ground or an unstable base.</td>
<td>All people in the proximity.</td>
<td>Death, crushing injuries, amputation.</td>
<td>5 5 25</td>
<td>A firm level base must be prepared in advance of loading the drum into place. Sleepers may be used to support the drum off the ground. Sleepers must be laid out in readiness and be in good condition. Ongoing vigilance of the ground conditions, particularly during inclement weather, is important. Report any deterioration of the ground immediately.</td>
<td>2 2 4</td>
</tr>
<tr>
<td>2</td>
<td>Preparing the access ramp for vehicle access</td>
<td>All people in the immediate proximity.</td>
<td>Death, crushing injuries, amputation.</td>
<td>5 5 25</td>
<td>The ramp must be made of suitable material to support the weight of the concrete wagon. The ramp must be made sufficiently wide enough to provide full access for the wagon and a place of safety for the banksman to stand. If the ramp is high then stopblocks and barriers are essential. Use hydraulic self raising drum which will negate use of ramps considerably</td>
<td>1 4 4</td>
</tr>
<tr>
<td>3</td>
<td>Working in close proximity to and engine driven machine creating high noise levels.</td>
<td>All people in the immediate proximity.</td>
<td>Potential for noise induced deafness.</td>
<td>3 4 12</td>
<td>Wherever possible new plant will be used. Older plant will be serviced regularly. Noise monitoring and assessments will be conducted to establish the noise outputs from the machine during operation and data supplied to site. All operatives will be made aware of the noise levels as part of an ongoing training programme. Signs will be placed on all drums that have been identified as noisy. All operative will wear ear protection when required by the assessment.</td>
<td>1 4 4</td>
</tr>
<tr>
<td>4</td>
<td>Working with wet concrete for prolonged periods.</td>
<td>Pump operative.</td>
<td>The potential for chemical burns and or dermatitis.</td>
<td>3 4 12</td>
<td>A COSHH assessment will be produced that will identify the risk associated to working with concrete. All operatives will be made aware of the risks and the content of the COSHH assessment as part of an ongoing training programme. PPE will be provided to all operatives in the form off overalls, gloves, and safety glasses and must be worn when concreting is taking place.</td>
<td>1 4 4</td>
</tr>
<tr>
<td>5</td>
<td>Carrying out periodic and daily maintenance using fluids and lubricants.</td>
<td>Pump operative.</td>
<td>Contact with oils, coolants and greases containing carcinogens potentially causing cancers or skin disorders</td>
<td>4 5 20</td>
<td>COSHH assessments will be produced that will identify the risks associated to working with oils and lubricants. All operatives will be made aware of the risks and the content of the COSHH assessments as part of an ongoing training programme. PPE will be provided to all operatives in the form off overalls, gloves, and safety glasses and must be worn when maintenance operations is being performed.</td>
<td>1 5 5</td>
</tr>
<tr>
<td>Activity</td>
<td>Operating the Concrete Storage Drum</td>
<td>RAC No</td>
<td>038 continued</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>----------</td>
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<td></td>
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</tr>
<tr>
<td>6</td>
<td>Slips or falls when inspecting the inside of the drum.</td>
<td>Pump operative.</td>
<td>Fractures, sprains and strains, cuts and bruising.</td>
<td>4</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>7</td>
<td>Working in close proximity to the rotating drum.</td>
<td>Pump operative.</td>
<td>Death. Crushing injuries, Amputation caused by being pulled into working parts.</td>
<td>5</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>8</td>
<td>Struck by particles when washing off the machine</td>
<td>Pump operative.</td>
<td>Splashes to the eyes causing potential blindness or scratches to the cornea. Disorientation due to temporary loss of vision leading to other situations.</td>
<td>5</td>
<td>5</td>
<td>25</td>
</tr>
</tbody>
</table>

Suitable ladders will be fitted to the drum with and inspection platform at the top. The inspection platform will have sufficient barriers fitted with a closing gate to secure the operative within. The operative must use the correct ladders and platform and not improvise.

Guards will be fitted around the perimeter of the drum to prevent access whilst the drum is rotating. The guards must not be removed whilst the drum is in operation.

A COSHH assessment will be produced that will identify the risk associated to working with concrete and when washing off. All operatives will be made aware of the risks and the content of the COSHH assessment as part of an ongoing training programme. PPE will be provided to all operatives in the form of overalls, wetsuits, gloves, and safety glasses and must be worn when washing off is taking place.
### Risk and Working Environment Assessment

**Activity**: Assembling & Removing Auger Strings  
**RAC No**: 039

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Hazard</th>
<th>Associated Persons affected</th>
<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Working at heights whilst accessing the joints of the augers.</td>
<td>Leading hand</td>
<td>A fall from height causing death or serious injury.</td>
<td>4</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>Struck by the auger while positioning. Trapping hands and feet etc.</td>
<td>Leading hand, People in close proximity</td>
<td>Amputation, crushing injuries, fractures, lacerations.</td>
<td>4</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>Slings slipping or breaking</td>
<td>Leading hand, People in close proximity</td>
<td>Death, Amputation, Crushing injuries, Fractures, lacerations caused by the falling auger.</td>
<td>5</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>Use of hand tools such as hammers to locate locking pins in the joints.</td>
<td>Leading hand</td>
<td>Amputation, crushing injuries, fractures, lacerations.</td>
<td>4</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>Failure of the winch or ropes during operations to lift augers into position.</td>
<td>Leading hand, People in close proximity</td>
<td>Death, Amputation, Crushing injuries, Fractures.</td>
<td>5</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Activity</td>
<td>Assembling &amp; Removing Auger Strings</td>
<td>RAC No 039 continued</td>
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</tr>
</tbody>
</table>

- Lacerations caused by the falling auger

The rig operator shall carry out regular checks of the winch and will record the results of the check. Any defects will be reported immediately.
### Risk and Working Environment Assessment

#### Activity: Lifting & Lowering ISO Containers

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Associated Hazard</th>
<th>Persons affected</th>
<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Work at height while accessing the ISO lifting points to attach or remove lifting accessories.</td>
<td>Slinger.</td>
<td>Death or major injury caused by a fall from high level.</td>
<td>3 5 15</td>
<td>Operatives will gain access to the ISO lifting points using a ladder that has been checked before use and is in good condition. The ladder will be positioned, in turn, on all four corners and will be securely footed by an operative when gaining access. The operative will not climb on top of the container to fit the slings and will climb down the ladder immediately after completing the task. When loading to and from a vehicle, the vehicle and container must be positioned so it is accessible to the slinger, and he/she can access the tools and equipment.</td>
<td>1 1 1</td>
</tr>
<tr>
<td>2</td>
<td>Loading the container on to the piling platform.</td>
<td>All personnel in close proximity.</td>
<td>Death or major injury due to failure of the ground to support the weight of the container causing overturn or sinking.</td>
<td>4 5 20</td>
<td>The piling platform and ground conditions must be prepared in advance to support the weight of the load. The platform must be sufficiently prepared to allow safe access around the load while being positioned by the crane. (see Lift Plan).</td>
<td>1 1 1</td>
</tr>
<tr>
<td>3</td>
<td>Using specialist lifting accessories to lift the container.</td>
<td>All personnel in close proximity.</td>
<td>Death or major injury due to failure of the sling method, incorrect choice of slings or incorrect attachment. This will cause the container to fall to ground.</td>
<td>5 5 25</td>
<td>The correct ISO shackles must be available in all cases. ISO shackles must be supplied with test certificates and be thoroughly examined regularly.</td>
<td>1 1 1</td>
</tr>
</tbody>
</table>

#### Severity Key

<table>
<thead>
<tr>
<th>Severity Score</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Light</td>
<td>Medium</td>
<td>Severe</td>
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#### Likelihood Key

<table>
<thead>
<tr>
<th>Likelihood Score</th>
<th>Unlikely</th>
<th>Likely</th>
<th>Very Likely</th>
<th>Certain</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Minor Injury (First Aid)</td>
<td>Minor Injury (Hospital Treatment)</td>
<td>Major Injuries</td>
<td>Death</td>
</tr>
<tr>
<td>2</td>
<td>Major Injury (Hospital Treatment)</td>
<td>Major Injuries</td>
<td>Death</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Major Injuries</td>
<td>Death</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Death</td>
<td></td>
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#### Severity Key

<table>
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<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>Likelihood</td>
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<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>Unlikely</td>
<td>Minor Injury (First Aid)</td>
<td>Minor Injury (Hospital Treatment)</td>
<td>Major Injuries</td>
<td>Death</td>
</tr>
<tr>
<td>2</td>
<td>Likely</td>
<td>Major Injury (Hospital Treatment)</td>
<td>Major Injuries</td>
<td>Death</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Very Likely</td>
<td>Major Injuries</td>
<td>Death</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Certain</td>
<td>Death</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Death</td>
<td>Death</td>
<td>Death</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**Site Name**

MS/

28/07/14

Shoreditch

Bouygues.
## Activity  Safe Use Of Pressure Washers  RAC No 042

<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Associated Persons affected</th>
<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Splashes to the skin and eyes etc. with concrete.</td>
<td>Concrete burns. Eye Injuries.</td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>The power unit producing extremes of noise from pressure washer.</td>
<td>Noise induced hearing loss.</td>
<td>3</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>Equipment projecting / Faulty equipment.</td>
<td>Major Injuries.</td>
<td>3</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>Diesel leak</td>
<td>Ground contamination</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

### Risk and Working Environment Assessment

#### Risk Assessment Key

<table>
<thead>
<tr>
<th>Severity Score</th>
<th>Likelihood Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low</td>
</tr>
<tr>
<td>2</td>
<td>Medium</td>
</tr>
<tr>
<td>3</td>
<td>High</td>
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#### Likelihood Key

<table>
<thead>
<tr>
<th>Score</th>
<th>Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unlikely</td>
</tr>
<tr>
<td>2</td>
<td>May Happen</td>
</tr>
<tr>
<td>3</td>
<td>Likely</td>
</tr>
<tr>
<td>4</td>
<td>Very Likely</td>
</tr>
<tr>
<td>5</td>
<td>Certain</td>
</tr>
</tbody>
</table>

#### Severity Key

<table>
<thead>
<tr>
<th>Score</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Minor Injury (First Aid)</td>
</tr>
<tr>
<td>2</td>
<td>Minor Injury (Hospital Treatment)</td>
</tr>
<tr>
<td>3</td>
<td>Three Day Injuries (Time Lost)</td>
</tr>
<tr>
<td>4</td>
<td>Major Injuries</td>
</tr>
<tr>
<td>5</td>
<td>Death</td>
</tr>
</tbody>
</table>

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**Site Name**

MS/ 28/07/14

Shoreditch Bouygues.
<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Associated Hazard</th>
<th>Persons affected</th>
<th>Consequence</th>
<th>Risk Assessment</th>
<th>Control Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Equipment failure or malfunction</td>
<td>Operators and other workers and damage to plant/property</td>
<td>MEWP collapsing</td>
<td>2 5 10</td>
<td>Ensure the MEWP has a through examination by a competent person at least once every six months, inspections may be more frequent depending on the use and operating conditions (refer to manufacturers instructions) Inspection intervals should be stated in the examination scheme Pre-use checks and a weekly inspection with records kept on file</td>
</tr>
<tr>
<td>2</td>
<td>Poor/uneven ground conditions</td>
<td>Operators and other workers and damage to plant/property</td>
<td>MEWP overturning</td>
<td>2 5 10</td>
<td>Identify areas of uneven ground and avoid where possible Maintain ground conditions in state of good repair and the ground is strong enough to withstand the applied weight of the MEWP</td>
</tr>
<tr>
<td>3</td>
<td>Working under the influence of alcohol and or drugs (including prescribed medicines that may affect a persons ability to work safely)</td>
<td>Operators and other workers and damage to plant/property</td>
<td>Risks of personal injury injury to others, mistakes during installation work as drugs (including some prescribed medicines) and alcohol alter the way a person thinks leading to impaired judgment and concentration</td>
<td>2 5 10</td>
<td>Persons made aware of dangers of working under the influence of drugs and or alcohol and potential disciplinary actions for disregarding the rules Persons taking prescribed medicines which may affect their capabilities to work safely should inform their immediate supervisor</td>
</tr>
<tr>
<td>4</td>
<td>Outriggers (not used or faulty)</td>
<td>Operators and other workers and damage to plant/property</td>
<td>Person’s being thrown from the basket</td>
<td>2 5 10</td>
<td>Persons to make use of work restraint lanyard (also known as fall restraint). Lanyard to be attached to fixed anchorage point in basket Always make use of outriggers</td>
</tr>
<tr>
<td>5</td>
<td>Operator error, lack of attention, lapses in concentration</td>
<td>Operators and other workers and damage to plant/property</td>
<td>Trapping against fixed structures/buildings, protruding trees, steel works</td>
<td>2 5 10</td>
<td>Identify areas of potential risk avoid where possible Operators to be made aware of any areas of potential risk Use of banksman</td>
</tr>
<tr>
<td>6</td>
<td>Other on-site vehicular traffic</td>
<td>Operators and other workers and damage to plant/property</td>
<td>MEWP being struck by other vehicles/plant</td>
<td>2 5 10</td>
<td>Segregate other site traffic (delivery vehicles, dumpers, etc) from the work area</td>
</tr>
</tbody>
</table>
### Environmental Site Specific Risk Assessment Checklist

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Comments</th>
<th>Control Measures</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CONTROL OF WATERS</td>
<td>Highlight control measures to prevent water pollution entering drains, rivers, streams, lakes etc. eg. site run-off, concrete wagon washout, blowing the line, discharge consent conditions (if applicable).</td>
<td>Ensure that water taps are switched off when not in use, especially after end of shift.</td>
<td>Ensure that water taps are switched off when not in use, especially after end of shift.</td>
<td>Oily wastes e.g. used spill kits, oily rags, spent oil filters, etc should be dealt with in accordance with WP/ENV/DWD/01 and TBT ENV.</td>
</tr>
<tr>
<td>2. WASTE MANAGEMENT</td>
<td>Identify who is responsible for waste management on site eg. General skip. Identify who is responsible for muck away. Prepare the necessary paperwork and review the disposal route as appropriate.</td>
<td></td>
<td>Good Housekeeping.</td>
<td></td>
</tr>
<tr>
<td>3. OPERATIONAL ASSISTANCE</td>
<td>Assess the impact of the site and general aesthetics from a neighbours/visitors perspective. eg. public informed of works, site complaints procedure.</td>
<td>Bougues to notify, if required, adjacent parties when piling operations will commence.</td>
<td>Avoid deliveries etc at peak times, if possible between 8am to 9.30am.</td>
<td></td>
</tr>
<tr>
<td>4. NUISANCE</td>
<td>Review the generation of noise, dust, fumes, vibration etc. on local residents and businesses. eg. section 61 consent conditions, site hours, quiet periods.</td>
<td>CFA piling causes minimal vibration and noise compared with other piling systems.</td>
<td>As above avoid deliveries at peak times and turn off engines when not in use and keep within site hours.</td>
<td></td>
</tr>
<tr>
<td>5. TRANSPORT</td>
<td>Consider vehicle movements to/from site including parking, unloading, congestion, use of full loads, wheel wash facilities, responsibility for maintaining highway at site entrance, waste secured when leaving site.</td>
<td>Use designated route to site as defined by AZ Traffic Management Plan.</td>
<td>Avoid deliveries etc at peak times, if possible.</td>
<td></td>
</tr>
<tr>
<td>6. HABITAT SENSITIVITY</td>
<td>Identify areas of particular sensitivity due to protected flora/fauna.</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>7. ARCHAEOLOGICAL SENSITIVITY</td>
<td>Identify areas of particular sensitivity due to archaeological considerations.</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>8. GEOLOGICAL SENSITIVITY</td>
<td>Identify areas of geological importance (may be SSSI site, etc)</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>9. OTHERS</td>
<td>eg. Piling in contaminated ground, other client requirements raised in the contract documents. None.</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

**NOTE:** Sections to be completed with specific information e.g. if working hours are restricted the hours are to be specified (0700 – 1700). All sections to be completed. Use “not applicable” or “by client” as necessary. See Environmental Manual Section 4 “Guidance Notes” for more information.
Appendix C

COSHH
<table>
<thead>
<tr>
<th>PRODUCT / SUBSTANCE:</th>
<th>ROLLED STEEL BAR Reinforcement</th>
<th>Ref No: 018.01</th>
</tr>
</thead>
<tbody>
<tr>
<td>USE:</td>
<td></td>
<td>Date: 06/09/12</td>
</tr>
<tr>
<td>MANUFACTURER:</td>
<td>Various.</td>
<td></td>
</tr>
<tr>
<td>PHYSICAL / CHEMICAL:</td>
<td>Iron, carbon and various elements.</td>
<td></td>
</tr>
<tr>
<td>PROPERTIES:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>POSSIBLY</td>
<td>POSSIBLY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HAZARD DETAILS</th>
<th>Steel products are heavy and can have burrs and sharp edges.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEALTH RISKS</td>
<td>Steel products are heavy and can have burrs and sharp edges.</td>
</tr>
<tr>
<td>CONTROL METHODS</td>
<td>Wear industrial gloves, hard hats and safety foot wear. Adequately ventilate area when burning. Wear face mask when disk cutting or grinding.</td>
</tr>
<tr>
<td>EMERGENCY PROCEDURE</td>
<td>Seek help depending on the severity of the laceration/crushing.</td>
</tr>
<tr>
<td>DESCRIPTION OF USE</td>
<td>Used in the making of cages etc.</td>
</tr>
<tr>
<td>STORAGE</td>
<td>Properly stack to avoid contamination and trip hazards.</td>
</tr>
</tbody>
</table>

**ASSESSMENT:** Steel is heavy and unforgiving.
### Material/Process
- **CASTROL ANTIFREEZE**

### Supplier
- CASTROL (UK) LTD (BP)

### Address
- Witan Gate House
- 500-600 Witan Gate
- Central Milton Keynes
- MK3 2EL
- 01908 835000

### Health Risks
- **HARMFUL IF SWALLOWED**
- **MAY CAUSE EYE IRRITATION**
- **SKIN - IRRITATION AND DERMATITIS MAY RESULT FROM PROLONGED CONTACT**

### Spillage
- **VENTILATE AREA**
- **DO NOT ALLOW UNCONTROLLED SPILLAGES TO ENTER MAINS DRAINAGE/SEWERS/WATER COURSES**

### Control Measures
- **COVERED**
- **PROTECTIVE HEADS**
- **SHINNERS EYE PROTECTION**
- **ULTRAVIOLET VENTILATION**
- **NO BREATHING**
- **WASH AFTER CONTACT**

### First Aid
- **INHALATION - REMOVE TO FRESH AIR AND REST**
- **AFTER A SIGNIFICANT EXPOSURE CALL FOR MEDICAL ASSISTANCE IMMEDIATELY**
- **INGESTION - DO NOT INDUCE VOMITING**
- **INGESTION - GIVE CHEST COMPRESSIONS**
- **INGESTION - GET IMMEDIATE MEDICAL ATTENTION**
- **EYE - IRIGATE WITH WATER FOR AT LEAST 15 MINUTES**
- **SKIN - RINSE WITH SOAP/CLEANER AND RINSE WITH WATER**
- **IF IRRITATION PERSISTS THEN CONSULT A DOCTOR**

### Fire
- **ISOLATED SMALL SCALE FIRE:**
- **WATER:**
- **CARBON DIOXIDE:**
- **POWDER:**
- **FOAM**
- **DO NOT USE WATER JET**
- **LARGE FIRE:**
- **EVACUATE AREA:**
- **CALL FIRE BRIGADE OR FOLLOW SITE PROCEDURE**

### Personal Protection
- **KNEE GUARDS**

### Safety Data Sheet Reference
- 09/02/2010

### Printed Date
- 11/06/2012

---

**Site Name**

Shoreditch

Bouygues.
### Health Risks

**LIMITED EVIDENCE OF A CARCINOGENIC EFFECT**

**MAY CAUSE ILL HEALTH IF INGESTED IN QUANTITY**

**MAY CAUSE EYE IRRITATION**

**SKIN - IRRITATION AND DERMATITIS MAY RESULT FROM PROLONGED CONTACT**

Do not breathe in vapour

When using do not eat, drink or smoke

Avoid contact with skin and eyes

### Spillage

**VENTILATE AREA**

**DO NOT ALLOW UNCONTROLLED SPILLAGES TO ENTER MAINS DRAIN/WATER CUNES**

**WEAR POLYTHENE OR NITRILE GLOVES**

**WEAR EYE PROTECTION (GRADE 3)**

**WEAR RPE WITH ORGANIC FILTER (A)**

**WEAR PROTECTIVE CLOTHING IF WHOLE CONTAINER IS SPILT**

**ABSORB IN SAND OR INSERT ABSORBENT MATERIAL**

**COLLECT INTO A CONTAINER, CLOSE LID**

**DISPOSE OF USING SUITABLE PROCEDURE OR SEE H & S GUIDANCE**

### First Aid

**INHALATION - REMOVE TO FRESH AIR AND REST**

**AFTER A SIGNIFICANT EXPOSURE CALL FOR MEDICAL ASSISTANCE IMMEDIATELY**

**INGESTION - DO NOT INDUCE VOMITING**

**INGESTION - GIVE PLENTY OF WATER IN SIPS**

**IF FEELING UNWELL CONSULT YOUR DOCTOR IMMEDIATELY**

**EYE - BRUSH WITH WATER FOR AT LEAST 15 MINUTES**

**SKIN - WASH WITH SOAP/CLEANSER AND RINSE WITH WATER**

**IF IRRITATION PERSISTS THEN CONSULT A DOCTOR**

### Fire

**ISOLATED SMALL SCALE FIRE**

**WATER FOAM - CARBON DIOXIDE - POWDER - FOAM**

**DO NOT USE WATER/JET**

**LARGE FIRE - EVACUATE AREA, CALL FIRE BRIGADE OR FOLLOW SITE PROCEDURE**

**WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING**

**TOXIC FUMES ARE PRODUCED WHEN SUBSTANCE IS INVOLVED IN A FIRE**

### Safety Data Sheet

**Reference Derived Safety Data**

This assessment was compiled by Sypol Limited from supplier's safety data sheets. Safety in the use of assessments is the responsibility of the subscriber.

**Printed 11/04/2012**

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**Site Name**

**28/07/14**

**Shoreditch Bouygues**

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**Page 65 of 112**
Material/Process: GENERIC - GROUT
Supplier: * IMC
Address: Keyword Grout (Cement)
Date: 17/09/2008
Contents: Cement, Respirable Silica

This assessment was compiled by Sypol Limited from supplier’s safety data sheets. Safety in the use of assessments is the responsibility of the subscriber.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Safety Data Sheet Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRITANT</td>
<td>*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Considerations</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAINTENANCE</td>
<td>If using engineering controls/non disposable RPE ensure maintenance (Reg 9) Contains silica, consider monitoring (Reg 10) Material contains cement, consider skin checks (Reg 11). Do not exceed shelf life of stored cement</td>
</tr>
<tr>
<td>MONITOR</td>
<td>EXPOSURE LEVEL</td>
</tr>
<tr>
<td>SKIN CHECK</td>
<td></td>
</tr>
</tbody>
</table>

Health Risks
- PROLONGED INHALATION MAY LEAD TO LONG TERM LUNG DAMAGE
- IRRITATING TO RESPIRATORY SYSTEM
- CAN CAUSE CHEMICAL BURNS TO THE EYE
- SKIN - CONTACT CAN CAUSE BURNS/SKIN ULCERATION
- SKIN - CAN CAUSE ALLERGIC DERMATITIS THROUGH CONTACT WITH CHROMATES
- SKIN - CONTACT CAN CAUSE IRRITANT CONTACT DERMATITIS
- MAY CAUSE ILL HEALTH IF INGESTED IN QUANTITY

Do not breathe
When using do not eat, drink or smoke
Avoid contact with skin and eyes

Spillage
- VENTILATE AREA
- DO NOT ALLOW TO ENTER MAINS DRAIN/SEWERS/WATER COURSES
- WEAR HEAVY DUTY RUBBER GLOVES
- WEAR EYE PROTECTION (GRADE 3)
- WEAR RPE WITH PARTICULATE FILTER (P) IF DUST GENERATED
- WEAR PROTECTIVE CLOTHING IF WHOLE CONTAINER IS SPLITT
- DO NOT DRY SWEEP/EITHER SUPPRESS DUST OR CLEAR USING HEPA VACUUM
- COLLECT INTO SUITABLE CONTAINER AVOIDING DUST GENERATION
- DISPOSE OF USING SUITABLE PROCEDURE OR SEEK LA. GUIDANCE

First Aid
- ENSURE ACCESS TO EYEWASH STATION FOR EMERGENCY USE
- INHALATION - REMOVE TO FRESH AIR AND REST
- AFTER A SIGNIFICANT EXPOSURE CALL FOR MEDICAL ASSISTANCE IMMEDIATELY
- INGESTION - DO NOT INDUCE VOMITING
- INGESTION - GIVE PLENTY OF WATER IN SIPS
- IF FEELING UNWELL CONSULT YOUR DOCTOR IMMEDIATELY
- EYE CONTACT - IRRIGATE USING EYEWASH & GET IMMEDIATE MEDICAL ATTENTION
- SKIN - REMOVE CLOTHING & WASH CONTAMINATED AREA WITH WATER
- IF IRRITATION PERSISTS THEN CONSULT A DOCTOR

Fire
- ISOLATED SMALL SCALE FIRE:
- USE EXTINGUISHERS SUITABLE FOR OTHER MATERIALS INVOLVED IN FIRE
- DO NOT USE WATER JET
- LARGE FIRE: EVACUATE AREA, CALL FIRE BRIGADE OR FOLLOW SITE PROCEDURE
- WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING
- TOXIC FUMES ARE PRODUCED WHEN SUBSTANCE IS INVOLVED IN A FIRE

<table>
<thead>
<tr>
<th>Work Area</th>
<th>Signed</th>
<th>Date</th>
</tr>
</thead>
</table>

MS/ 28/07/14
Shoreditch
Bouygues.
<table>
<thead>
<tr>
<th>Risk Assessment Activity 1</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method: Mixing</td>
<td>If significant dust generated: RPE as interim pending monitoring, or for one-off tasks. If LEV used, monitor to verify it controls to below the CEL.</td>
</tr>
<tr>
<td>Area: Outside</td>
<td></td>
</tr>
<tr>
<td>Exposure Time: 1/2 to 2 hours daily</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Personal Protective Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COVER SKIN</strong></td>
</tr>
<tr>
<td><strong>FOOTWEAR</strong></td>
</tr>
<tr>
<td><strong>PROTECT HANDS</strong></td>
</tr>
<tr>
<td><strong>EYE PROTECTION</strong></td>
</tr>
<tr>
<td><strong>VENTILATION</strong></td>
</tr>
<tr>
<td><strong>KEEP COVERED</strong></td>
</tr>
<tr>
<td><strong>WET CEMENT</strong></td>
</tr>
<tr>
<td><strong>HEAVY DUTY RUBBER</strong></td>
</tr>
<tr>
<td><strong>BS EN166 GRADE 3</strong></td>
</tr>
<tr>
<td><strong>AND</strong></td>
</tr>
<tr>
<td><strong>PORTABLE</strong></td>
</tr>
<tr>
<td><strong>DISPOSABLE</strong></td>
</tr>
<tr>
<td><strong>NO SMOKING</strong></td>
</tr>
<tr>
<td><strong>WASH BASIN</strong></td>
</tr>
<tr>
<td>** Changing**</td>
</tr>
<tr>
<td><strong>DAMP DOWN</strong></td>
</tr>
<tr>
<td><strong>DISPOSAL</strong></td>
</tr>
<tr>
<td><strong>EN149 FFP2</strong></td>
</tr>
<tr>
<td><strong>EATING OR DRINKING</strong></td>
</tr>
<tr>
<td><strong>WASH AFTER CONTACT</strong></td>
</tr>
<tr>
<td><strong>IF SOILED</strong></td>
</tr>
<tr>
<td><strong>THEN SWEEP OR VACUUM</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk Assessment Activity 2</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method: Hand applying</td>
<td>Applying mixed material</td>
</tr>
<tr>
<td>Area: Any area (not confined)</td>
<td></td>
</tr>
<tr>
<td>Exposure Time: 2 to 4 hours daily</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Personal Protective Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COVER SKIN</strong></td>
</tr>
<tr>
<td><strong>FOOTWEAR</strong></td>
</tr>
<tr>
<td><strong>PROTECT HANDS</strong></td>
</tr>
<tr>
<td><strong>EYE PROTECTION</strong></td>
</tr>
<tr>
<td><strong>VENTILATION</strong></td>
</tr>
<tr>
<td><strong>KEEP COVERED</strong></td>
</tr>
<tr>
<td><strong>WET CEMENT</strong></td>
</tr>
<tr>
<td><strong>HEAVY DUTY RUBBER</strong></td>
</tr>
<tr>
<td><strong>BS EN166 GRADE 3</strong></td>
</tr>
<tr>
<td><strong>OR</strong></td>
</tr>
<tr>
<td><strong>DILUTION VENTILATION</strong></td>
</tr>
<tr>
<td><strong>NO SMOKING</strong></td>
</tr>
<tr>
<td><strong>WASH BASIN</strong></td>
</tr>
<tr>
<td>** CHANGING**</td>
</tr>
<tr>
<td><strong>DISPOSAL</strong></td>
</tr>
<tr>
<td><strong>EATING OR DRINKING</strong></td>
</tr>
<tr>
<td><strong>WASH AFTER CONTACT</strong></td>
</tr>
<tr>
<td><strong>IF SOILED</strong></td>
</tr>
</tbody>
</table>
Material/Process: PRIME-A-PUMP
Supplier: CONCRETE PUMPING PRODUCTS LTD
Address: Manor Suite, Manor Manor, Llandudno Anglesey L59 0SB 01246 496 055

Keyword Additive: Date: 17/04/2012
Contents: Sodium carbonate 30-50%.

**Health Risks**
- **IRRITATING TO EYES**
- **MAY CAUSE ILL HEALTH IF INGESTED IN QUANTITY**
- **SKIN - IRRITATION AND DERMATITIS MAY RESULT FROM PROLONGED CONTACT**
- Do not breathe dust
- When using do not eat, drink or smoke
- Avoid contact with skin and eyes

**Spillage**
- **VENTILATE AREA**
- **DO NOT ALLOW UNCONTROLLED SPILLAGES TO ENTER MAINS DRAIN/SEWERS/WATER COURSES**
- **WEAR NITRILE GLOVES**
- **WEAR EYE PROTECTION (65 EN166)**
- **WEAR BREATHING APPARATUS IF SIGNIFICANT DUST GENERATED**
- **WEAR PROTECTIVE CLOTHING IF WHOLE CONTAINER IS SPILLED**
- **DO NOT DRY SWEEP/EITHER SUPPRESS DUST OR CLEAR USING HEPA VACUUM**
- **COLLECT INTO A CONTAINER, CLOSE LID**
- **DISPOSE OF USING SUITABLE PROCEDURE OR SEEK I.A. GUIDANCE**

**First Aid**
- **INHALATION - REMOVE TO FRESH AIR AND REST**
- **AFTER A SIGNIFICANT EXPOSURE CALL FOR MEDICAL ASSISTANCE IMMEDIATELY**
- **INGESTION - DO NOT INDUCE VOMITING**
- **INGESTION - GIVE PLENTY OF WATER IN SIPS**
- **IF FEELING UNWELL CONSULT YOUR DOCTOR IMMEDIATELY**
- **EYE - IRIGATE WITH WATER FOR AT LEAST 15 MINUTES**
- **SKIN - WASH WITH SOAP/CLEANER AND RINSE WITH WATER**
- **IF IRRITATION PERSISTS THEN CONSULT A DOCTOR**

**Fire**
- **ISOLATED SMALL SCALE FIRE**
- **USE EXTINGUISHERS SUITABLE FOR OTHER MATERIALS INVOLVED IN FIRE**
- **LARGE FIRE: EVACUATE AREA, CALL FIRE BRIGADE OR FOLLOW SITE PROCEDURE**
- **WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING**
- **TOXIC FUMES ARE PRODUCED WHEN SUBSTANCE IS INVOLVED IN A FIRE**

**Risk Assessment**
- **Method:** Mixing
- **Area:** Outside
- **Exposure Time:** Up to 1/2 hour per shift

**Activity Comments**
Mixing large quarts with water. If dust generated use RPE as interim pending monitoring, or for one-off tasks. If LEV used, monitor to verify it controls to below the CEL.

**Control Measures**
- **DIVER SUIT**
- **PROTECTIVE CLOTHING (65 EN166)**
- **KNIFE COVERED**
- **NITRILE**
- **VENTILATION**
- **LEV OR**
- **EN149 FFP2**

**Considerations**
- **Details**
  - If using engineering controls/iron disposable PPE ensure maintenance (reg 9)

**Safety Data Sheet Reference**
- **CHIP SDS 01/09**

This assessment was compiled by Sygma Limited from supplier's safety data sheets. Safety in the use of assessments is the responsibility of the subscriber.

Printed 11/06/2012
Material/Process: GENERIC - CONCRETE
Supplier: VARIOUS
Address:

Keyword: Concrete
Date: 08/06/2012
Contents:
Portland cement, Respirable Silica <10%,

Hazards

Exposure Limit:
Portland cement: 10mg/m³
Silica: 4mg/m³
Rasp/Drill/WA WEL: Respirable Silica 0.1mg/m³; Drift WEL

Risk Assessment
- Method: General Exposure
- Area: Outside
- Exposure Time: 4 to 8 hours per shift
- Activity Comments: General exposure to concrete dust does not cover cutting. Use RPE as interim pending monitoring or for one-off tasks. If LEV used, monitor to verify it controls to below the OEL

Control Measures

- KEEP SIGN COVERED
- AVOID SKIN CONTACT
- IF CONTACT LIKELY
- IF HEAVILY SOILED
- SUPPRESS DUST

First Aid
- ENSURE ACCESS TO EYEWASH STATION FOR EMERGENCY USE
- INHALATION - REMOVE TO FRESH AIR AND REST
- AFTER A SIGNIFICANT EXPOSURE CALL FOR MEDICAL ASSISTANCE IMMEDIATELY
- INGESTION - DO NOT INDUCE VOMITING
- INGESTION - GIVE PLENTY OF WATER IN SIPS
- IF FEELING UNWELL, CONSULT YOUR DOCTOR IMMEDIATELY
- EYE CONTACT - IRIGATE USING EYEWASH & GET IMMEDIATE MEDICAL ATTENTION
- SIGN - WASH WITH SOAP/CLEANSER AND RINSE WITH WATER
- IF IRRITATION PERSISTS THEN CONSULT A DOCTOR

Fire
- ISOLATED SMALL SCALE FIRE:
  - WATER FOAM - CARBON DIOXIDE - POWDER - FOAM
- LARGE FIRE: EVACUATE AREA, CALL FIRE BRIGADE OR FOLLOW SITE PROCEDURE
- WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING
- TOXIC FLAMES ARE PRODUCED WHEN SUBSTANCE IS INVOLVED IN A FIRE

Safety Data Sheet Reference
- Various

This assessment was compiled by Sywpl Limited from supplier's safety data sheets. Safety in the use of assessments is the responsibility of the subscriber.

Printed: 11/06/2012
Material/Process: SURVEY MARKER (ALL COLOURS)
Supplier: BLUE DIAMOND I.S. LTD
Address: Clayfield Industrial Estate

IMC: 09/01/2012
Keyword: Coating (Aerosol)

Risk Assessment: MEDIUM HAZARD
Method: Spraying (Aerosol)
Area: Outside
Exposure Time: 1/2 to 2 hours per shift
Exp Limit:
Acetone 1210mg/m3 8hr TWA 3610mg/m3
Isopropyl Alcohol 150mg/m3 8hr TWA 6660mg/m3

Hazards
- Acetone 5-10%, n-butyl acetate 5-10%, ethyl acetate 10-20%, 1-methoxypropan-2-ol 5-10%, Calcium carbonate 5-15%, n-Butane 15-20%, acryl resin 15-20%, pigment 5-15%

Activity Comments
- Intermittent use of an aerosol.

Health Risks
- Extremely Flammable
- IRRITATING TO EYES
- REPEATED EXPOSURE MAY CAUSE SKIN DRYNESS OR CRACKING
- VAPOURS MAY CAUSE DROWSINESS AND DIZZINESS
- MAY CAUSE ILL HEALTH IF INGESTED IN QUANTITY
- SKIN - IRRITATION AND DERMATITIS MAY RESULT FROM PROLONGED CONTACT

Control Measures
- COVER SKIN
- PROTECT HANDS
- KEEP SKIN COVERED
- BUTYL OR NITRILE
- BLEEDED EYE PROTECTION
- NATURAL VENTILATION
- NO SMOKING
- WASH BASIN
- WASH AFTER CONTACT
- EATING OR DRINKING
- CHANGING
- DISPOSAL
- IF HEAVILY SOILED

First Aid
- ISOLATED SMALL SCALE FIRE:
  AFTER A SIGNIFICANT EXPOSURE CALL FOR MEDICAL ASSISTANCE IMMEDIATELY
  INGESTION - DO NOT INDUCE VOMITING
  INGESTION - GIVE PLENTY OF WATER IN SIPTE
  IF FEELING UNEASY CONSULT YOUR DOCTOR IMMEDIATELY
  EYE - IRRIGATE WITH WATER FOR AT LEAST 15 MINUTES
  SKIN - WASH WITH SOAP/CLEANSER AND RINSE WITH WATER
  IF IRRITATION PERSISTS THEN CONSULT A DOCTOR

Fire
- ISOLATED SMALL SCALE FIRE:
  WATER FOAM - CARBON DIOXIDE - POWDER - FOAM
  DO NOT USE WATER JET
  LARGE FIRE: EVACUATE AREA, CALL FIRE BRIGADE OR FOLLOW SITE PROCEDURE
  WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING
  TOXIC FUMES ARE PRODUCED WHEN SUBSTANCE IS INVOLVED IN A FIRE
  KEEP AEROSOL CANS COOL, DO NOT BURN FOR DISPOSAL
  RISK OF EXPLOSION IF INVOLVED IN A FIRE

Considerations
- If using engineering controls/non disposable PPE ensure maintenance (reg 9)

This assessment was compiled by Sygol Limited from supplier's safety data sheets. Safety in the use of assessments is the responsibility of the subscriber.

Safety Data Sheet Reference: 18/12/2008
Printed on: 28/11/2012

MS/ 28/07/14
Shoreditch
Bouygues.
<table>
<thead>
<tr>
<th>Site Name</th>
<th>Shoreditch Bouygues.</th>
</tr>
</thead>
</table>

**Activity 1**

**Risk Assessment**
Method Filling
Area Any area (not confined)
Exposure Time Up to 1/2 hour daily

**Comments**
Not classified as hazardous under CHIP regulations
Refined mineral oil

**Activity 2**

**Risk Assessment**
Method Changing
Area Any area (not confined)
Exposure Time Up to 1/2 hour daily

**Comments**
Used engine oil may contain carcinogenic material
<table>
<thead>
<tr>
<th>Material/Process</th>
<th>IMC</th>
</tr>
</thead>
<tbody>
<tr>
<td>BARTRAN 22,32,46,68</td>
<td>Oil (Hydraulic)</td>
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<table>
<thead>
<tr>
<th>Supplier</th>
<th>Key Word Oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP OIL (UK) LTD</td>
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</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Address</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>BP House Breakspear Way</td>
<td>13/01/2009</td>
</tr>
<tr>
<td>Harrow Hampstead</td>
<td></td>
</tr>
<tr>
<td>Hertfordshire</td>
<td></td>
</tr>
<tr>
<td>HP2 4UL</td>
<td></td>
</tr>
<tr>
<td>01442 222323</td>
<td></td>
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</table>

This assessment was compiled by Sypol Limited from supplier's safety data sheets. Safety in the use of assessments is the responsibility of the subscriber.

### Hazard

<table>
<thead>
<tr>
<th>Exposure Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>5mg/m³ 15mSTEL, 10mg/m³ 8hrTWA oil mist</td>
</tr>
</tbody>
</table>

### Considerations

**Details**

If using engineering controls/non disposable PPE ensure maintenance (reg 9) Consider skin check (reg 11)

### Health Risks

**Used mineral oil may cause skin cancer**

**May cause ill health if ingested in quantity**

**May cause eye irritation**

**Skin - irritation and dermatitis may result from prolonged contact**

Do not breathe mist

When using do not eat, drink or smoke

Avoid contact with skin and eyes

### Spillage

**Ventilate area**

Do not allow uncontrolled spillages to enter mains drain/sewers/water courses

**Wear nitrile gloves**

**Wear eye protection (grade 3) if splash likely**

**Wear protective clothing if whole container is spilt**

Absorb in sand or inert absorbent material

Collect into a container, close lid

**Dispose of using suitable procedure or seek L.A. guidance**

### First Aid

**Inhalation - remove to fresh air and rest**

After a significant exposure call for medical assistance immediately

**Ingestion - do not induce vomiting**

**Ingestion - give plenty of water in sips**

If feeling unwell consult your doctor immediately

**Eye - irrigate with water for at least 15 minutes**

**Skin - wash with soap/cleanser and rinse with water**

If irritation persists then consult a doctor

### Fire

**Isolated small scale fire:**

**Powder - foam - carbon dioxide (CO2)**

Do not use water

**Large fire - evacuate area, call fire brigade or follow site procedure**

**Wear self-contained breathing apparatus and protective clothing**

Toxic fumes are produced when substance is involved in a fire

<table>
<thead>
<tr>
<th>Work Area</th>
<th>Signed</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS/</td>
<td>Shoreditch</td>
<td>Bouygues</td>
</tr>
<tr>
<td>28/07/14</td>
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</tbody>
</table>
**Bachy Soletanche Ltd**  BachyCSH  
**Material/Process** MOULD OIL  
**Supplier** VARIOUS  
**Address**  

<table>
<thead>
<tr>
<th>Main 01</th>
<th>Sub 72923</th>
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</thead>
</table>

**IMC**  
**Keyword** Oil (Mineral)  
**Date** 23/10/2008  
**Contents**  
Not classified as hazardous under CHIP regulations  
Mineral oil

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**Hazard**

CAUTION

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**Considerations**

MAINTENANCE

SKIN CHECK

---

**Exposure Limit**

5mg/m3 15mSTEL, 10mg/m3 8hr TWA oil mist

---

**Health Risks**

USED MINERAL OIL MAY CAUSE SKIN CANCER  
MAY CAUSE ILL HEALTH IF INGESTED IN QUANTITY  
MAY CAUSE EYE IRRITATION  
SKIN - IRRITATION AND DERMATITIS MAY RESULT FROM PROLONGED CONTACT  
Do not breathe mist  
When using do not eat, drink or smoke  
Avoid contact with skin and eyes

---

**Spillage**

VENTILATE AREA  
DO NOT ALLOW UNCONTROLLED SPILLAGES TO ENTER MAINS DRAIN/SEWERS/WATER COURSES  
WEAR NITRILE GLOVES  
WEAR EYE PROTECTION (GRADE 3) IF SPLASH LIKELY  
WEAR PROTECTIVE CLOTHING IF WHOLE CONTAINER IS SPILT  
ABSORB IN SAND OR INERT ABSORBENT MATERIAL  
COLLECT INTO A CONTAINER, CLOSE LID  
DISPOSE OF USING SUITABLE PROCEDURE OR SEEK L.A. GUIDANCE

---

**First Aid**

INHALATION - REMOVE TO FRESH AIR AND REST  
AFTER A SIGNIFICANT EXPOSURE CALL FOR MEDICAL ASSISTANCE IMMEDIATELY  
INGESTION - DO NOT INDUCE VOMITING  
INGESTION - GIVE PLENTY OF WATER IN SIPS  
IF FEELING UNWELL CONSULT YOUR DOCTOR IMMEDIATELY  
EYE - IRIGATE WITH WATER FOR AT LEAST 15 MINUTES  
SKIN - WASH WITH SOAP/CLEANSER AND RINSE WITH WATER  
IF IRRITATION PERSISTS THEN CONSULT A DOCTOR

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**Fire**

ISOLATED SMALL SCALE FIRE:  
POWDER - FOAM - CARBON DIOXIDE (CO2)  
DO NOT USE WATER  
LARGE FIRE: EVACUATE AREA, CALL FIRE BRIGADE OR FOLLOW SITE PROCEDURE  
WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING  
TOXIC FUMES ARE PRODUCED WHEN SUBSTANCE IS INVOLVED IN A FIRE

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**Work Area**  
**Signed**  
**Date**
### Bachy Soletanche Ltd BachyCSH

**Material/Process:** Mould Oil  
**Supplier:** Various  
**Address:**

<table>
<thead>
<tr>
<th>Main 01</th>
<th>Sub</th>
<th>72923</th>
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<tbody>
<tr>
<td></td>
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**Risk Assessment**  
**Activity 1**  
**Method:** Pouring  
**Area:** Any area (not confined)  
**Exposure Time:** Up to 1/2 hour daily

<table>
<thead>
<tr>
<th>Risk Assessment</th>
<th>Activity 1</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

- **COVER SKIN**  
- **PROTECT HANDS**  
- **EYE PROTECTION**
- **NATURAL VENTILATION**  
- **GENERAL VENTILATION**  
- **DILUTION VENTILATION**

- **KEEP SKIN COVERED**  
- **NITRILE**
- **IF SPLASH LIKELY**
- **OR**
- **OR**

- **NO SMOKING**  
- **WASH BASIN**
- **CHANGING**  
- **DISPOSAL**

- **EATING OR DRINKING**
- **WASH AFTER CONTACT**  
- **IF SOILED**

**Risk Assessment**  
**Activity 2**  
**Method:** Hand applying  
**Area:** Any area (not confined)  
**Exposure Time:** 4 to 8 hours daily

<table>
<thead>
<tr>
<th>Risk Assessment</th>
<th>Activity 2</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
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<td></td>
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</tbody>
</table>

- **COVER SKIN**  
- **PROTECT HANDS**  
- **EYE PROTECTION**
- **NATURAL VENTILATION**  
- **GENERAL VENTILATION**  
- **DILUTION VENTILATION**

- **KEEP SKIN COVERED**  
- **NITRILE**
- **IF SPLASH LIKELY**
- **OR**
- **OR**

- **NO SMOKING**  
- **WASH BASIN**
- **CHANGING**  
- **DISPOSAL**

- **EATING OR DRINKING**
- **WASH AFTER CONTACT**  
- **IF SOILED**

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**Site Name:** MS/ Shoreditch  
**28/07/14 Bouygues.**
Material: BF Energrease 121M
Supplier: BP Lubricants & SP Products
Address: WhiteGate House, 506-600WitanGate, Central Milton Keynes MG9 5FE 01422 232323

This assessment was compiled by Sypol Limited from supplier's safety data sheets. Safety in the use of assessments is the responsibility of the subscriber.

Hazard

CAUTION

Considerations

Maintenance

Exposure Limit

6mg/m3 15mg/m3 10mg/m3 8hr TWA oil mist

Details

If using engineering controls/non disposable RPE ensure maintenance (reg 9) Consider skin check (reg 11)

Health Risks

Used mineral oil may cause skin cancer
May cause ill health if ingested in quantity
May cause eye irritation
Skin irritation and dermatitis may result from prolonged contact
Do not breathe mist
When using do not eat, drink or smoke
Avoid contact with skin and eyes

Spillage

Ventilate area
Do not allow to enter mains drain/sewers/water courses
Wear rubber or neoprene gloves
Wear eye protection (Grade 3) if splash likely
Wear protective clothing if whole container is spilt
Absorb any sand or inert absorbent material
Collect into a container, close lid
Dispose of using suitable procedure or seek LA. guidance

First Aid

Inhalation - remove to fresh air and rest
After a significant exposure call for medical assistance immediately
Ingestion - do not induce vomiting
Ingestion - one plenty of water in sips
If feeling unwell consult your doctor immediately
Eye - irrigate with water for at least 15 minutes
Skin - wash with soap/paint remover and rinse with water
If irritation persists then consult a doctor

Fire

Isolated small scale fire:
Powder, foam, carbon dioxide (CO2)
Do not use water
Do not use water jet
Large fire: evacuate area, call fire brigade or follow site procedure
Wear self-contained breathing apparatus and protective clothing
Toxic fumes are produced when substance is involved in a fire

Work Area

Signed

Date

Site Name
Shoreditch
Bouygues.
<table>
<thead>
<tr>
<th>Material/Process</th>
<th>BP ENERGRELSE L21M</th>
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</thead>
<tbody>
<tr>
<td>Supplier</td>
<td>BP LUBRICANTS &amp; BP PRODUCTS</td>
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<tr>
<td>Address</td>
<td>Witan Gate House, S00-000 Witan Gate, Central Milton Keynes MK9 1ES 01442 223233</td>
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<tr>
<th>IMC</th>
<th>Keyword</th>
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<tr>
<td>Date</td>
<td>15/10/2008</td>
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<tr>
<td>Contents</td>
<td>Not classified as hazardous under CHIP regulations</td>
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<tr>
<td>Mineral Oil and additives</td>
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<table>
<thead>
<tr>
<th>Risk Assessment Activity 1</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method Hand applying</td>
<td></td>
</tr>
<tr>
<td>Area Inside Well Ventilated</td>
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<tr>
<td>Exposure Time</td>
<td>1/2 to 2 hours daily</td>
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<table>
<thead>
<tr>
<th>Cover Skin</th>
<th>Protect Hands</th>
<th>Eye Protection</th>
<th>General Ventilation</th>
<th>No Smoking</th>
<th>Wash After Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep Skin Covered</td>
<td>Rubber or Neoprene</td>
<td>If Splash Likely</td>
<td>Eating or Drinking</td>
<td>Wash After Contact</td>
<td></td>
</tr>
<tr>
<td>Changing</td>
<td>Disposal</td>
<td>If Soiled</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Site Name
Shoreditch
Bouygues.
### Material Process
- **Name:** AUTRAMX
- **Supplier:** SP LUBRICANTS & SP PRODUCTS
- **Address:** Witton Gate House, Witton Gate,
  Central Milton Keynes
  MK0 1ES
  01442 232323

### Assessment Details
- **Date:** 30/07/2008
- **Keyword Oil (Mineral):** MEDIUM HAZARD
- **Content:** Highly refined mineral oil (IP 346 DMSO extract < 3 percent)
- **Activity/Comments:** Pouring intermittently

### Health Risks
- **Description:**
  - USED MINERAL OIL MAY CAUSE SKIN CANCER
  - MAY CAUSE ILL HEALTH IF INGESTED IN QUANTITY
  - MAY CAUSE EYE IRRITATION
  - SKIN - IRRITATION AND DERMATITIS MAY RESULT FROM PROLONGED CONTACT
  - When using do not eat, drink or smoke
  - Avoid contact with skin and eyes

### Control Measures
- **Diaper Skin:**
- **Protect Hands:**
- **Keep Skin Covered:**
- **Nitrile:**
- **Eye Protection:**
- **No Smoking:**
- **Eating or Drinking:**
- **Wash Basin:**
- **Shower:**
- **Changing:**
- **In Case of Spill:**

### First Aid
- **Inhalation - Remove to Fresh Air and Rest:**
- **After a Significant Exposure Call for Medical Assistance Immediately:**
- **Ingestion - Give Plenty of Water in Sips:**
- **If Feeling Unwell Consult Your Doctor Immediately:**
- **Eye - Irrigate With Water For at Least 15 Minutes:**
- **Skin - Wash With Soap/Cleanser and Rinse With Water:**
  - If irritation persists then consult a doctor

### Fire
- **Isolated Small Scale Fire:**
  - Water fog - Carbon Dioxide - Powder - Foam
  - Do Not Use Water Jet
  - Large Fire - Evacuate Area Call Fire Brigade or Follow Site Procedure
  - Wear Self-Contained Breathing Apparatus and Protective Clothing
  - Toxic Fumes Are Produced When Substance Is Involved In a Fire

### Disposal
- **Details:**
  - If using engineering control or disposable RFP ensure maintenance (eg 8)
  - Consider skin check (eg 11)

---

This assessment was compiled by Symp Limited from supplier's safety data sheets. Safety in the use of assessments is the responsibility of the subscriber.

**Safety Data Sheet Reference:** SDS 17/06/03
**Material/Process:** VAREXELLS CL MULTIGRADE  
**Supplier:** BP CL (UK) LTD  
**Address:**  
Wilton Gate House  
500/600 Wilton Gate  
Milton Keynes  
MK9 1ES  
01908 833 000  

**Keyword:** Oil (Mineral)  
**Date:** 24/08/2013  
**Contents:** severely refined mineral oil  

**Health Risks:**  
MECHANICALLY DEGRADED MINERAL OIL MAY CAUSE SKIN CANCER  
MAY CAUSE ILL HEALTH IF INGESTED IN QUANTITY  
MAY CAUSE EYE IRRITATION  
SKIN - IRRITATION AND DERMATITIS MAY RESULT FROM PROLONGED CONTACT  
Do not breathe dust  
When using do not eat, drink or smoke  
Avoid contact with skin and eyes  

**Spillage Area:**  
VENTILATE AREA  
DO NOT ALLOW UNCONTROLLED SPILLAGES TO ENTER MAINS DRAIN/SEWERS/WATER COURSES  
WEAR NITRILE GLOVES  
WEAR EYE PROTECTION (GRADE 3) IF SPLASH LIKELY  
WEAR PROTECTIVE CLOTHING IF WHOLE CONTAINER IS SPLITT  
ABSORB IN SAND OR INERT ABSORBENT MATERIAL  
COLLECT INTO A CONTAINER, CLOSE Lid  
DISPOSE OF USING SUITABLE PROCEDURE OR SEEK L.A. GUIDANCE  

**First Aid:**  
INHALATION - REMOVE TO FRESH AIR AND REST  
AFTER A SIGNIFICANT EXPOSURE CALL FOR MEDICAL ASSISTANCE IMMEDIATELY  
INGESTION - DO NOT INDUCE VOMITING  
INGESTION - GIVE PLENTY OF WATER IN SIPS  
IF FEELING UNWELL CONSULT YOUR DOCTOR IMMEDIATELY  
EYES - BRIGATE WITH WATER FOR AT LEAST 15 MINUTES  
SKIN - WASH WITH SOAP/CLEANSER AND RINSE WITH WATER  
IF IRRITATION PERSISTS THEN CONSULT A DOCTOR  

**Fire:**  
ISOLATED SMALL SCALE FIRE:  
USE EXTINGUISHERS SUITABLE FOR OTHER MATERIALS INVOLVED IN FIRE  
LARGE FIRE: EVACUATE AREA, CALL FIRE BRIGADE OR FOLLOW SITE PROCEDURE  
WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING  
TOXIC FUMES ARE PRODUCED WHEN SUBSTANCE IS INVOLVED IN A FIRE  

**Risk Assessment:**  
**Method:** Pouring  
**Area:** Outside  
**Exposure Time:** 1/2 to 2 hours per shift  

**Activity Comments:**  

**Control Measures:**  

**Considerations:**  
Details: Consider skin check (reg 11)  

**Safety Data Sheet Reference:**  
CPD 5603 01/90  
This assessment was compiled by Sypro Limited from supplier’s safety data sheets. Safety in the use of assessments is the responsibility of the subscriber.  

**Printed:** 11/06/2012  

---  

**Site Name:**  
Shoreditch  
Bouygues.
# Safety Data Sheet

**Material/Process:** BARTRAN 22,32,46,88  
**Supplier:** BP Oil (UK) LTD  
**Address:**  
BP House Breakspear Way  
Harrow Harrow  
Hertfordshire  
HP2 4UL  
01442 223233

## This assessment was compiled by Sypol Limited from supplier's safety data sheets. Safety in the use of assessments is the responsibility of the subscriber.

## Hazard

**Exposure Limit**  
5mg/m³ 15minSTEL, 10mg/m³ 8hrTWA oil mist

## Considerations

**Details**  
If using engineering controls/non disposable PPE ensure maintenance (reg 9) Consider skin check (reg 11)

## Health Risks

- USED MINERAL OIL MAY CAUSE SKIN CANCER  
- MAY CAUSE ILL HEALTH IF INGESTED IN QUANTITY  
- MAY CAUSE EYE IRRITATION  
- SKIN - IRRITATION AND DERMATITIS MAY RESULT FROM PROLONGED CONTACT  
- Do not breathe mist  
- When using do not eat, drink or smoke  
- Avoid contact with skin and eyes

## Spillage

- VENTILATE AREA  
- DO NOT ALLOW UNCONTROLLED SPILLAGES TO ENTER MAINS DRAIN/SEWERS/WATER COURSES  
- WEAR NITRILE GLOVES  
- WEAR EYE PROTECTION (GRADE 3) IF SPLASH LIKELY  
- WEAR PROTECTIVE CLOTHING IF WHOLE CONTAINER IS SPILT  
- ABSORB IN SAND OR INERT ABSORBENT MATERIAL  
- COLLECT INTO A CONTAINER, CLOSE LID  
- DISPOSE OF USING SUITABLE PROCEDURE OR SEEK L.A. GUIDANCE

## First Aid

- INHALATION - REMOVE TO FRESH AIR AND REST  
- AFTER A SIGNIFICANT EXPOSURE CALL FOR MEDICAL ASSISTANCE IMMEDIATELY  
- INGESTION - DO NOT INDUCE VOMITING  
- INGESTION - GIVE PLENTY OF WATER IN SIPS  
- IF FEELING UNWELL CONSULT YOUR DOCTOR IMMEDIATELY  
- EYE - IRRIGATE WITH WATER FOR AT LEAST 15 MINUTES  
- SKIN - WASH WITH SOAP/CLEANSER AND RINSE WITH WATER  
- IF IRRITATION PERSISTS THEN CONSULT A DOCTOR

## Fire

- ISOLATED SMALL SCALE FIRE:  
  - POWDER - FOAM - CARBON DIOXIDE (CO2)  
- DO NOT USE WATER  
- LARGES FIRE - EVACUATE AREA, CALL FIRE BRIGADE OR FOLLOW SITE PROCEDURE  
- WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING  
- TOXIC FUMES ARE PRODUCED WHEN SUBSTANCE IS INVOLVED IN A FIRE

## Work Area

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Signed</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS/</td>
<td>Shoreditch</td>
<td>Bouygues.</td>
</tr>
</tbody>
</table>
## Activity 1
**Method:** Filling  
**Area:** Any area (not confined)  
**Exposure Time:** Up to 1/2 hour daily

### Comments
- **IMC:** Oil (Hydraulic)  
- **Keyword:** Oil  
- **Date:** 13/01/2009  
- **Contents:** Not classified as hazardous under CHIP regulations  
- **Regulations:** Refined mineral oil

### Instructions
- **COVER SKIN**
- **PROTECT HANDS**
- **BEJEANS EYE PROTECTION**
- **NATURAL VENTILATION**
- **GENERAL VENTILATION**
- **DILUTION VENTILATION**
- **KEEP SKIN COVERED**
- **NITRILE**
- **IF SPLASH LIKELY**
- **OR**
- **OR**
- **NO SMOKING**
- **WASH BASIN**
- **CHANGING**
- **DISPOSAL**
- **EATING OR DRINKING**
- **WASH AFTER CONTACT**
- **IF SOILED**

## Activity 2
**Method:** Changing  
**Area:** Any area (not confined)  
**Exposure Time:** Up to 1/2 hour daily

### Comments
- Used engine oil may contain carcinogenic material

### Instructions
- **KEEP SKIN COVERED**
- **NITRILE**
- **IF SPLASH LIKELY**
- **OR**
- **OR**
- **NO SMOKING**
- **WASH BASIN**
- **CHANGING**
- **DISPOSAL**
- **EATING OR DRINKING**
- **WASH AFTER CONTACT**
- **IF SOILED**
Appendix D

Noise Assessments
Noise Level Readings

<table>
<thead>
<tr>
<th></th>
<th>100dB(A)</th>
<th>95dB(A)</th>
<th>90dB(A)</th>
<th>85dB(A)</th>
<th>80dB(A)</th>
<th>75dB(A)</th>
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<td>6.4</td>
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<td></td>
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<tr>
<td>Front Right</td>
<td>9</td>
<td>8.4</td>
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<td>1.5</td>
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<td>7.9</td>
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</table>
Concrete Agitator/Mixer

Noise Level Readings

<table>
<thead>
<tr>
<th></th>
<th>100dB(A)</th>
<th>95dB(A)</th>
<th>90dB(A)</th>
<th>85dB(A)</th>
<th>80dB(A)</th>
<th>75dB(A)</th>
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<tr>
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<td>4.5</td>
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<td>11.8</td>
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<td>5.1</td>
<td>8.3</td>
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<td>3.8</td>
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<tr>
<td>Rear Right</td>
<td>0.6</td>
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<td>1</td>
<td>2.3</td>
<td>4.7</td>
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<td>1.5</td>
<td>2</td>
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<tr>
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<td>8.2</td>
<td>16.0</td>
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</table>
Appendix E

Technical Specification of Plant & Equipment
SOILMEC : CM700 \+842

<table>
<thead>
<tr>
<th>Base Carrier</th>
<th>Soilmec : CM700</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eurocode</td>
<td>K2072300001</td>
</tr>
<tr>
<td>Torque (kN)</td>
<td>172</td>
</tr>
<tr>
<td>Operating weight (t)</td>
<td>75</td>
</tr>
<tr>
<td>Auxiliary weight (kN)</td>
<td>75</td>
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</tbody>
</table>

CFA Drilling Data

<table>
<thead>
<tr>
<th></th>
<th>Standard</th>
<th>Extension</th>
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<tr>
<td>Kelly Extension (m)</td>
<td>22.5</td>
<td>28.5</td>
</tr>
<tr>
<td>Max Drilling Depth (m)</td>
<td>1050</td>
<td>1050</td>
</tr>
<tr>
<td>Auger Extraction Force (kN)</td>
<td>680</td>
<td>680</td>
</tr>
<tr>
<td>Auger Crown Force (kN)</td>
<td>120</td>
<td>120</td>
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<tr>
<td>Auger Length (m)</td>
<td>23</td>
<td>23</td>
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</table>

Soilmec CM700
K2072300001

Scales 1:150

Drawing No. 609/15
Sheet No. 1/2
Revision 6

Date Revised 30.07.14

Site Name
Shoreditch
Bouygues.
Rite Mixer
Concrete Capacity – 8 cu.m.
Weight 8500 kg approx. (unloaded)
Dimensions in mm
not to scale

Site Name
Shoreditch
Bouygues.

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PUMPING CONCRETE

PUTZMEISTER BSA 1005 PUMP DETAILS

VOLUME PER STROKE: 0.02417 cu. m.
CONCRETE CYLINDER DIAMETER: 180 mm
CONCRETE CYLINDER STROKE: 1000 mm
HOPPER CAPACITY: 0.3 cu. m.
MAX. CONCRETE PRESSURE: 65 bar
MAX. CONCRETE OUTPUT: 50 cu. m./hr
DIESEL ENGINE: 56 KW
Appendix F

Sketches / Plans
P.M.C. Limited Tophat Beam and System 120 test pile dimensions

 Thickness of the beam
 = 254.5mm

 Anchor and Bar Layout for Two-Anchor Load Test up to 1200kN capacity

 SYSTEM 120
 Four anchors may be used in line with the same constraints on the threadbar inner and outermost limits.
Appendix G

Operatives Training

Issued at site inductions.
All Bachy Soletanche Company Supervisory Staff have received formal training. All operatives are experienced in this type of work and have received training to perform their duties safely. Details of training courses undertaken can be forwarded if required.

All personnel involved in this project will hold appropriate CPCS / CSCS qualifications and these will be available for inspection.
Appendix H

Record Sheets
### CFA PILE - DAILY RECORD

**Contract Name:**  
**Sheet No:**  
**Date:**  

<table>
<thead>
<tr>
<th>Contract No</th>
<th>Sheet No:</th>
<th>of</th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Drawing No:</th>
<th>Rev:</th>
<th>Pile Diameter</th>
</tr>
</thead>
</table>

**Concrete / Mix Details**  
**Steel in accordance with:**

<table>
<thead>
<tr>
<th>Pile Ref No.</th>
<th>Bored Length (m)</th>
<th>Concreted Length (m)</th>
<th>Platform Level (OD)</th>
<th>Proj. of Cage (m)</th>
<th>Reinforcement Main (mm)</th>
<th>Links (mm)</th>
<th>Pitch (mm)</th>
<th>Cage Length (m)</th>
<th>Remarks</th>
<th>Test Cube</th>
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</thead>
<tbody>
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</tbody>
</table>

- **Page totals**: Indicate in the last column above, the TEST CUBES locations
- **Totals b/f**: Full details recorded on Form IN13 Nos
- **Totals c/f**: Total number of piles / set-ups

**Obstruction or Standing time**  
**Reason** *(refer to site letter where appropriate)*

<table>
<thead>
<tr>
<th>Pile</th>
<th>from</th>
<th>to</th>
</tr>
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**REMARKS:** *(Weather & other factors affecting progress)*

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<th>Signed as a correct record:</th>
<th>Date</th>
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<tr>
<td>M/C</td>
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**Form:** PC16  
**Distribution**  
- **Original**  
- **Client**  
- **Ops Mgr for File 12.3.2**  
- **Quantity Surveyor**  
- **Site File**

**Site Name**  
Shoreditch  
Bouygues.

**Date**  
28/07/14
## TEST CUBE RECORD / DISPATCH SHEET

<table>
<thead>
<tr>
<th>Contract Name</th>
<th>Contract No.</th>
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<table>
<thead>
<tr>
<th>Area of site</th>
<th>Sheet No</th>
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</table>

<table>
<thead>
<tr>
<th>Method of compaction</th>
<th>Nominal cube size</th>
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</thead>
<tbody>
<tr>
<td>BAR VIBRATION</td>
<td></td>
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</tbody>
</table>

1. Enter details of all cubes taken, on this form.
2. Ensure cubes are sent to the testing laboratory, with a copy of this form, in sufficient time for the first test.
3. Immediately after manufacture, the cubes must be stored in moist, vibration free conditions, within a temperature range of 15 - 25°C.
4. After removal from moulds, the cubes must be stored in water within a temperature range of 18 - 22°C.
5. A minimum of four cubes must be taken from each sample.

<table>
<thead>
<tr>
<th>Test age</th>
<th>Cube Ref No</th>
<th>Sample location</th>
<th>Sample time</th>
<th>Delivery Ticket no</th>
<th>Mix details</th>
<th>Spec strength</th>
<th>Slump or Flow</th>
<th>Cubes made by</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

Sampling of the concrete and cube preparation has been carried out in accordance with BS EN 12390-1:2000 & BS EN 12390-2:2000

Signed ........................................... .................................

Please receive the cubes detailed, and test accordingly to BS EN12390-3:2000 & BS EN 12390-7:2000

Name of testing laboratory .......................................................... Collected (date) ...............  
Name ..................................................................................... Signed .............................................
Appendix I

Other - Method Statement for Crane Lift
- Lift Plan & Risk Assessment
- Berthing Study
- Pile Testing
Method Statement for Crane Lift

Client

Please refer to the Lift Plan / Risk Assessment and Berthing Study for this crane lift which form part of this method statement.

Responsibilities

Simplex Westpile will undertake the responsibilities for the management of this lifting operation and movement of goods involving crane operation. The client is responsible for ensuring that the ground can withstand the loads that will be applied to it by the crane (Crane Lift Supervisor to ensure that signed Working Platform Certificate is in place before commencing lift).

Personnel

Simplex Westpile will provide the following personnel complete with relevant personal protection who’s duties are defined in LOLER 1998. The Appointed Person for the lifting operation is the Site Inspector who has inspected the site and planned this lifting operation. Please note the Appointed Person may not be on site during the lift as his duties may be delegated to the Crane/Lift Supervisor.

Appointed Person (Site Inspector)          Contract Manager
Crane/Lift Supervisor                     Site Foreman

Crane Drivers, Slingers, Signallers will be named at the commencement of the lifting operation (please note that the Appointed Person may decide that one person can carry out more than one duty).

Cranes

The following crane or adequate alternative will be provided complete with all current statutory documentation.

Type of crane/s        Liebherr LTM 1055/3.1 55 Tonne All Terrain Crane
The crane will be positioned in accordance with the Lift Plan / Risk Assessment form and Berthing Study which form part of this method statement.

Lifting Accessories

The lifting accessories or adequate alternatives as detailed in the Lift Plan / Risk Assessment form will be provided by the crane hire company complete with all statutory documentation.

Weather conditions

The Appointed Person will ensure that no operations are carried out in adverse weather conditions.

Sequence of operation

1. Arrive on site at designated time and report to client’s representative. All legislative documentation to be available if requested.
2. Ensure signed off Working Platform Certificate is in place.
3. Drive crane into working position, guided by signaller, check slewing area is clear and that working radius is correct commence to rig crane to the required outrigger width and boom length. Crane should now be ready for work.
4. Slinger to attach lifting tackle to hook block and equipment to be lifted. Signaller to guide all crane operations by known hand signals / verbal phrase or if required by radio communication.
5. Following instruction from signaller, crane will lift and position load according to requirements. Slinger will detach lifting tackle.
6. Repeat operation to complete all lifts. De-rig by reverse of rigging procedure and if everything is satisfactory the crane can leave site.
### Lift Plan & Risk Assessment Report

**Lift Plan Reference:** 01

<table>
<thead>
<tr>
<th>Contract:</th>
<th>Contract No:</th>
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</table>

<table>
<thead>
<tr>
<th>Site Address &amp; Telephone:</th>
<th>Risk Assessment / Method Statement Ref:</th>
</tr>
</thead>
<tbody>
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</table>

<table>
<thead>
<tr>
<th>Crane Details – Capacity, Type &amp; Name of Company:</th>
<th>Liebherr LTM 1055/3.1 All Terrain Crane supplied by Ainscough Crane Hire Limited</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Date of Lifting Operation/Period of Validity of Plan:</th>
<th>Piling platform to suit piling rig in accordance with Working Platform Certificate (172 KN/m²)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Name of Appointed Person:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Crane Supervisor:</td>
<td></td>
</tr>
<tr>
<td>Name of Crane Operator:</td>
<td></td>
</tr>
</tbody>
</table>

For basic lifts name of competent persons to whom duties of crane supervisor can be delegated:

- Site Foreman

## Load Details

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Capacity (kg)</th>
<th>Accessory’s (kg)</th>
<th>Total load (kg)</th>
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<tbody>
<tr>
<td>1</td>
<td>Concrete Drum</td>
<td>8000</td>
<td>500</td>
<td>8500</td>
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<tr>
<td>2</td>
<td>Concrete pump</td>
<td>3000</td>
<td>500</td>
<td>3500</td>
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<td>3</td>
<td>Tool Box</td>
<td>5000</td>
<td>500</td>
<td>5500</td>
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<td>4</td>
<td>Steel</td>
<td>2000</td>
<td>500</td>
<td>2500</td>
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<td>Augers</td>
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<td>4000</td>
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<td>6</td>
<td>Small Items</td>
<td>1000</td>
<td>500</td>
<td>1500</td>
</tr>
</tbody>
</table>

Method of Communication: Radio/hand signals/other [please specify]

- Hand Signal

Classification of lift (Basic, Standard, Complex)

- Basic

Capacity of Lifting points on load (kg) or Single leg choke

- Single leg Choke
  - On Lifts 4, 5, 6,

Position of Centre of Gravity [either fixed lifting points] or details of how C of G to be assessed.

- Fixed point
  - On Lifts 1, 2, 3

Radius at which load is to be placed

- 10m
### Crane Assessment

<table>
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<tr>
<th>Description</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Max Boom length to be used [if applicable]</td>
<td>20.5m</td>
</tr>
<tr>
<td>Rigger Spread</td>
<td>6.3</td>
</tr>
<tr>
<td>Outrigger Load</td>
<td>24 tonne</td>
</tr>
<tr>
<td>Maximum available lifting capacity for load to be lifted</td>
<td>15.1 tonne @10 m radius</td>
</tr>
<tr>
<td>Acceptable</td>
<td>Yes</td>
</tr>
<tr>
<td>Berthing study attached</td>
<td>Yes</td>
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</table>

### Details of Required Lifting Accessories [please specify SWL where applicable]

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<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ropes:</td>
<td>Certs to be provided on site by Ainscough</td>
</tr>
<tr>
<td>Web Slings:</td>
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</tr>
<tr>
<td>Chains:</td>
<td>Lift 1, 2no x 2 leg (7.5 ton) Capacity = ((7.5/1.4)\times2 = 10.71) ton</td>
</tr>
<tr>
<td></td>
<td>Lift 2,3,4,5,6, 1no x 2 leg (7.5 ton) Capacity = ((7.5/1.4) = 5.35) ton</td>
</tr>
<tr>
<td>Shackles:</td>
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</tr>
<tr>
<td>Other (Eyebolts, beams, hooks etc):</td>
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</tr>
</tbody>
</table>

### Details of risk assessment:

**Note:** This lift plan **MUST** be accompanied by a **SITE SPECIFIC** assessment of the risk presented by the proximity hazards identified below. Please refer to risk assessment RAC 032 as a prompt to assist in preparing the site specific assessment.

<table>
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<th>Description</th>
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<td>Adjacent structures</td>
<td>Yes</td>
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<tr>
<td>Service covers</td>
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</tr>
<tr>
<td>Other lifting equipment</td>
<td>No</td>
</tr>
<tr>
<td>Access/egress routes</td>
<td>Yes</td>
</tr>
<tr>
<td>Railway lines</td>
<td>No</td>
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<tr>
<td>Width restrictions</td>
<td>No</td>
</tr>
<tr>
<td>Adverse weather, assessed on the day</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Supplementary Information (e.g. specific sequencing of lifts etc):

Crane driver to be inducted in to lift plan

All crane certification to be inspected prior to commencement of lifting operations

Out riggers to be fully extended, use minimum 1.2m² pads

Crane duties not to exceed an 8.0 tonne lift at 10m radius with 20.5m of boom to ensure the mobile crane complies with the working platform certificate. Maximum bearing pressure in accordance with the working platform certificate is 172kn/m². Crane not to be used on fly jib duties. No lifting operations to be carried out without the use of 1.5m² pads under the outriggers on Astra Zeneca, Macclesfield site.

### Liebherr LTM 1055-3.1

#### Main Boom Duties

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<th>m</th>
<th>12.2m</th>
<th>13.6m</th>
<th>17m</th>
<th>20.6m</th>
<th>23.9m</th>
<th>27.6m</th>
<th>30.8m</th>
<th>34.2m</th>
<th>37.6m</th>
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* over rear

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Authorised by: Name:  
Appointed Person:  
Signature:  

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Site Name: Shoreditch Bouygues
None of the information in this Plan is of any use unless it is communicated to all those persons involved in the lifting task.

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<thead>
<tr>
<th>ACCEPTANCE OF DUTIES AND RESPONSIBILITIES</th>
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<td><strong>Appointed Person</strong></td>
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<td>CPCS Card number 01005548/1  Expiry date Aug 2016.</td>
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<tr>
<td>I confirm that the lift(s) have been planned and will be carried out in accordance with current legislation and British Standard 7121 and that I accept responsibility for the preparation of the Lift Plan, Berthing Study, Method Statement and Risk Assessment.</td>
</tr>
<tr>
<td>Name:</td>
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| **Crane Supervisor**                      |
| I confirm that I have been fully briefed on the contents of this Lift Plan, Berthing Study, Method Statement and Risk Assessment and that I accept the duties and responsibilities of ensuring that the lift(s) will be carried out in accordance with the documents above. |
| Name: | Signature: | Date: |

| **Crane Operator(s)**                     |
| I confirm that I have been fully briefed on the contents of this Lift Plan, Berthing Study, Method Statement and Risk Assessment and that I accept the duties and responsibilities of ensuring that the lift(s) will be carried out in accordance with the documents above. |
| Name: | Signature: | Date: |
| Name: | Signature: | Date: |
| Name: | Signature: | Date: |

| **Slinger/Signaller(s)**                   |
| I confirm that I have been fully briefed on the contents of this Lift Plan, Berthing Study, Method Statement and Risk Assessment and that I accept the duties and responsibilities of ensuring that the lift(s) will be carried out in accordance with the documents above. |
| Name: | Signature: | Date: |
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| Name: | Signature: | Date: |
‘Hardcore’ piling platform designed, provided and maintained by others in accordance with Working Platform Certificate.

Container positioned on platform

Mobile crane with outriggers fully extended on mats

10.0m

Container positioned on articulated lorry

10.0m
Bachy Soletanche Ltd

Static Pile Load Testing

Method Statement

1.0 Introduction

2.0 Equipment

2.1 Concept
2.2 Sensors
2.3 Monitoring
2.4 Data Logging
2.5 Processing
2.6 Control and Automation
2.7 Calibration and Quality Assurance

3.0 Setting Up

4.0 Equipment Checks

5.0 Testing

5.1 Loading Schedule

6.0 Data Processing and Reporting

6.1 Data Processing
6.2 Reporting

7.0 Options

8.0 Safety
1.0 **Introduction**

This statement is intended to describe the general methods and equipment employed in Static Load Testing of vertical compression piles using the electronic equipment systems developed by Precision Monitoring and Control Limited, (PMC). This statement shall also be relevant in part or whole in different modes of static load testing of piles, including lateral and tension testing.

This method statement should be read in conjunction with the testing schedule to be employed. In all cases of apparent conflict between these two documents, the testing schedule shall take precedence.

2.0 **Equipment**

2.1. **Concept**

The electronic system employed has been developed by PMC over a number of years, being specifically designed and constantly updated for static pile load testing. The system design fulfils the following demands:

- Accuracy of measurement;
- Stability of readings;
- Ability to store readings;
- Robustness;
- Reliability;
- Battery power source;
- Ease of use;
- Flexibility.

2.2 **Sensors**

2.2.1. **Load Measurement**

This is accomplished by use of electronic load cells designed and manufactured specifically for PMC. The cells are strain-gauged column type, with an integral tilting-cap top platten to minimise errors due to misalignment. Trials indicate misalignment tolerance of at least 1 degree without loss of performance. Typical accuracies obtained in calibrations carried out at the National Physical Laboratory are better than 0.2% F.S. The cells are environmentally protected to IP67 (hoseproof) standard.

A range of cells is available from 1000kN up to 12MN, with larger loads measured by using multiple cells.

2.2.2. **Displacement Transducers**

Hybrid-track potentiometric transducers are used to measure pile head displacement, vertical and lateral (where fitted). The benefits of the hybrid track technology combine the stability of wirewound and the stepless feature of the conductive plastic overlay. The units are spring-loaded with ball tipped stems and a range is available from 10mm to 150mm stroke. For general applications, 50mm stroke units are used. These transducers are robust, have infinite resolution and have a linearity better than 0.25% F.S.

2.2.3. **Temperature**

Ambient temperature is measured at the pile head by a thermistor device having an accuracy of better than 0.2 degree Celsius.

2.3 **Monitoring**

This task is performed by the data-logging unit. As well as its logging function, this unit displays current status of each instrument as well as derived data such as average displacements, movements and
penetration rates. The digital display updates every second, allowing the unit to be used to monitor the test as it proceeds and this function is typically used in a manually-controlled test. All data is displayed in engineering units. Options are available to display all or selected test parameters on VDU in either digital format or combined with real time graphics.

2.4 Data Logging

Recording of data is carried out by the data-logging unit. This is pre-programmed to scan all connected instruments once per second and to record them at intervals set by means of a rotary switch positioned on the control panel. These scan intervals are pre-set at 5 seconds, 1 minute, 5 minutes, 15 minutes, 30 minutes and 60 minutes and any of these intervals can be selected at any point throughout a test without interrupting any other function. There is also a push button which instructs the logger to record a single scan when pressed. The logger can store 29,908 data values and peripheral devices can be connected to extend this in extreme circumstances. Each set of data from sensors is immediately processed into engineering units, derived values are calculated and the set is stored along with real time. Thus, for instance, 15 minute scans are taken on the hour, at quarter past, at half past and at quarter to the next hour.

A solid state memory storage module is always connected to the data logger and the logger is instructed to store a duplicate set of readings in the module each time it stores data in its own memory. Data is thus protected. Further, at intervals during a test and immediately on its conclusion, data stored so far is copied onto the hard drive of a p.c., again without interruption to any other task the logger is performing. At the end of a test, therefore, there are typically three copies of all data, each independently stored by individual devices.

2.5 Processing

The logged data is processed by an IBM compatible p.c. using specialised software in conjunction with a standard spreadsheet.

2.6 Control and Automation

Options are available for partially or fully automated testing, or for external functions to be controlled as may be required in special situations. For especially long maintained load hold periods, a pump control can be incorporated to automatically hold the test load to within 1-2 KN. These parts of a test can be conducted unattended.

Should a fully automated test be required, equipment can be supplied and set up to carry out the complete test, incorporating such hold periods, and settlement criteria as the schedule may require. Periodical visits by a technician are advised. Readings are automatically recorded and fail-safe devices are incorporated to reduce the possibility of malfunction producing a dangerous situation.

Automatic penetration rate control is an option for constant rate of penetration testing.

2.7 Calibration and Quality Assurance

All sensors are calibrated as matched sets with the data logging equipment with which they are to be used in the field.

Load cells are calibrated in presses conforming to, or exceeding, the relevant parts of British Standard 1610 at either the National Physical Laboratory, John Gibson (Lifting Gear) Agencies Ltd, or Lloyds British Testing Company Ltd. Calibration involves an initial exercise of the cell to its rated capacity (each cell is tested to 150% of its rated capacity when new), followed by sufficient loadings to capacity.
to determine the calibration factor. With this factor entered, one or more calibration runs in at least 5 steps to capacity, followed by unloading, are carried out to check linearity. Typically, cells have an accuracy of better than 0.2% F.S.

All calibrations of load cells are directly traceable back to the National Physics Laboratory and are carried out at intervals less than 12 months.

Linear transducers are calibrated in-house using a micrometer with attachments and may easily be checked on site against a machined steel block or gauge.

Manufacturers calibration factors are accepted for temperature sensors. The data logger software contains linearisations for most types of thermocouple.

Certificates of calibration and/or certificates of conformity are available for all devices, each listing reference standard employed and tractability details.

3.0 Setting Up

Four squares of plane glass spaced equally around the pile circumference, are positioned using rapid-hardening epoxy glue to secure, and packed with small wood wedges to level. Glass must be based on the pile or the cast pile cap, not on any capping plate which may be used, regardless of whether this is grouted. If necessary, bars are secured to pile shaft for fixing plates to, if this is required to avoid capping plate.

A hydraulic cylinder is placed on the pile cap, ensuring that it is central to the pile shaft and based on a flat, level surface. If the pile cap is slightly rough, the cylinder may be bedded on a thin layer of grout, sand or cement dust.

The electronic load cell is positioned carefully on top of the jack ram, ensuring matching surfaces are clean. Any air gap is taken out with suitably sized steel plates. The reaction frame should have been erected so that a minimum thickness of packers is required. Checks are made that the load cell top is central to the reaction frame main beam.

Four magnetic stands are mounted on the reference beams, each adjacent to a glass square, and a spring loaded linear transducer affixed to each, so that the instrument is vertical with its tip bearing centrally on the glass square. The position of each is adjusted such that the instrument is within 2 to 5mm of being fully compressed.

The hydraulic hose is fitted to the cylinder (quick-connect fitting) and the other end connected to the hydraulic pump. The pump should be situated within the testing station, adjacent to the data logger.

Sight tapes required for optical levelling, are set in positions which may include reference beams, pile head, anchor piles (or kentledge base) and back sight. The precise level with parallel plate micrometer, should be set up in a position where all tapes can be sighted and where there will be no disturbance from pile loading or external activities.

Tarpaulin sheets must be placed such that they protect the reference beams from direct sunlight, rain etc., and secured firmly such that the sheets cannot foul reference beams, ensuring that levels can still be read.
4.0 Equipment Checks

Each sensor reading is checked individually, reading values in turn on the logger display. Displacement transducers should each read the initial 2-5mm offset position of the sensor probe. The load cell or cells should each have a small positive or negative offset, typically around 20kN. Ambient temperature can be viewed directly. All readings should be stable.

The load cell factor should be displayed on the data logger and checked against the calibration certificate for the cell/logger combination used. The correct factor for the engineering units desired should check against the factor displayed.

All channels should be zeroed using the interlocked control, and the function checked by scanning through the displayed values.

One manual scan should be taken and the stored data checked by accessing the logger memory.

Logger battery should be checked and must lie above 10.5 Volts at the start of a test of more than 6 hours duration.

The hydraulic pump reservoir should be checked for oil level and topped up if required. If a pneumatically powered pump is used, this can be stroked with its dump valve fully open to prevent the pile being loaded while checking the pump function.

A final visual check of the reaction frame and its fixings should be made.

5.0 Testing

The data logger should be switched on, the programme loaded, current time should be entered and function checks carried out. The storage module must be connected for data protection. Other peripherals as may be required for a particular job, such as printer, p.c., VDU, etc. should be attached and function checks carried out on all.

The loading schedule to be employed should be checked. Specified Working Load, Design Verification Load, Downdrag factors, etc. must be verified, loadings worked out and the testing schedule set out using actual loads to be applied.

A set of precise level readings should now be taken.

A final check of the pile head arrangement, reference beams, reaction beams, etc. should be made. All personnel should be cleared from close proximity to the test frame, and made aware that the test is under way. If other personnel are working in the area, the test area should be surrounded by high-visibility bunting.

All logger channels should be zeroed and the logger set to record at the desired intervals. A manually initiated scan of the zero base readings should be taken.

The first increment of the load should be applied, as displayed digitally by the data logger and a manual scan of readings logged. Average displacement and the four individual readings of displacement should be checked. Any bending or other uneven movements of the pile can usually be detached at this stage. The data logger will automatically record full sets of readings at intervals selected by the rotary switch, from the load cell, the four displacement transducers and the thermocouple. Derived readings also recorded include average displacement, movement since last reading, elapsed time since the last reading, real time and penetration rate in mm/hr.
Each increment of load must be held until the criteria demanded by the testing schedule are met. These may be combinations of the fixed periods of time (hold periods) and penetration rates. The scan rate of the data logger may be reset at any time throughout the test to satisfy the testing schedule employed. Scan intervals are varied between 5 seconds and 60 minutes by positioning the rotary selector switch. Manually initiated scans may be taken at any time by pushing one button.

When an increment of load is completed, a manual scan is taken and the next increment of load applied. Another manual scan is taken immediately on reaching a new load stage and the scan rate set as required. All readings should be checked frequently for anomalies.

Each increment of load is applied as demanded by the testing schedule, with sets of precise level readings taken as required. Visual checks of pile head and reaction system should be made as the test progresses, especially at higher loads. It is inadvisable to approach the test frame while the test is under way.

If, at any stage, the test should become unstable or otherwise dangerous, all load should be immediately released and action taken to rectify the situation before proceeding with the test.

6.0 Data Processing and Reporting

6.1 Data Processing

With the test schedule completed, data should be copied to the p.c. for processing, using the special utility software for interrogating the logger. All precise level reading should be manually entered into the p.c. spreadsheets program. Report processing may be undertaken on site, or data sent by modem for processing in PMC Ltd office.

The complete file of data is processed from its raw, comma-delineated ASCII format into a tabulated text file and imported into a spreadsheet program for manipulation into the format required for the test report.

6.2 Reporting

Any preliminary information required by the client can be left as written or printed hard-copy, either recorded during testing, printed out as the test proceeded or printed out at the end of the test.

Report generation generally takes 1-2 hours and can be submitted on site or faxed and couriered between offices as arranged prior to testing. Copies of raw data or finished reports can be supplied on diskette if required.

Report format can vary, but usually includes a cover sheet identifying the pile and site, client, contract number, etc. and will summarise test results, pile dimensions, strata, etc. Following the cover sheet will be tabulated data recorded during the test, including readings from all sensors, derived data, such as averages, movements and penetration rates and will include real times at which readings were taken.

Also included in the report would be graphs of “Load & Settlement Vs Time” and “Load Vs Settlement” plus any special graphs as required. A table of fully reduced precise level readings would also be included where appropriate.

By arrangement, reports could further analyse pile performance, with graphs produced of any parameter against any other and to any scale. Additional instruments incorporated in the test would be reported as per the contract agreement.
7.0 **Options**

Options which could be included in any testing package could include:- Additional instrumentation of pile (internal or external); instrumentation of adjacent structures; VDU display of real time graphics as the test proceeds; printouts of data as test proceeds (automatic or manually initiated); screen dumps of graphical or digital data from VDU; automated load hold facility for extended hold periods; constant rate of penetration (or uplift) testing with manual or automated rate control; partial or fully automatic test control; automated control of external processes; special reporting and test analysis; transfer of data to different media and formats; colour printing; printing on overhead projector film; report binding.

8.0 **Safety**

Pile load testing involves the use of high forces and should be considered as potentially an **extremely hazardous activity**. Testing should not be conducted by un-trained personnel in any circumstances.

Hard-hats, protective clothing and boots with steel toe-caps must be worn by all persons involved in erecting a test frame and setting up test equipment.

Hydraulic hoses and any mains leads (where used) must not be routed where vehicles can run over them, except where protected by ducting buried in the ground. Hydraulic equipment uses pressures up to 10,000 psi and should be treated with extreme care. Equipment is regularly checked and tested, but if any signs of damage are noticed on site the item should not be used until assessed by a competent person.

The reaction frame or kentledge stack should be erected to a high standard, having particular regard for centrality of beam axis over test pile. All components should be positioned using a spirit level and heights should be adjusted to give an air gap for jack and load cell which is not excessive.

Threaded tendon bars must never be subjected to heat such as welding or burning and should never be straightened when bent. Great care should be taken that adequate threads are engaged when using tendon couplers. Nuts should always be used with substantial washers and must sit squarely, having been pulled down hard using a spanner. Refer to technical memo issued to technicians/engineers

Pile caps must be normal to the pile axis and concentric to the shaft. It should be flat and smooth and constructed of material of a suitable strength.

Testing locations should, where practicable, be 10 metres away from the test frame. When extreme loads are to be applied, the station should be positioned 15-20 metres away. Protection for testing personnel should be incorporated in the station.

Hydraulic loading equipment must only be used within its rated capacity. Only experienced operators should be allowed control of high pressure hydraulic equipment. Hydraulic rams must only be extended up to their rated stroke. This is generally 150mm.

Personnel must be kept well away from a loaded test pile, with access limited to authorised persons for a specific purpose only when it is judged safe to do so.
Prestressing Steel Threadbars

Based on a continuously threaded bar, the Dywidag System of Prestressing Steel Threadbars is exceptionally versatile and well proven worldwide.

The threadbars may be cut to finished length at the factory or on site and anchorages, nuts or couplers fitted immediately without frustration or delay.

Being coarse and robust, the thread is ideally suited for use in the construction industry. Dywidag Prestressing Steels comply with the requirements of BS 4486 1980

Technical Data for Prestressing Steel

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<th>Bar Ø mm</th>
<th>Steel Grade Yield/Ultimate N/mm²</th>
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<th>Yield Strength kN</th>
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* Available from stock  Modulus of Elasticity  \( E = 205,000 \text{ N/mm}^2 \pm 5\%

Anchor Plates

Solid Flat Anchor plate and Domed Nut
When anchoring prestressing steels the dywidag nut is usually domed shaped. This nut locates into a cone shaped recess in the anchor plate and can tolerate a nominal deviation from the normal. The flat anchor plate is designed for surface mounting on either concrete or steel. Variations on plate size are possible from the standard table to suit specific applications. Grouting holes may be incorporated to suit.

Bell Anchorage with Domed Nut
The bursting forces immediately behind this anchorage are contained by a steel cylinder. This causes a triaxial stress condition resulting in a uniform load transfer. Incorporation at design stage is essential as bell anchorages must be cast in situ.

Articulating Anchor Plate
This anchorage comprises a cast steel base plate and a malleable cast iron hemisphere. The hemisphere is designed to accept all preferred sizes of domed anchor nuts. The hemisphere permits articulation of up to 30° in one direction. Application include tie bars through structures or piling where tendon orientation cannot be predicted.
Pile Integrity Testing.

1. Test Method

Pile Integrity Testing is used for the purpose of investigating the structural soundness of piles which have been installed below ground level.

On site testing is carried out by use of the Sonic Echo system.

The basic principle requires the pile head to be excited by a hammer blow which results in pile head oscillation and a longitudinal wave propagation along the pile shaft.

The reflected signal is received by a piezo-electric transducer in contact with the pile head. The input is then fed via an A to D converter onto the microcomputer hard disk. Each pile head is tested at several points to ensure that a consistent signal is being obtained.

A degree of first line inspection is possible by the Engineer carrying out the test as the waveform produced can be viewed on the microcomputer monitor. This enables potential anomalies to be identified immediately. Subsequent re-tests can therefore be carried out until it is certain that the data obtained is correct. Full signal analysis is carried out by N.D.T. Services are stored on computer software and retained for further reference.
2. **Signal Analysis**

The integrity tests carried out on each pile produce a signal in the form of a sine wave decay. Each signal obtained is stored on a microcomputer and analysed.

The test detects variations in the acoustical impedance of the pile shafts. This can be defined as a product of the pile density, sonic wave velocity and horizontal pile sectional area. Variations in the impedance or reflections from significant discontinuities such as the toe seat of the pile, cracks, or changes in cross sectional area (necks and voids) produce distinctive changes in the received signal. Dependant on the type of defect the waveform amplitude and frequency are affected in such a way as to make the defect apparent. In the case of a fully voided pile the test would indicate a complete loss of signal.

Further analysis can identify at what point along the pile shaft the discontinuity occurs. Computer measurement of the amplitude / frequency change point can obtain the exact figure in milliseconds. Using a factor representing sonic velocity for concrete, a calculation can now identify at what point the discontinuity lies.

It can be seen that this method of testing allows the type of defect and its position along the pile shaft to be identified.

The pile toe seat reflection results in a similar discontinuity or a change in amplitude / frequency. Consequently a secondary feature of the test can produce an estimation of pile length. The relationship \( L = \frac{tc}{2} \) is used where:

\[
L = \text{Calculated pile length}
\]

\[
t = \text{Calculated toe seat reflection time (ms)}
\]

\[
c = \text{Sonic velocity (concrete)}
\]

To obtain exact pile lengths it is usual for a transducer to be incorporated within the pile during casting. The above method of estimation uses a factor of 4.2 Km/sec to represent sonic velocity within the concrete. As it is possible for this velocity factor to vary due to the strength of the concrete by +/- 0.5 km/sec it can be seen that all figures quoted for pile lengths are estimates. It is usual for figures quoted to lie +/- 10% of the true pile length.

3. **Test Results**

Hard copy signal traces are compiled within the report format and supplied in duplicate or as requested. Pile head deflection is plotted against the longitudinal signal propagation for each of the piles tested. An example of test results with a normal response signal and an anomalous signal are given (i.e. no variation / variation of pile impedance).

The test results are interpreted in such a way as to make the signal change point apparent and the approximate pile length calculated. Signal impedance variations are immediately recognisable.

4. **Reporting**

Anomalous piles identified will be reported immediately to the client. A full report of the site visit will be issued normally within 24 hours. An opinion of the type of anomaly and its approximate position along the pile shaft will be listed.

For site visits where all piles are found to be satisfactory a preliminary site report can be issued by the site Engineer if required. A full report will be issued within 3/4 working days of the site visit.

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Site Name
MS/ Shoreditch
28/07/14
Bouygues.