METHOD STATEMENT

MVV O&M,
South West Devon Waste Partnership
&
Kier Construction Limited

Document No: CMS/ C1005 /001

FOR

Installation and Testing of Test Piles

DOCUMENT HISTORY

DATE	ISSUE	COMMENTS	ORIGINATOR	CHECKED BY	APPROVED BY
18/07/11	1	First Issue	JD		
04/08/11	2	Second issue	JD		
11/08/11	3	Final following client comments	JD		

CONTENTS

1. Scope

This document describes the procedures and method of work for the installation of a series of test piles to provide information to support potential development of land at North Yard, Devonport for future uses. This information will be useful for evaluating the development potential of this land for any purpose but particularly for the proposed Energy from Waste Combined Heat and Power (EfW CHP) facility.

This document describes the health, safety, environmental and quality considerations associated with the works.

The immediate surroundings consist of the watercourse known as Weston Mill Creek and the surrounding inter-tidal and terrestrial habitats including Blackies Wood.

The purpose of the test piles is to achieve the following:

- To prove that the selected piling method is practical in the given ground conditions.
- To use the information gained from installation and testing of these piles in the design of any permanent piles.
- To mitigate design risk and design period.

The results can be viewed as additional information to that already gained from the site investigation (SI) carried out during 2010 at this site.

2. Introduction

The area of land covered by the proposed EfW CHP facility is shown on the plan overleaf. The existing ground is made up of crushed concrete, building rubble and other materials deposited over the past 20 years during the numerous construction projects in the dockyard. The foundations of the facility will require piles at different depths and to transmit varying magnitudes of load. As an example, the proposed bunker floor level is at 9m below plant datum and transmitting high loads into the underlying rock through rotary-bored reinforced concrete piles.

The SI that was carried out in June and July 2010 has given sufficient borehole information for the preliminary pile design, but a series of test piles must be installed to gain the required confidence to finalise the design and piling method.

The following page shows the locations of the boreholes and trial pits carried out during the SI in 2010, together with the proposed test pile locations.

DO NOT SCALE - IF IN DOUBT ASK

NOTES

- Cable percussion borehole
- Cable percussion borehole with rotary cored drilling following on
- Mechanically excavated trial pit
- CPTu probehole
- TRIAL PILE LOCATIONS

FOR INFORMATION

Rev	Date	Description	By	Chk	App
		Revision			
B	22/7/11	TRIAL PILE POSITIONS AMENDED	NW	KC	NW
A	27/1/11	INFORMATION	NW	KC	NW

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CLIENT
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PROJECT
PLYMOUTH EfW

TITLE
SI & TRIAL PILE LOCATION PLAN

SCALE	DRAWING SIZE	CAD FILE NAME
1/500	A1	

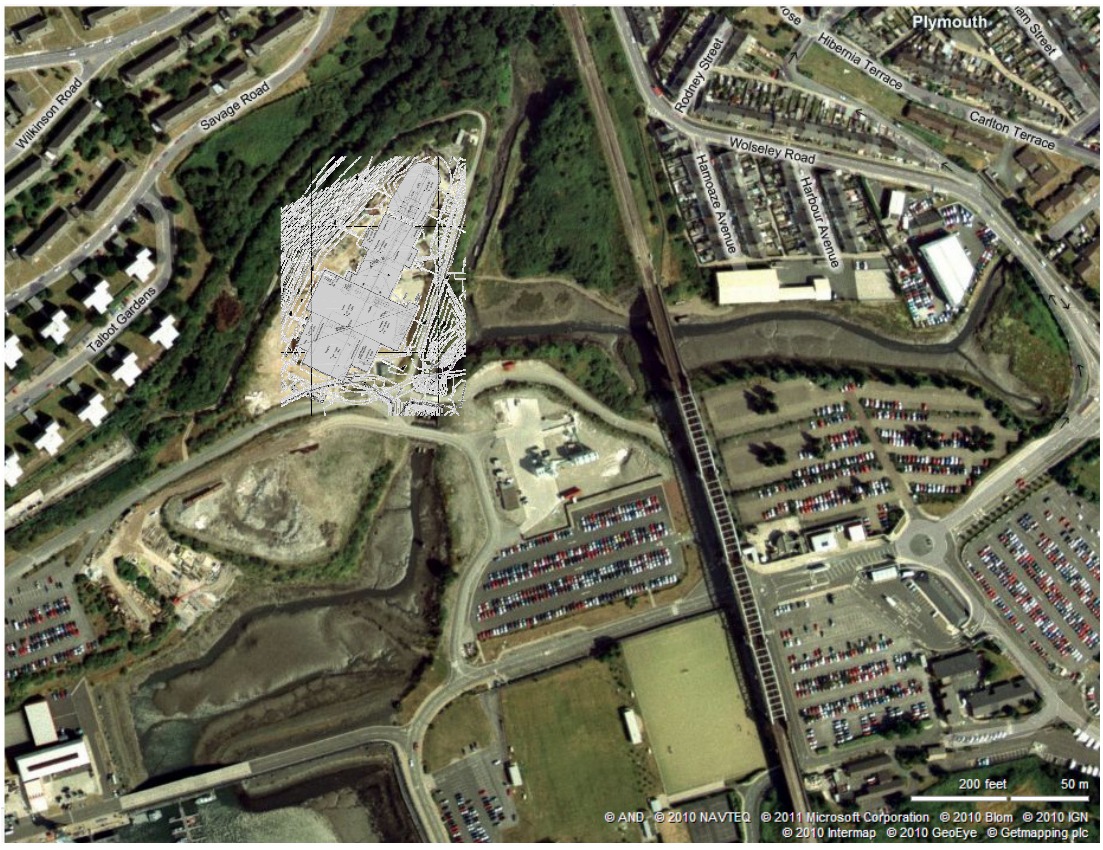
DRAWING No. QC8223/10 REV. B

Three test piles will be installed – one each adjacent to the proposed locations of the waste bunker, the boiler house and flue gas area. The specified test piles are of the same size, expected depth and specification as for the preliminary design.

The piles will take the form of 880mm diameter rotary-bored piles socketed in to the underlying slate rock to give the necessary loading requirements and design performance. A square arrangement of four reaction piles of similar design is required around each test pile with the test pile as the centre point. These reaction piles are required to exert the necessary test loads on the test pile in a controlled manner (in accordance with the Federation of Piling Specialists (FPS) Handbook on Pile Load Testing.

The piles will then be tested and the results used as validation for the design of the permanent piles.

The exact locations (as shown on the previous page) are selected to be outside the footprint of the proposed building because the test loads effectively test the piles to failure, so they cannot be reused as permanent piles. In addition, the locations of the permanent piles cannot be determined until the test results dictate the final pile arrangement, so the test piles must be outside of the footprint of the proposed buildings so they do not clash with permanent pile positions. The selected locations (5m outside the footprint of the building) are on the landward side (west) so as to minimise potential impact on the watercourse and to avoid the higher density of planned underground service ducts and pipes which will be on the creek-side (east).



As well as the carefully managed risks normally associated with this method of piling, another risk associated with the location is the possibility of unexploded ordnance (UXO) buried under the site as a result of World War II enemy bombing raids on Devonport. According to the Entec UK Ltd desktop study for unexploded ordnance, the most likely UXO to be found is the 'High Explosive (HE) Bomb'.

The photographs (right) show a *magnetometer (a combined magnetometer and non-magnetic CPT cone)* used for detection of buried UXO and the photo below it shows a World War II bomb having been made safe.

There are a number of circumstances which carry a risk of detonation of a bomb:

- Direct impact onto the main body of the bomb – fairly unlikely.
- Re-starting the mechanical clock timer in the bomb – unlikely.
- Induction of a static charge to initiate an electric fuse – unlikely.
- Friction impact causing initiation of electric fuse – likely.

However, none of the above risks are at a low enough level to be considered acceptable, so magnetic detection of bombs will be employed. If a bomb is detected, all further work in the vicinity will be stopped and the emergency services will be called by calling '2222' – refer to Devonport Royal Dockyard Limited (DRDL) induction for procedure.

The method is described in more detail in the following section.

The proposed rotary boring methods produce comparatively low levels of vibration, even when boring through concrete or rock. This has the benefit of reducing the risk of detonation of any UXO that may be present. It is also one of the quietest forms of piling.

The method is suitable for constructing piles in most strata: gravels, sands, silts, clays and soft rocks and in mixtures of strata and so is suitable for augering through the materials present in this location.

3. Construction Sequence

3.1. Introduction

Installation and testing of the trail piles is expected to take approximately 8 weeks with a further 4 weeks for evaluation of the results. A Gantt chart showing the proposed construction sequence can be found in Appendix 1.

3.2. Site Set-up

The site supervision team for the works will be experienced in their designated areas of responsibility. The team will ensure the work is competently supervised with respect to health and safety, environment and quality.

Detailed risk assessments will be attached to this document for construction issue and should be monitored and updated during these works.

A Site Clearance Certificate from the Ministry of Defence (MoD) is required before any work can commence.

All personnel will have attended the mandatory Kier Construction site induction and will have been briefed on the contents of the risk assessments and method statement (RAMS), and Control of Substances Hazardous to Health (COSHH) assessments relevant to their operations.

The construction site is currently surrounded by a secure 3m high fence to prevent unauthorised access.

Owing to the presence of the watercourse known as Weston Mill Creek which runs into Weston Mill Lake along the eastern boundary of the site, special precautions must be taken to prevent pollution of that watercourse in accordance with the Environment Agency's Pollution Prevention Guidance (PPG) 5: Works and maintenance in or near water.

These will include:

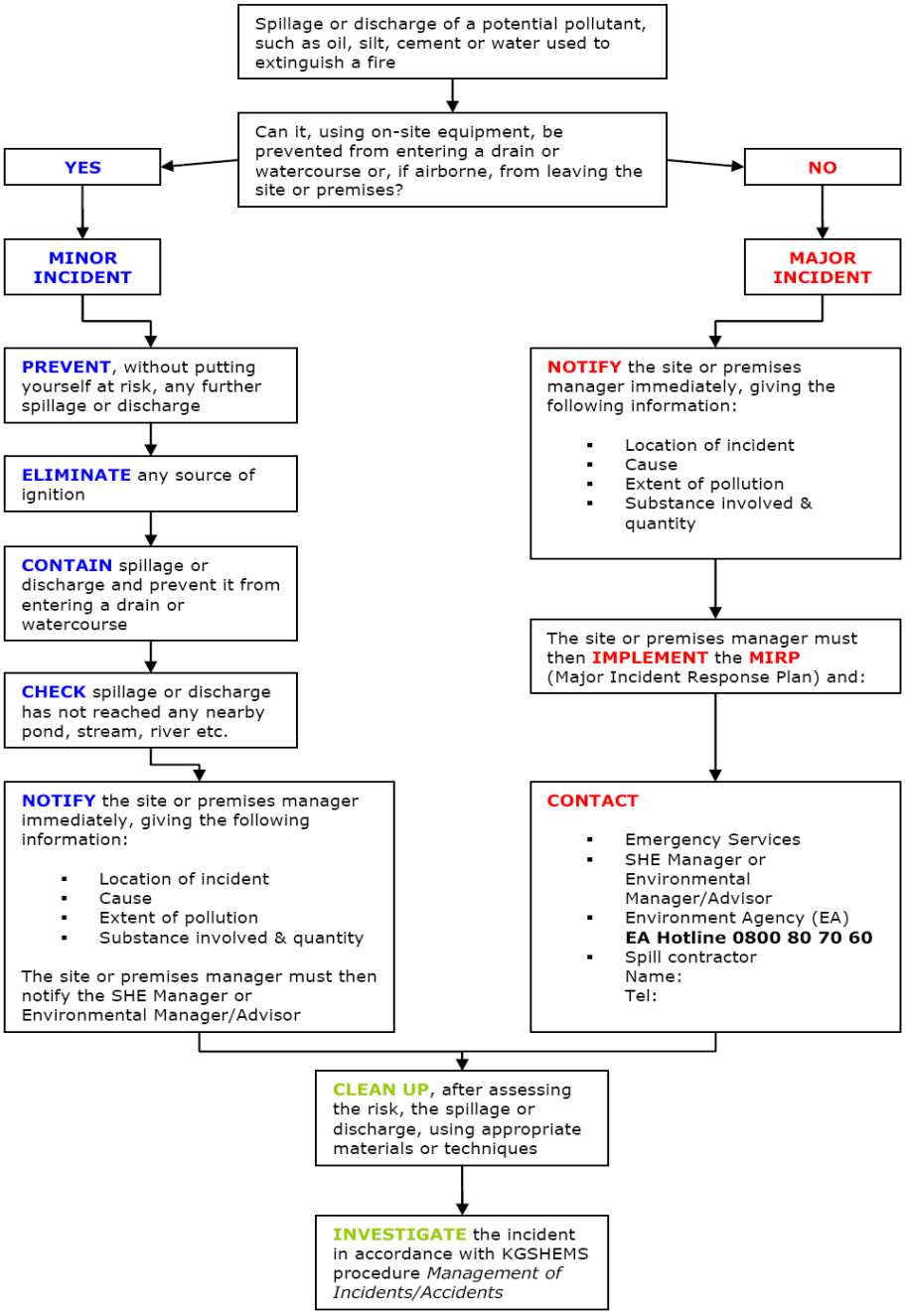
- A designated, bunded plant refuelling area situated well away from the stream.
- Use of biodegradable hydraulic fluid in the piling rig, test rig and any other machinery (e.g. excavator and dumper for piling platform preparation etc).
- All plant must be inspected daily for fluid leaks and must not be used until any leak is rectified.
- No plant, materials, labour or debris may be allowed to enter the water.
- Emergency spill kits must be made available and maintained at all times.
- A leak-proof skip for waste concrete and concrete wash-out is to be provided.

All site personnel will be briefed on the environmental emergency response procedure. A flow chart depicting the Kier Environmental Incident Response Procedure is show on the following page.

In addition Kier Construction Limited (KCL) operates various permit-to-work procedures and the following shall be implemented during these activities:

- Permit to Excavate; and
- Permit to Load.

Typical Environmental Incident Response Procedure for Site/Premises



3.3. Construction of piling mat

Before any penetration of the ground surface, a survey of underground services will be carried out using the site clearance certificate information, Cable Avoidance Tool (CAT) and Ground-Penetrating Radar (GPR). Any services shall be clearly marked using wooden pegs, or other marks. However, it is not envisaged that there will be any underground services in these locations.

The site is currently covered in mounds of demolition waste. A 360^{o} excavator and dumper will be used to create a piling mat at a suitable level and this will be compacted using a twin-drum vibrating roller. No imported material is required to construct the piling mat. These items of plant will be used to remove boring arisings from the pliing area and deposit elsewhere within the site boundary. These quantities will be small and will be levelled and compacted where appropriate.

Where the concrete placement may displace groundwater to the surface, this water will be contained to prevent direct run-off into the stream and allowed to settle. The quantity of water displaced is not likely to be large and should disperse quickly. A bund shall be constructed around each set of piles and should consist of a 300mm high bund surrounding the area.

3.4. Piling

- The test piles shall be set out in positions shown on Drawing QC8223/10 above for the reasons described in Section 2.0.

The reaction piles shall be set out in a square formation with the fifth pile in the centre being the test pile.

All-hydraulic mast-based rigs will be used for the construction of the cast-in-situ piles. The rigs are fitted with a rotary boring unit which operates a Kelly-bar (used to transmit the torque from the motor to the boring tool which is fitted to the foot of the Kelly bar). This equipment has been selected because of its versatility in a wide variety of soils including the made-ground at this site location, the alluvial silts and the rock beneath.
The rig will impart a vertical load on to the Kelly-bar to improve production in difficult strata and overcome buried obstacles such as reinforced concrete.

As the test piling methods will be identical to those currently planned for the permanent piles (subject to validation of test results), the following environmental monitoring will be carried out during installation of test piles.

- Noise monitoring – with respect to the most sensitive receptors i.e. residents on Talbot Gardens and Savage Road.

- Vibration – As explained in previous pages, vibration levels are generally low, but are dependent upon the type of soil or rock.

Studies of vibration case history data suggest that in general the vibration levels from large diameter rotary bored piling are low and even though they are above the threshold of human perception (Peak Particle Velocity (PPV) of 0.14 mm/s), they are not expected to cause a problem. The distance of more than 60m from the test piles to the nearest sensitive receptors (the flats on Talbot Gardens) means that the vibrations from rotary piling are predicted to be imperceptible by residents, and likewise are not predicted to have any adverse (i.e., potentially damaging) effect on buried services or other structures nearby.

- Ground gas – The recent monitoring of ground gas at borehole BH01 will be supplemented by monitoring the drilling operation for disturbance and production of ground gases. Again, as found with the sequence of monitoring already carried out, it is not expected that significant concentrations or flows of ground gas will be encountered.

The piles will be constructed from a platform at existing ground level. The piling rig will be set up in position over the pile centre positions as marked. Safety fencing for edge protection shall be erected around each pile position to prevent falls into the hole until the concrete is poured (e.g. when the auger is removed for the magnetometer).

When the rig is set up over the pile position, the auger is screwed into the ground a short distance to loosen the soil at the head of the pile. A length of temporary casing is lowered into the open bore and then rotated into the ground. Additional lengths of casing are added and the spoil inside removed until the casing reaches the bedrock to seal off any unstable ground. The rock socket is then bored out below the casing to the required depth, which may be under water. On completion of the bore, the base is cleaned mechanically. The pile reinforcement cage is lowered to the correct level and restrained. The concrete is placed by a central tremmie pipe to the base of the bore and progressively raised in stages always maintaining a suitable head of concrete until the concrete has displaced all of the water in the bore. Pile concrete is left at ground level. The temporary outer casing is then withdrawn in sections and the concrete topped up as necessary.

The photo (right) shows the type of rig proposed for the works. Further photographs and a specification can be found in Appendix 2.

The risk of the presence of UXO will be monitored at regular intervals with the use of a Magnetometer *(a combined magnetometer and non-magnetic CPT cone).* The cone of a magnetometer probe for UXO detection will be

lowered into the augered hole at regular intervals while the magnetometer takes real time readings of the amplitude of the Earth's magnetic field. Buried ferrous items result in localised distortions of the magnetic field. These local disturbances are manifested as anomalies in the data that indicate buried metal objects such as tanks, drums, pipes or bombs. The caesium vapour magnetometer has a detection radius of 2.0m for detecting large items such as a 500 kg bomb. This gives drill-depth intervals of 2m at which times the auger will be removed and the probe lowered to the bottom of the hole for readings. Readings will be recorded.

Concrete and reinforcement will be supplied to the test pile specification, not the working pile specification as the testing is required to validate the geotechnics, not the pile integrity.

Test cubes should be cast at this stage.

Depths
Kelly bars can be of single or telescopic construction to reach the required depth. The geotechnical investigations carried out so far give expected depths in the region of 20 to 25m.

Boring Tools
Boring tools are available to cope with different strata. The range includes general purpose augers, rock augers, boring buckets and coring barrels amongst others.

The piles are to be straight sided (i.e. not under-reamed) and 880mm diameter. In suitable strata it is possible to construct a dry bore; in water-bearing strata it is often necessary to progress the bore under flooded conditions, i.e. water, bentonite or polymer.

Concrete
The detailed pile design will determine the grade of concrete to be used. Concrete grades up to 40N/mm² are common, and higher grades can be used where necessary. Where the pile bore is dry, a hopper with a short tube is used to direct the concrete down the centre of the reinforcement. Under flooded conditions a full-length tremmie pipe is used. In both situations it may be practical to terminate the concrete at a low level so that the tested piles finish at a level below any road construction. It is not practical to remove piles after testing and they cannot be re-used as they are effectively tested to failure.

Environmental Impacts and Proposed Mitigation
Vibration levels depend very much upon the nature of the subsoils, the distance from structures etc and therefore there are no generic figures for individual rigs. However, vibration data collected from the many and various locations and situations for the proposed rig type gives confidence that vibration levels will be low.

Dust levels will similarly be very site specific depending upon the soils being bored and the weather conditions. If necessary, the soils being bored will be damped down to reduce dust potential. On-going monitoring

will be carried out by site personnel on a regular basis to ensure no migration of dust.

Noise output from the piling operations can be divided into three main activities:

- Handling crane under load
- Boring
- Shaking spoil off the auger

Noise contours associated with these operations and interpretation of the contours are included in Appendix 3 at the end of this document. Noise monitoring of the actual operation will also be carried out.

In accordance with Plymouth City Council's Code of Practice for the Control of Pollution and Noise from Demolition and Construction Sites, hours of work will be limited to:

- Monday – Friday: 08:00 to 18:00
- Saturday: 08:30 to 13:00

The noise limits within Appendix 2 of Plymouth City Council's Code of Practice will also be adhered to (see Appendix 3 for worst case predicted noise levels).

Local residents will be informed of the nature of the work prior to it commencing.

3.5. Testing

Before any testing can commence all arisings from augering and any other materials such as the earth bund and spilled concrete must be cleared away, the piling mat trimmed to a flat, level surface and re-compacted to suit testing requirements. Use of small sized graded granular fill (e.g. Type 1) may be necessary to achieve the required surface. The plant employed for this purpose will be a 360^{o} excavator and a wheeled dumper, both operated by suitably experienced and qualified personnel.

Sufficient curing time must be allowed before testing may commence and test cubes crushed to verify concrete strength.

The piling is intended for design development / validation and the magnitude of the test loads will be set at the Design Verification Load (DVL) which is the working load plus allowances for soil induced forces (such as skin friction) plus 1.5 times the specified working load (SWL). This equates to just over 2.5 times the working load.

Load testing shall be carried out in accordance with the Institution of Civil Engineers (ICE) Specification for Piling and Embedded Retaining Walls.

The test rig will be erected using a mobile crane and Mobile Elevated Work Platforms (MEWPs) for access. MEWP operators will be International Powered Access Federation (IPAF) qualified and all occupants of the MEWP basket must be attached to the basket via a full body harness and fixed-

length lanyard. The hydraulic cylinders shall be assembled with the pump operation position as far as reasonably practicable from the test rig.

Photographs in Appendix 2 show a typical pile testing rig.

Static load tests will be carried out for compression, tension and laterally, and the load applied using adjacent piles for application of the reaction loads. The arrangement of the reaction piles and the test load requirements mean that tension testing is carried out in the same procedure as compression load testing (i.e. on the reaction piles). The loads should be taken to failure so that maximum confidence in the test results can be gained. The deflections and loads will be monitored using load cells and these results will be analysed and interpreted for the purpose of validating/modifying the pile design.

3.6. Traffic

During the first week of the proposed works, the plant, equipment and portacabins for office and welfare facilities will be brought to the site. This is likely to result in up to 7 one-way HGV movements (on any one day). On a typical day during piling there are likely to be approximately 5 one-way movements of HGVs (concrete lorries).

There are likely to be approximately 12 construction workers on site during the works. Assuming a worst case, that no vehicle sharing takes place, this would amount to up to 12 one-way light vehicle movements per day.

4. Quality

All project operations will be controlled by Kier's quality procedures, industry standards and project specific quality control plans as agreed and approved by MVV. Additional controls as required by the piling contractor and approved by Kier/MVV will be required. The quality control plans will define all project documents required including ITP's, all approvals, project hold points, records required, and verifying authorities.

5. Safety

All personnel accessing the site will be subject to DRDL and KCL site rules and will wear Personal Protective Equipment (PPE) as required.

In addition to the above, all operatives will wear appropriate PPE relevant to the tasks being carried out. These include mandatory long sleeves, long trousers, safety boots, task-specific gloves, safety helmet, and safety glasses. Other task-specific PPE may include disposable overalls, face protection, hearing protection, Wellington boots (for concreting) or full body safety harness where there is a risk of falls from height.

The following Safety Risk Assessments are relevant to the works and will be produced by competent persons and attached to the detailed Method Statement in accordance with the Construction Phase Plan:

- Initial site setup
- Manual Handling
- Piling
- Working at Height
- Slips, trips and falls
- Excavations
- Power tools and abrasive wheels
- Working near services (live, redundant and unknown)
- Working near mobile plant and plant movement
- COSHH Assessment for all hazardous products.
- Weil's Disease
- Lift Plans

All personnel will be fully briefed on the safe method of work, via the use of a site specific induction and operation Specific Method And Risk Training (SMART) briefings, prior to the works being carried out.

All lifting operations (e.g. lifting of pipes using an excavator equipped with an SLI) will be controlled by the lift supervisor and Suitably Qualified and Experienced Personnel (SQEP) banks-men.

Static load testing involves the application of very high loads over an extended period of time. Therefore, when under load the rig is very hazardous and only experienced, specialised personnel should carry out and manage the process. Strict restrictions on access to the testing area will be applied.

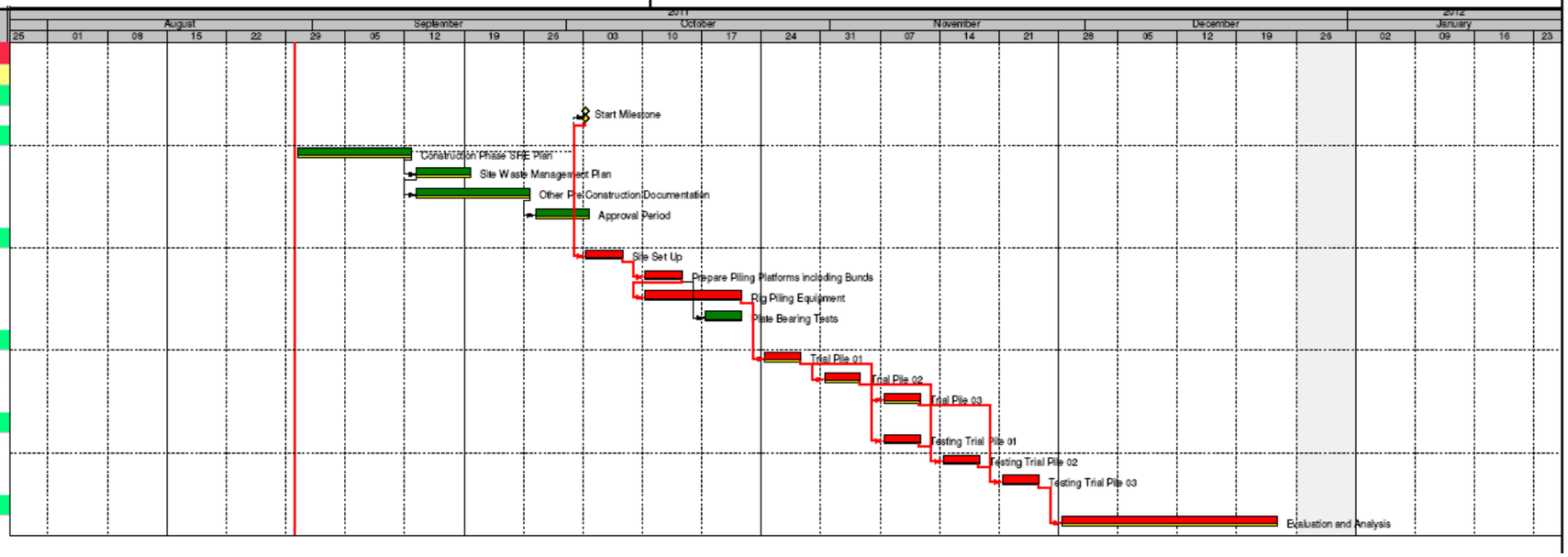
The site safety and environment will be continually monitored via weekly site inspections as well the continual monitoring as described in the above paragraphs. These inspections are carried out independently of the project management and are recorded. Inspection results will be made available upon request. The Health and Safety Plan will also be continually reviewed, the results recorded and changes implemented.

Appendix 1
Timetable for pile installation, testing and evaluation

Kier Construction Ltd

Remaining Level of Effort
Actual Level of Effort
Primary Baseline
Actual Work
Remaining Work
Critical Remaining Work
Baseline Milestone
Start Milestone
Finish Milestone

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish
MVV C1005 CP01- B	MVV Plymouth EFW - Trial Piles	84	84	30-Aug-11	23-Dec-11
MVV C1005 CP01- B.4	Trial Piles	84	84	30-Aug-11	23-Dec-11
MVV C1005 CP01- B.4.11	Milestones	0	0	03-Oct-11	03-Oct-11
P90518	Start Milestone	0	0	03-Oct-11*	
MVV C1005 CP01- B.4.1	Prepare Documents	25	25	30-Aug-11	03-Oct-11
P90528	Construction Phase SHE Plan	10	10	30-Aug-11	12-Sep-11
P90538	Site Waste Management Plan	5	5	13-Sep-11	19-Sep-11
P90568	Other Pre Construction Documentation	10	10	13-Sep-11	26-Sep-11
P90658	Approval Period	5	5	27-Sep-11	03-Oct-11
MVV C1005 CP01- B.4.2	Mobilisation	15	15	03-Oct-11	21-Oct-11
P90548	Site Set Up	5	5	03-Oct-11	07-Oct-11
P90558	Prepare Piling Platforms including Bunds	5	5	10-Oct-11	14-Oct-11
P90578	Rig Piling Equipment	10	10	10-Oct-11	21-Oct-11
P90587	Plate Bearing Tests	5	5	17-Oct-11	21-Oct-11
MVV C1005 CP01- B.4.3	Piling	15	15	24-Oct-11	11-Nov-11
P90588	Trial Pile 01	5	5	24-Oct-11	28-Oct-11
P90598	Trial Pile 02	5	5	31-Oct-11	04-Nov-11
P90608	Trial Pile 03	5	5	07-Nov-11	11-Nov-11
MVV C1005 CP01- B.4.4	Testing	15	15	07-Nov-11	25-Nov-11
P90618	Testing Trial Pile 01	5	5	07-Nov-11	11-Nov-11
P90628	Testing Trial Pile 02	5	5	14-Nov-11	18-Nov-11
P90638	Testing Trial Pile 03	5	5	21-Nov-11	25-Nov-11
MVV C1005 CP01- B.4.5	Evaluation and Analysis	20	20	28-Nov-11	23-Dec-11
P90648	Evaluation and Analysis	20	20	28-Nov-11	23-Dec-11

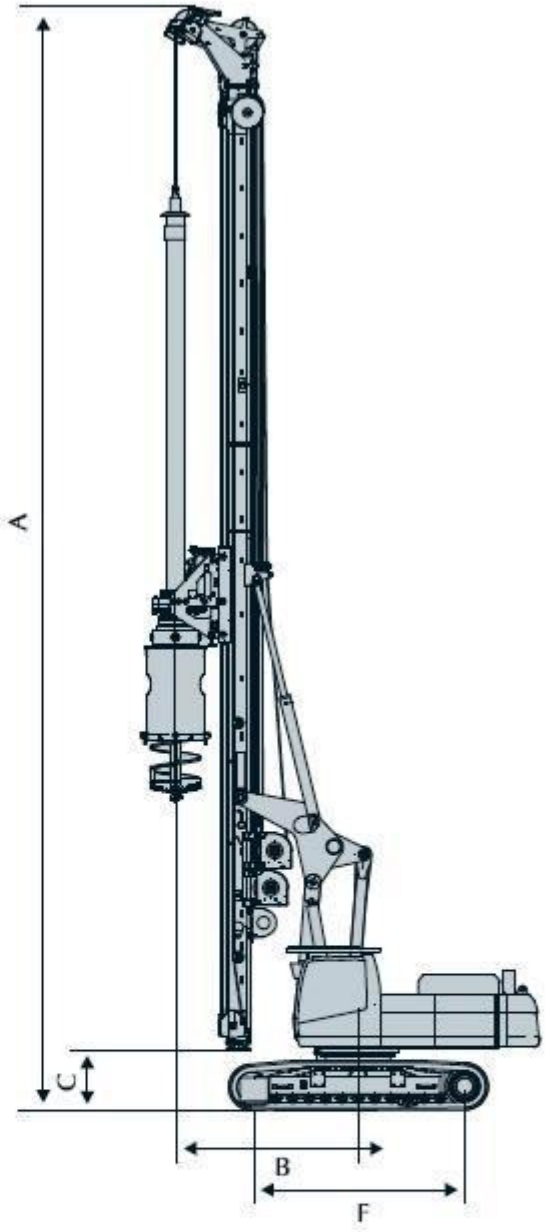


Appendix 2
Rig Specification and Photographs

Drilling Rig RH 20

Usable length			
	Stroke (optional)	mm	13900 (15700)
A	Total height above ground	mm	20990 (22790)
B	Reach	mm	3770-4300
	Casing length max.	mm	6000*
	Free diameter in front of the crowd pulleys	mm	1830
Mast			
C	Ground clearance - mast foot	mm	1240
	Inclination forward / backward	Deg.	3,8 / 14
	Inclination right / left	Deg.	9,5 / 9,5
Crowd winch			
	Force pull nom./eff., max.	kN	380 / 300
	Force crowd nom./eff., max.	kN	250 / 200
	Speed working / rapid, max.	m/min	7 / 25
Kelly winch			
	Line pull nom./eff., max.	kN	190 / 150
	Rope speed, max.	m/min	72
Auxiliary winch			
	Line pull nom./eff., max.	kN	100 / 75
	Rope speed max.	m/min	48
Transport weight			
	without kelly, rotary head	kg	61500
	without kelly, rotary head, counter weight	kg	51000
Transport dimensions			
D	Length	mm	20285 (22085)
E	Height	mm	3550
	Width	mm	3000

* without mast extension with Kelly bar K 368/3-24

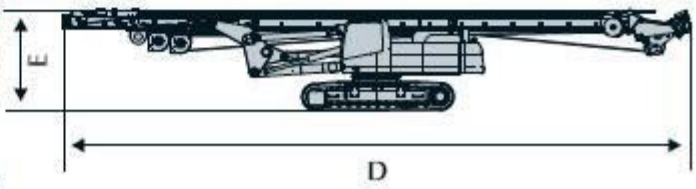


Carrier unit CAT 336 D

	Power (EU Stage IIIA, US EPA TIER 3)	kW	261
	Track gage	mm	2250-3700
F	Wheel base	mm	4400
	Track shoes	mm	750
	Swing radius - rear	mm	3735

Rotary head BT 200-2 / 368

Torque	kNm	0-200
Revolutions	min^{-1}	0-38/60
Total weight	kg	4550



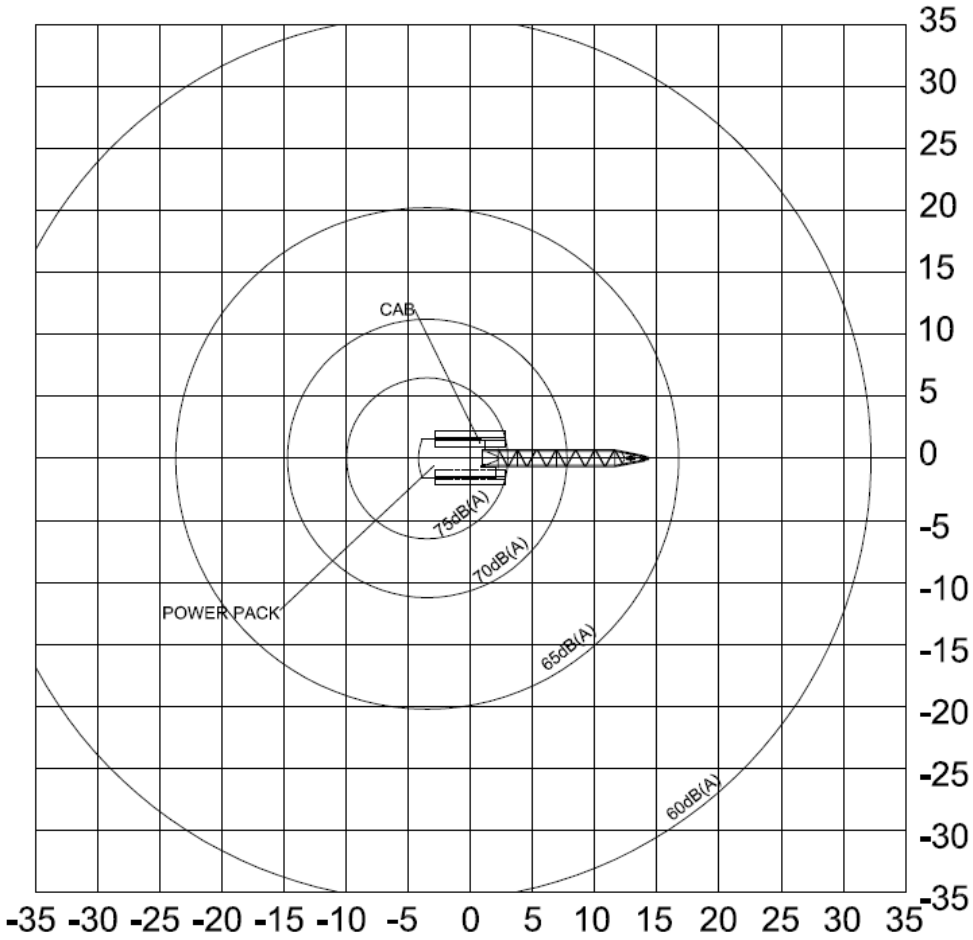
Kelly bars

K 368/3-18
K 368/3-21
K 368/3-24
K 368/3-30

Photographs of a typical piling rig

Photographs of a typical pile testing rig

Appendix 3
Noise Contours

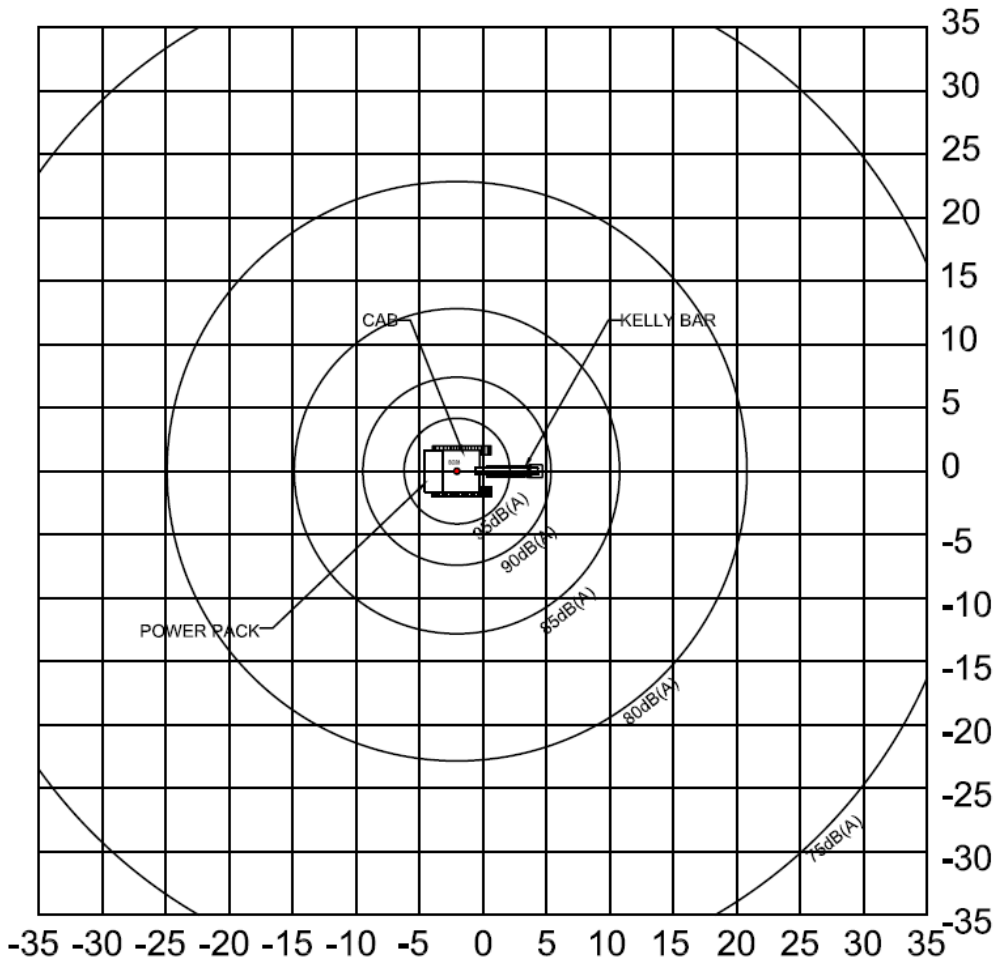


Drawing Title

ESTIMATED SOUND LEVEL CONTOURS FOR KOBELCO BM700C
80 TONNE HYDRAULIC HANDLING CRANE UNDER LOAD

RIG PLANT No. HC0101
LOCATION BANKSIDE 123, LONDON SE1, DATE 17/3/04

CEMENTATION FOUNDATIONS
SKANSKA

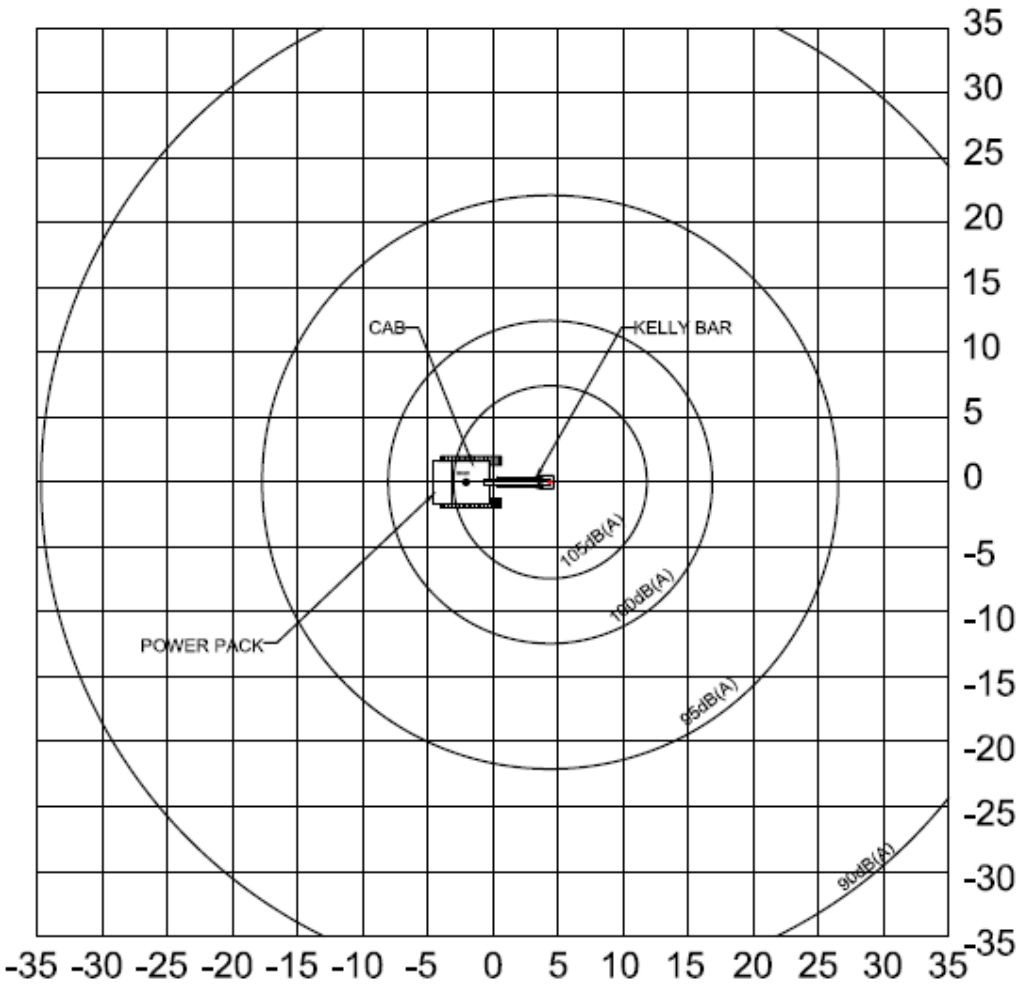


Drawing Title

ESTIMATED SOUND LEVEL CONTOURS FOR BAUER BG 28 HDD EXCAVATOR
BASE MOUNTED PILING RIG
BORING LARGE DIAMETER PILE WITH AUGER

RIG PLANT No. 58262
LOCATION WALBROOK HOUSE DATE 02/08/07

CEMENTATION FOUNDATIONS SKANSKA



Drawing Title

ESTIMATED SOUND LEVEL CONTOURS FOR BAUER BG 28 HDD EXCAVATOR
BASE MOUNTED PILING RIG
SHAKING SPOIL OFF THE AUGER (LAmax)

RIG PLANT No. 58262
LOCATION WALBROOK HOUSE DATE 02/08/07

CEMENTATION FOUNDATIONS
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Interpretation of noise contours

The following sound power levels for the equipment have been derived from the noise contours:

- Handling crane under load 99 dB(A)
- Piling rig boring large diameter pile 115 dB(A)

The noise contours for "shaking spoil off the auger" are LAmax levels, and consequently no sound power levels have been derived. However, based on the contours, the maximum instantaneous levels due to this activity would be 16 dB(A) above the steady levels for boring a large diameter pile.

Noise levels to all surrounding receptors have been calculated, assuming the piling rig was operating continuously at the 3 test locations in turn.

Noise levels to all receptors were at or below 70 dB(A). The limit at surrounding sensitive receptors, according to Plymouth City Council Code of Practice for the Control of Pollution and Noise from Demolition and Construction Sites is 70 to 75 dB LAeq over a 10 hour working day. Hence, the limit is not exceeded. In fact average noise levels over the day will be significantly less than those calculated as the piling rig will not operate continuously.

The LAmax levels due to shaking spoil off auger will be at or below 86 dB(A) at surrounding sensitive receptors. The Plymouth City Council limit at surrounding sensitive receptors for a 5 minute period is 86 dB LAeq. Hence, this limit will not be exceeded.