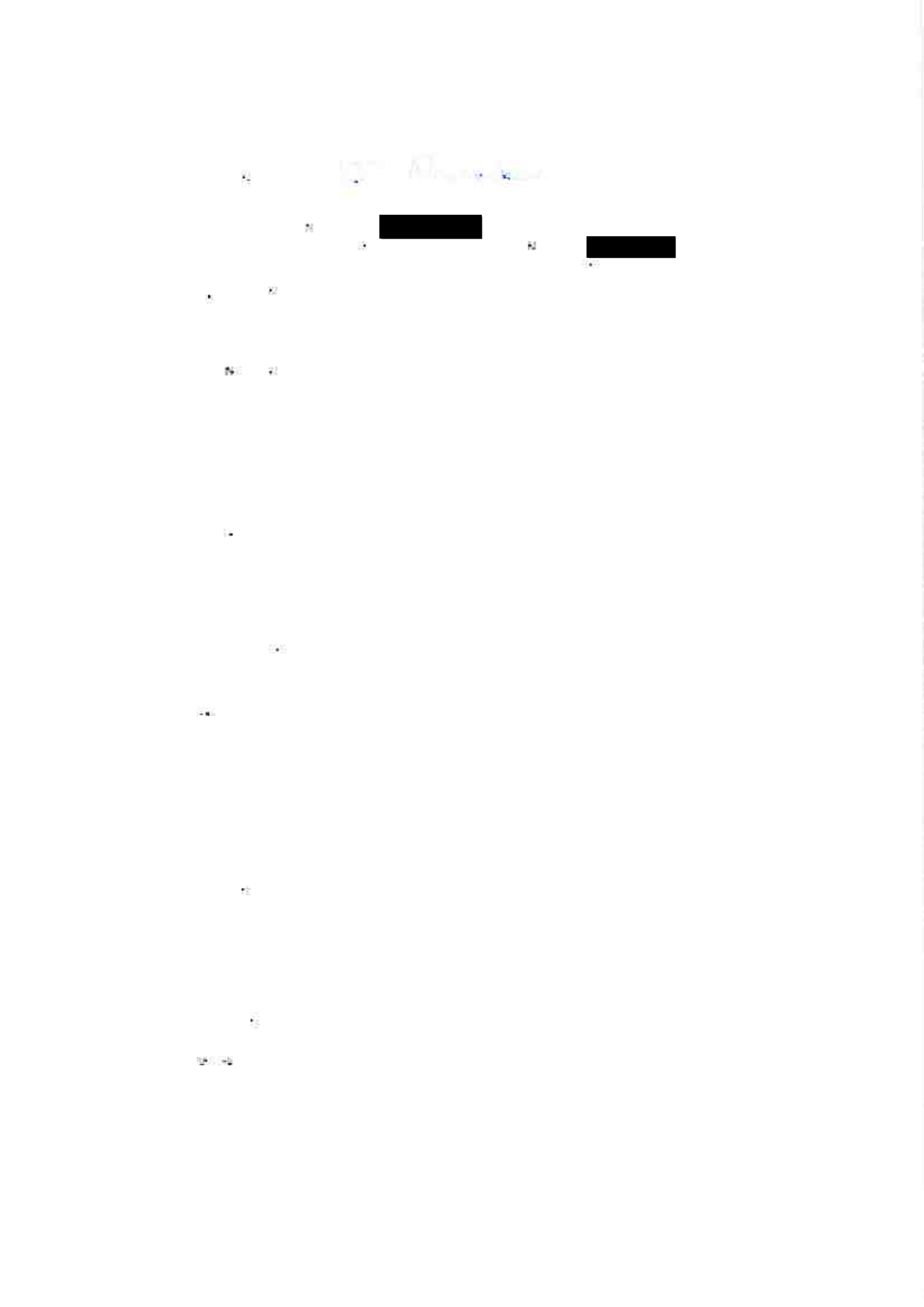


2. **INTERPRETATION**

2.1 In this Licence:

2.1.1 the clause headings do not affect its interpretation;

2.1.2 references to clauses are to clauses of this Licence;

2.1.3 references to the Property includes any part of it;

2.1.4 references to "include" or "including" mean "including without limitation";

2.1.5 references to the end of the Licence Period are to the date on which this Licence ends;

2.1.6 references to a statute or statutory provision is a reference to it as amended, extended or re-enacted from time to time; and

2.1.7 references to a statute or statutory provision shall include all subordinate legislation made from time to time under that statute or statutory provision.

2.2 An obligation on the Licensee not to do or omit to do any act or thing includes an obligation not to permit or allow that act or thing to be done or omitted, as the case may be.

2.3 Where two or more persons form a party to this Licence, the obligations they undertake may be enforced against them all jointly or against one or more of them individually.

2.4 Any notice under this Licence is to be given in accordance with section 196 Law of Property Act 1925.

3. **RIGHTS**

3.1 In consideration of the payment of the Licence Fee (receipt of which is hereby acknowledged) by the Licensee to the Licensor, the Licensor grants to the Licensee the right to enter over the Access Routes and remain on the Property between the hours of 7am and 5pm only during the Licence Period with or without contractors, consultants, surveyors, employees, agents, workmen and others and with or without motor or other vehicles, plant, apparatus and materials (and for plant, apparatus and materials to remain on the Property overnight in securely fenced areas) in order to carry out the Works in accordance with the terms of this Licence.

3.2 The Licensee acknowledges that:

3.2.1 the Licensor is entitled to exclusive control and possession of the Property and the Licensee has no right to exclude the Licensor from the Property; and

3.2.2 nothing in this Licence is intended to create a letting of the Property or to confer any rights on the Licensee, whether under common law or any enactment, greater than a bare licence on the terms of this Licence.

3.3 The parties acknowledge that the Licence Fee is paid to the Licensor in consideration for the grant of the Rights and as compensation for any minor damage and disturbance that may be caused as a result of the Works (the **"Minor Damage"**).

3.4 Without prejudice to clause 3.3, the Licensor hereby expressly: (i) waives any claims, rights and actions that it may have against the Licensee in respect of the Minor Damage in so far as the Minor Damage does not exceed the value of the Licence Fee to rectify; (ii) confirms that the Licensee shall have no liability in respect of the Minor Damage in so far as the Minor Damage does not exceed the value of the Licence Fee to rectify; and (iii) agrees with the Licensee that the compensation referred to at clause 3.3. is a genuine pre-estimate of its loss.

4. **CONDITIONS OF ENTRY**

4.1 Prior to commencing the Works, the Licensee is to:

4.1.1 obtain at the Licensee's own cost all approvals, licences, consents and other permissions required from:

(A) any local authority, other statutory body or competent authority; and/or

(B) any other person required in respect of the Works.

4.2 The Licensee shall procure, so far as applicable, that its contractors, subcontractors and consultants comply with the provisions of clause 4.1 before carrying out the Works.

5. **WORKS**

The Licensee agrees with the Licensor that it shall (and procures that its contractors, agents, consultants, surveyors, workmen and employees shall where relevant also):

5.1 undertake the Works in accordance with the Method Statement;

5.2 take reasonable precautions against causing unnecessary damage to the Property and to make good any damage caused to the Property by the Works to the Licensor's reasonable satisfaction;

5.3 take all reasonable and proper precautions during the Works:

5.3.1 not infringe, interrupt or destroy any rights, easements, privileges or services enjoyed by the Property or any neighbouring or adjoining property; and

5.3.2 not to cause or permit nuisance to the Licensor or any tenants or other occupiers of the Property or any adjoining property; and

cause as little disturbance, annoyance, inconvenience or interference to the Licensor and any tenants or other occupiers (including livestock) of the Property or any adjoining property, as is reasonably practicable; and

5.3.3 access the Works over the Access Routes only and to otherwise not enter any other part of the Property; and

5.3.4 where reasonably practicable to undertake the Works using vehicles with rubber tires; and

5.3.5 fence-off all boreholes and/or trial pits; and

5.3.6 not interfere with the Licensor or its employees, servants or agents in its ownership, enjoyment, operation and use of the Property or its equipment at the Property or any right enjoyed by the Licensor or occupiers of any adjoining property save as is reasonably necessary in order to carry out the Works; and

5.3.7 not erect any structure or place any advert or sign on the Property; and

5.3.8 remove immediately from the Property and dispose of lawfully, any waste arising from the Works; and

5.3.9 not use or bring any Hazardous Substances onto the Property, not to cause Contamination on the Property and not to cause the escape, release, spread or migration of any existing Hazardous Substances on or from the Property; and

5.4 comply with all statutory requirements and any reasonable regulations of the Licensor notified

to the Licensee in writing from time to time in relation to the exercise of the Rights and Works; and

5.5 carry out the Works (and procure that the Works will be carried out) with skill, care, diligence as is reasonably expected of skilled, competent and properly qualified professionals undertaking surveys on projects of similar size, scope and complexity.

6. **REINSTATEMENT**

6.1 The Licensee agrees with the Licensor that on or before the expiry of the Licence Period, or on termination of this Licence in accordance with Clause 9:

6.1.1 the Licensee will reinstate the Property and restore the Property to its state and condition immediately shown in the Schedule of Condition and shall remove any waste, materials, plant and equipment; and

6.1.2 (without prejudice to the foregoing) any boreholes will be properly plugged and any trial pits will be back-filled with the same material that was extracted from that borehole or where this is not reasonably possible with material that is the same as the surrounding ground and not contain any Hazardous Substances save for any of the substances identified at Appendix K to the Method Statement which are required to be used in line with the procedures set out in the Method Statement;

6.1.3 notify the Licensor of completion of the Works and make good so that the Licensor may inspect the Property.

7. **CONTAMINATION**

The Licensor shall have no responsibility or liability whatsoever under this Licence or otherwise as a result of Contamination caused on the Property by the Licensee and the Licensee must indemnify the Licensor from and against any Losses suffered or incurred by the Licensor in respect of the same whether or not any such Contamination is caused or knowingly permitted by the Licensee or its agents, contractors or employees. The agreement in this clause is an agreement on liabilities in accordance with paragraph 7.29 of the Statutory Guidance to exclude the Licensor from any liability in respect of Contamination. For the avoidance of doubt, to the extent that this provision is inconsistent with any other provision of this Licence, then this provision prevail.

8. **INDEMNITY**

8.1 Subject to the Licensor's discharging its obligations pursuant to clause 8.2, the Licensee agrees with the Licensor to indemnify the Licensor against all costs, claims, damages, expenses, liability and loss arising from or incurred in the course of the exercise of the Rights and/or any breach of the terms of this Licence and which shall include (but is not limited to) any costs incurred by the Licensor in remediating any hazardous substances disturbed by the Works provided that the Licensee's liability in relation to the Licensee's surveyor's fees for monitoring and inspecting the Works shall not exceed the sum of £3,000 plus VAT.

8.2 If any third party makes a claim, or notifies an intention to make a claim, against the Licensor which may reasonably be considered likely to give rise to a liability under this indemnity (a "**Claim**"), the Licensor shall:

8.2.1 as soon as reasonably practicable, give written notice of the Claim to the Licensee, specifying the nature of the Claim in reasonable detail;

8.2.2 not make any admission of liability, agreement or compromise in relation to the Claim without the prior written consent of the Licensee;

8.2.3 give the Licensee and its professional advisers access at reasonable times (on reasonable prior notice) to its premises and its officers, directors, employees, agents, representatives or advisers, and to any relevant assets, accounts, documents and records within the power or control of the Licensor, so as to enable the Licensee and its professional advisers to examine them and to take copies (at the Licensee's expense) for the purpose of assessing the Claim; and

8.2.4 take such action as the Licensee may reasonably request to avoid, dispute, compromise or defend the Claim.

8.3 Nothing in this clause shall restrict or limit the Licensor's general obligation at law to mitigate a loss it may suffer or incur as a result of an event that may give rise to a claim under this indemnity.

9. TERMINATION

9.1 The Licence to access the Property granted by this licence shall end:

9.1.1 on 21 November 2020; or

9.1.2 immediately following service of a notice given by the Licensor to the Licensee in respect of any material breach of any of the Licensee's obligations contained in clause 5 which has not been remedied within a reasonable period of time following notice of the breach given by the Licensor to the Licensee.

9.2 Termination or expiry of this Licence shall not affect any rights, remedies, obligations or liabilities of the parties that have accrued up to the date of termination or expiry, including the right to claim damages in respect of any breach of the agreement which existed at or before the date of termination or expiry.

10. CONFIDENTIALITY

10.1 Subject to clause 9.2, each party shall keep confidential and not divulge to any person any information received or obtained in respect of this licence including without limitation all information concerning the Project and any information of a proprietary, secret or confidential nature.

10.2 A party may disclose information which would otherwise be confidential if and to the extent:

10.2.1 required by law;

10.2.2 required by existing contractual obligations as at the date of this licence;

10.2.3 required by any securities exchange or regulatory or governmental body to which either party is subject, wherever situated, including (without limitation) The Stock Exchange or the Panel on Takeovers and Mergers, whether or not the requirement for information has the force of law;

10.2.4 required to vest the full benefit of this licence in it;

10.2.5 the information is disclosed to its professional advisers, auditors, Financers or bankers who are under a duty of confidentiality and provided that such disclosing party remains liable for any breach of confidentiality by any of its advisers, auditors or bankers;

10.2.6 the information has come into the public domain through no fault of that party; or

10.2.7 the other party has given prior written approval to the disclosure, such approval not to be unreasonably withheld or delayed.

11. COSTS

The Licensee agrees to be responsible for the reasonable and proper legal and surveyors' costs and disbursements incurred by the Licensor in connection with this Licence up to a maximum, in aggregate, of £1,500 plus VAT (subject to production of a valid VAT invoice).

12. ENTIRE AGREEMENT AND REPRESENTATIONS

12.1 This licence constitutes the entire agreement between the parties to the exclusion of every other antecedent statement and agreement.

12.2 Each party agrees that it shall have no remedies in respect of any statement, representation, assurance or warranty (whether made innocently or negligently) that is not set out in this licence. Each party agrees that it shall have no claim for innocent or negligent misrepresentation based on any statement in this licence.

13. CONTRACT (RIGHTS OF THIRD PARTIES) ACT 1999

A person who is not a party to this Licence is not intended to have any right under the Contracts (Rights of Third Parties) Act 1999 to enforce any term of this Licence.

14. GOVERNING LAW AND JURISDICTION

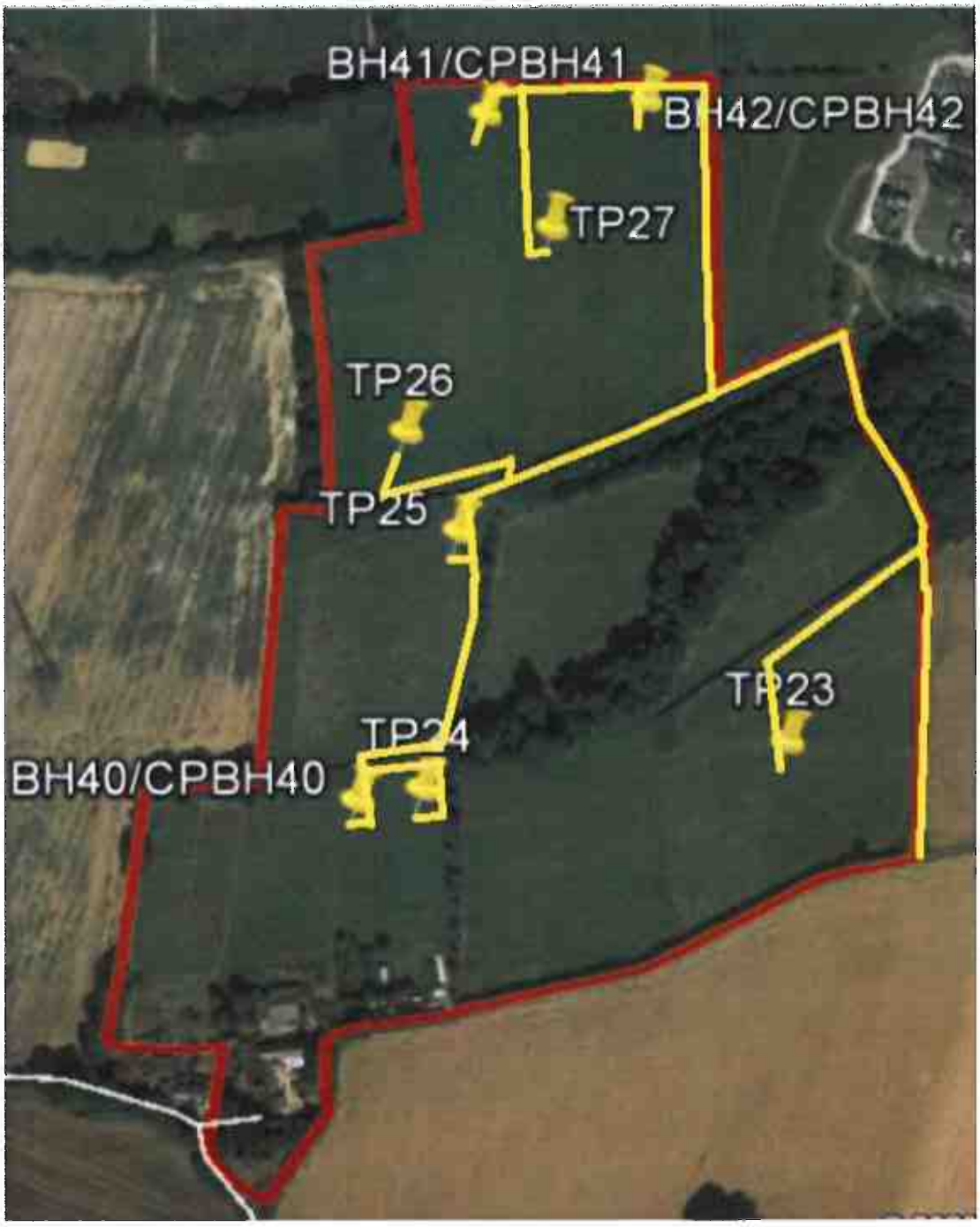
14.1 This licence and any dispute or claim arising out of or in connection with it or its subject matter, existence, negotiation, validity, termination or enforceability (including non-contractual disputes or claims) shall be governed by and construed in accordance with English law and within the exclusive jurisdiction of the English Court to which the parties irrevocably submit.

14.2 Each party agrees that any claim form or other document to be served under the Civil Procedure Rules may be served on it by being delivered to or left at the registered office of the relevant party.

This licence has been entered into on the date stated at the beginning of it.

SCHEDULE 1

PLAN



SCHEDULE 2

SCHEDULE OF RATES

Installation / Survey	**Boreholes**	**Trial Pits**	**Window Samples**
BH/CPBH-40	£250		
BH/CPBH-41	£250		
BH/CPBH-42	£250		
TP-23		£250	
TP-24		£250	
TP-25		£250	
TP-26		£250	
TP-27		£250	
Sub-total	£750	£1,250	£0
Licence Fee	£2,000		

ANNEX

METHOD STATEMENT

GEOTECHNICS
geotechnical and geoenvironmental specialists

CONSTRUCTION PHASE PLAN

CONSTRUCTION PHASE PLAN (CPP) AND SUPPORTING SAFE WORKING PROCEDURES (SWP'S)

ISSUING OFFICE: EXETER

Project Name: AQUIND ADDITIONAL GEOTECHNICAL INVESTIGATION – INFILTRATION INVESTIGATION

Project Number: PE201667

Project Address and Postcode:
Main Site - Lovedean Electrical Substation, PO8 0SJ
Fort Cumberland Site - Fort Cumberland Rd, Southsea, Portsmouth, Southsea PO4 9LD

Date: **5th October 2020**

Prepared by Geotechnics Limited in the role of Main Contractor or Contractor.

Issue:	Date:	Description	Prepared by	Reviewed by
1	5/10	CPP + RAMS	R Philpott	HD

It is essential that you have access to the relevant CoSHH assessments and Safe Working Procedures via one of the following methods:	
1	Company laptop with up to date downloaded version of the field work manual.
2	Company laptop with remote access to XPTemplates.
3	Electronic device with access to the field work manual via www.geotechnics.rocks/fieldworkmanual
4	Hard copy included within on-site project documentation folder.

Revision 28 July 2020

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CONTENTS

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APPENDICES

Appendix A –

- Relevant SWP's,
- Drilling Methodology

Appendix B –

- Exploratory Hole Location Plan.
- UXO Map

Appendix C –

- Technical Specification.

Appendix D –

- Company Generic Site Rules.
- Point of Work Risk Assessment (POWRA)

Appendix E –

- Accident and Emergency Locations and Directions.

Appendix F –

- Environmental Considerations – EN301B.
- Geotechnics' Waste Carrier Licence

Appendix G –

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- Covid-19 SWP and POWRA

Appendix J –

- Subcontractor RAMS

Appendix K –

- COSHH

GEOTECHNICS

[redacted]

[redacted]

[redacted]

[redacted]

2.0 SCOPE OF THE WORKS.

The work comprises of the following activities:

	Activity	Number of Holes / Installations (positions identified on the location plan)
1	Rotary Drilling	4
2	Trial Pitting	8
3	Packer Testing / Falling Head Test – Boreholes	8
4	Soakaway Tests	8

Relevant Safe Working Procedures and any specific Method Statements are listed in Appendix A. The Site Supervisor shall have the aforementioned on site within the Site File.

The work area and exploratory hole locations are highlighted in the sketch plan(s) provided in Appendix B

2.1 Breaking Out / Permit-to-Drill / Dig:

A Permit to Drill / Dig is to be filled in for each position.

Prior to undertaking any breaking out, each respective location shall be checked for buried services via the use of a Cable Avoidance Tool (CAT) and where appropriate, Signal Generator (Genny).

The breaking out of hard-standing will be undertaken using a hydraulic breaker powered by a portable petrol engine hydraulic unit.

The location will then be hand dug to a depth of 1.20metres below ground level to ensure the location is free from buried services.

Where the person who is trained and competent in the use of the CAT and Genny is on site at the material time, the bottom of the hand dug pit will be checked with the CAT prior to continuing with any drilling work.

2.1.1 Reinstatement:

Trial pits shall be backfilled with arisings (compacted with the excavator) with the surface left slightly proud to allow for settlement.

Boreholes will be reinstated as per the drilling methodology in Appendix A. If there are to be any monitoring well installations, these will be installed as per the drilling methodology in Appendix A.

3.0 SEQUENCE & METHOD.

3.1 The technical specification for the programme of works in is contained in Appendix C

3.2 Site Personnel and Supervision:

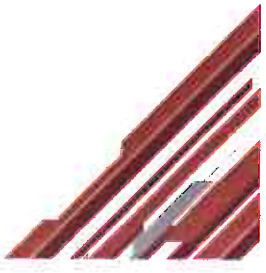
The personnel working on site will consist of 7 personnel, these being:

Site Supervisor – 1 Person

Logging Engineer – 1 Person

Senior Geotechnician – 1 Person

Rotary Drill Crew – 2 Persons



GEOTECHNICS

[redacted]

3.7 **Work at Height:**

All work will be undertaken at ground level. Care will be taken with regards to underfoot conditions, especially on unmade ground.

When assessing 'working at height', consideration has been given to the presence of an 'open deep excavation' and the procedural controls are detailed further in SWP 03 – Trial Pitting – Hand and Machine Excavation.

Where cable percussion drilling rigs are used on site, the Lead Driller shall have arrangements in place in order to comply with the requirements of the work at height regulations.

3.8 **Site Specific Hazards or Requirements:**

It is not anticipated that any specific hazards other than those associated with and controlled by the Company's undertakings shall be encountered during the proposed works.

Regardless of the above, prior to commencing the proposed works, the Site Supervisor shall carry out a visual 'Point of Work Risk Assessment' in order to ascertain if there has been any significant changes in the perceived or known site hazards. In the event that anything is identified, the Supervisor shall liaise with the Client's Supervisory presence.

3.9 **Lone working:**

Lone working is not anticipated during the proposed works.

3.10 **Mobile Phones**

When working on site, mobile phones are only to be used in designated areas identified in the site induction, to prevent any distraction to the user or others. Only in times of emergency should a mobile phone be used outside these areas.

3.11 **Adjacent Pedestrian Access / Right of Way:**

Pedestrian access along adjacent pavements will not be blocked at any time. Appropriate warning signs shall be provided to warn other site personnel of works in progress. In the unlikely event that the Site Supervisor assesses it necessary to temporarily close a footpath, close liaison with the Client's Supervisory presence will be undertaken. Agreed and appropriate traffic / pedestrian management shall then be put in place.

3.12 **Personal Protective Equipment and Clothing: (PPE)**

The following PPE shall be worn at all times:

- High visibility waist-coat or jacket.
- Safety helmet c/w ear defenders and ICE tag
- Safety glasses and gloves
- Laced safety boots or safety wellingtons (dependent on dynamic risk assessment. No rigger boots)

Safety Goggles and Gloves shall be readily available and worn when the activities being undertaken dictate their use.

Note: Hearing protection shall be required to be worn in instances such as when using a hydraulic breaker, operating the window sampling rig or rotary percussion drilling.

3.13 **Welfare Facilities:**

Welfare facilities shall comprise of the following: Welfare van or Ground Hog Unit and shall be located at: secure compound provided by WSP at Grain Store at Denmead Farm, Broadway Lane, Lovedean, PO8 0SJ.

3.14 **First Aid Arrangements:**

The Supervisor shall ensure that an appropriate First Aid kit provision is available for use and kept in the van/office/welfare unit.(delete as appropriate) In the event that additional first aid treatment or facility is required, the Site Supervisor shall ensure that the Emergency Services are called, or the casualty is transported to the nearest Accident and Emergency Unit, details of which are recorded in Appendix F.

3.15 **Interaction with the General Public:**

It is anticipated that at the Lovedean Electrical Substation Site that there should be no interaction with the general public.

At the Fort Cumberland Site where the test locations will be situated in the car park, it is likely that we will encounter the general public. All reasonable precautions will be undertaken to separate the works from the public, with heras fencing being utilised to form a compound around each test location during the works. Signage will be put in place. No Works will commence until a secure compound is erected to ensure that there is a secure separation between the works and the public.

Any questions or conversations will be dealt with politely and where necessary the public will be directed to the client if they need further information.

3.16 **Covid 19**

Geotechnics have established new methods of working to reduce the risk of spreading the coronavirus. This includes the following measures:

- No sharing of vehicles
- Staggered break times
- Additional tools for drillers to allow rod and casing handling without close contact.
- No sharing of hand tools across works teams
- Face masks/ visors
- Routine wiping down of surfaces using anti-bacterial solutions.

Specific Covid-19 Safe Working Procedures and POWRA is enclosed in Appendix I.

4.0 PROGRAMME.

The proposed site works are anticipated to take 1 week and shall commence on 16th November 2020. The working hours on site shall be 0800 hrs to 1800hrs.

5.0 COMPETENCY OF PERSONNEL ON SITE.

All Drilling contractors to be used on site have completed the Company's internal approval process and are listed on the approved register. The approval process requires evidence of training and competence of all personnel working on site under the control of the Company.

The Company and Site Supervisor shall also ensure that other personnel under the control of the Company are trained and competent to undertake the tasks they are assigned.

The Site Supervisor shall check the training records of all personnel as relevant to the activities that are being undertaken.

All hired plant operators shall have valid CPCS cards in their personal possession at all times, and these shall be inspected prior to the plant and operator being allowed to commence work on site.

On completion of the project, the Site Supervisor shall complete the project close out form which will allow for the provision of any comments in relation performance and any shortfalls or recommendations in relation to training and competence.

6.0 EQUIPMENT TO BE USED.

The Drilling Contractors to be used on site have provided evidence that their equipment to be used on site will be inspected, maintained and tested in accordance with PUWER* and LOLER*.

Prior to allowing the equipment to be used on site, the Site Supervisor shall check that the relevant documents and certification held by the contractor is valid and in date, and that the equipment is furnished with the relevant safety protection devices, that they operate efficiently, and that the equipment appears to be in an appropriate and suitable state of repair for use.

*PUWER – Provision and Use of Work Equipment. * LOLER – Lifting Operations and Lifting Equipment Regulations.

7.0 EMERGENCY PROCEDURES.

In case of serious incident, the emergency services must be telephoned and the site first aider and supervisor contacted. The site addresses are

Main Site - Lovedean Electrical Substation, PO8 0SJ

Fort Cumberland Site - Fort Cumberland Rd, Southsea, Portsmouth, Southsea PO4 9LD

The Emergency Services will be met at the site entrance.

The Nearest Accident and Emergency Unit is located at **Queen Alexander Hospital, Southwick Hill Road, Cosham, Portsmouth, Hampshire, PO6 3LY** and documented in Appendix F.

Fire Safety:

The arrangements in relation to fire are as follows:

Means of raising the alarm: Shout **"Fire Fire"**

Means of fighting a fire: The Site Supervisor shall ensure that appropriate types and numbers of fire extinguishers are provided in relation too, and located near to the perceived risk. These shall be checked by the Site Supervisor to ensure that they have a current service and maintenance record, and appear to be operational.

Only trained and competent personnel shall use a fire extinguisher, and shall only do so if their immediate safety or exit route is not compromised.

In the event that the Fire Emergency Services are required, these will be contacted by either the Site Supervisor or Lead Driller.

Fire Assembly point: The fire assembly point shall be located at The Compound Car Park located at the Grain Store at Denmead Farm.

The fire assembly point for Fort Cumberland will be determined on site prior to works commencing.

7.1 Accident / Incident / Near-Miss Reporting:

All Accidents, Incidents and Near-Misses shall be reported in accordance with the Company Reporting Procedures.

In addition to any requirement of the Client, the Site Supervisor shall verbally report all accidents, incidents and near-misses to the Company Project Engineer and Health and Safety Manager in the first instance, followed by a written report.

The Company Project Engineer or Health and Safety Manager shall liaise with the Client and determine the extent of any investigation to be carried out. The Health and Safety Manager shall ensure that any statutory reports are compiled and submitted in accordance with the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR). Details of any such report(s) shall be communicated to the Client.

Accident and Incident / Near-Miss report forms are held by the Site Supervisor within their Site File.

8.0 MONITORING OF THE WORK.

The Site Supervisor will be responsible for monitoring the day-to-day site health and safety requirements and shall record and address any shortfalls in the standards required.

The Company Health and Safety Manager may undertake an inspection whilst the proposed works are being undertaken.

9.0 ENVIRONMENTAL CONSIDERATION.

The effects of the proposed works on the environment and the controls to mitigate those effects are recorded on the Company document EN301B. A copy of the relevant section of this document is inserted into Appendix F.

10.0 REVISIONS AND AMENDMENTS

The Supervisor has the autonomy to undertake minor amendments to update the Method Statement. Any significant changes or amendments shall be approved by the Project Engineer and the Client prior to action.

Any revision or amendments shall be recorded in Appendix H and incorporated into the Project Method Statement Induction and additionally communicated to the initial inductees.

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APPENDIX A

- **Site Specific Method Statements**

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The Geotechnical Centre
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Fax: 01392 163 111

The Geotechnical Centre
Unit 1 Bypass Industrial Estate,
Sherburn in Elmet, North Yorkshire
LS25 6EP
Tel: 01977 525 037

GEOTECHNICS
geotechnical and geoenvironmental specialists

UK – France Interconnector Additional Ground Investigation Drilling Methodologies Proposed.

Geotechnics Ltd have been employed by WSP on behalf of Aquind Ltd to carry out additional ground investigation (including infiltration investigations) to determine the ground condition at the Lovedean Electrical Substation and Fort Cumberland

Areas of the site are known to be underlain by a principle aquifer – Chalk and has also been designated as a Source Protection Zones (SPZ1s).

As part of the investigation Geotechnics have been asked to drill rotary boreholes to depths up to 10m below ground level.

All drilling carried out by Geotechnics Ltd will be undertaken in accordance with the Environment Agency guidance as outlined in

- "Technical Report P5-065/TR" in "Technical aspects of site investigation" Volume 2, Environment Agency 2002
- Guidance on the design and installation of groundwater quality monitoring points
- British Drilling Association Guidelines

Aquifer protection measures, *including telescopic drilling techniques (clean drilling techniques) will be employed at **all** boreholes along the whole scheme including the proposed converter station locations close the existing electrical substation.*

Telescopic drilling is a technique used to minimise cross-contamination in layered aquifer systems. In brief, a borehole and temporary casing is advanced until a low permeability layer is encountered. The temporary casing is sealed into this layer and a second, narrower string of temporary casing is then advanced within it to permit drilling to continue. The technique will require the borehole to be started at a larger diameter than conventional drilling and may also require the use of additional lengths of casing.

Our proposed methodology based on the requirements of the investigation (information required, depths stipulated etc) the expected geology, indications from previous reports, work that we have carried out in the area previously and British Geological Survey borehole records, was to bore using 150mm diameter drilling tools and 150mm diameter casing to start each borehole.

Casing would be advanced as boring progresses, until a non permeable layer is encountered and the 150mm casing then effectively sealed into this layer meaning potential contaminated ground *and/or perched groundwater and any lenses of potentially contaminated water* above is sealed off from those stratas below. There would therefore be no route available for contaminations to seep downwards.

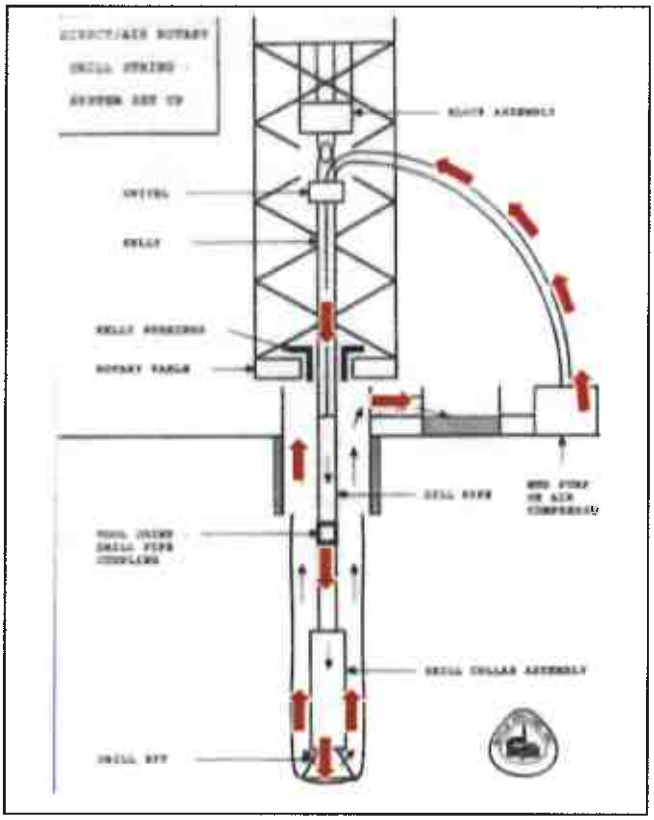
A second smaller diameter string of casing (nominal 140mm) will then be installed to case off any additional permeable layers *and/or perched groundwater and any lenses of potentially contaminated water* prior to the rotary coring beginning (once competent material is encountered – this could be before the Chalk is reached as stiff clays are anticipated).

The addition of bentonite seals can be installed at the base of each string of casing – this entails pulling back the casing by 1.0m then adding bentonite pellets to form a minimum 1.0m seal. The bentonite pellets will be left to cure for a minimum of 2 hours before drilling recommences. *If the borehole is dry at the point of adding the bentonite seals then potable water will be added to the borehole to enable the bentonite pellets to cure. The data sheet for the bentonite pellets that will be used (Mikolit 300) is at the end of this document; the delayed swelling time for these pellets is ~15mins therefore waiting 2 hours for the bentonite to swell and cure and create a low permeability seal is deemed more than sufficient.*

We anticipate encountering stiff impermeable clays for the majority of the borehole so the addition of bentonite seals may not be of any additional merit – however the geology will be closely monitored by our rig supervisors and drillers and the necessity of the bentonite seals assessed at a borehole by borehole / strata by strata basis.

The main risk is following completion of boring when casing is removed. However, we would be backfilling boreholes with bentonite pellets which will fully seal the boreholes. This is added as casing is removed so again, there is no time at which contaminated ground *or perched groundwater lenses* could "fall" down the borehole.

All the boreholes will be cased *(telescopically)* as detailed above as the borehole is progressed; sampling and drilling will be carried out using a combination of dynamic sampling (window sampling) through the softer overburden then switching to rotary coring utilising air mist as flush – direct circulation.
The dynamic sampling section of the borehole is achieved by percussive sampling – dropping weight onto sample barrel repeatedly to advance it through the ground and return continuous meter long samples – no flush is required whilst this technique is carried out.
Once rotary coring is being used flush will be added to the drill string by direct circulation to the base of the hole and pushed back up to the surface inside the temporary casing. The flush is used to lubricate and cool the bit as drilling progresses as well as to lift the drill cuttings to the surface where they will be contained within a bunded area at ground level. The water added to the borehole will be potable water.



Should poor core recovery be encountered then shorter run lengths shall first be attempted if this does not improve the core recover then the option to switch to water flush will be considered.
Water flush can be less destructive to the core in some geologies and help improve recovery, it can however wash away very weak rock. Consultation will be had between the lead driller, rig supervisor and investigation supervisor prior to switching the flush.

The drilling techniques described above result in continuous samples of the soils / rock being recovered with minimal excess spoil. All samples recovered will be logged and sub sampled by the onsite engineers/geologists and samples utilised for laboratory testing off site.

Proposed Plant and Equipment

Rig1 – Commaccio 205 – tracked

Drilling Equipment – Rotary

- Rotary drilling rigs - Fitted with compliant guarding – weight 2.7 Tonnes
- 1 No. compressor
- Trailer mounted IBC x2no. for water
- 100 mm diameter bauer pipework in 3 m and 6 m lengths
- 50 mm fire hoses
- 150 mm nominal diameter temporary casing in 2 m lengths
- 140mm nominal diameter temporary casing in 2m lengths
- Tricone bits, tungsten bits, diamond bits
- Drill rods

- Hand tools (stilsons, chains, hammers, shovels etc.)

Unexpected Ground Conditions

The nature of ground investigations is to gain more information on the ground conditions – geology, strength and groundwater, to that effect unexpected ground conditions may well be encountered.

Examples of these could be karstic features which are sometimes found within chalk.

To mitigate risks associated with these features any desk study or mapping information of local karstic features will be shared with Geotechnics and boreholes set out in areas to avoid any known features.

The rigs will be set up in such a way so that their load is spread over a larger footprint by way of using wooden sleepers under their outriggers thereby reducing their ground pressure at surface.

Lead drillers will be briefed on the fact that these features may be present in the area.
Lead drillers will take special note of the drilling speed and in particular the amount of flush being used and any flush loss both of which can be indicators that a void could be present or close.
Additional indicators that could be evidence of a karstic feature are encountering granular fill material within the Chalk strata and silts and sands in situ within the Chalk.

Should any one of these features be encountered in any of the boreholes – works will stop and the EA and Portsmouth *Water* informed immediately. Instructions will then be sought from the Investigation Supervisor WSP.
If instructed and ground conditions permitting drilling will continue to try to identify the depth of the feature/void – this will likely involve adding rods to the drill string and lowering these down the borehole until the base of the void is identified.
Additional casing will be required to advance the borehole past the void.

On terminating the borehole we would propose installing a mechanical packer at the top of the feature / void to effectively plug the borehole. From here the borehole will then be backfilled with bentonite pellets as the casing strings are removed until the borehole is completely backfilled up to surface.

For all boreholes located within the SPZ1 Portsmouth Water will be contacted to inform them of the following:-

- Prior to starting Boreholes
- Immediately of any loss of drilling flush
- *Encountering any unexpected fill/geology*
- Encountering any voids/karstic features
- Backfilling of the boreholes.
- Agreement of any installation details.

GEOTECHNICS
geotechnical and geoenvironmental specialists

'In-situ' Borehole Testing

It has been proposed that permeability testing of the subsurface materials are to be conducted where possible in all boreholes with the intention of achieving 2 tests in each borehole.

The *'insitu'* testing methods will be either by packer testing or falling head tests.

Packer testing will be conducted where structured chalk is encountered and a suitable section for testing is encountered. Packer tests involve isolating the proposed test section using single or double packers that are inflated to seal off this section and then water is pumped under pressure over a period of time with the amount of water used being measured at set increments across the test.

If no structured Chalk and /or no suitable section is encountered, then falling head tests will be undertaken. This involves filling the borehole with water to the top of the casing, utilising the drill casing as an impermeable sleave, and then measuring the water level at set time increments.

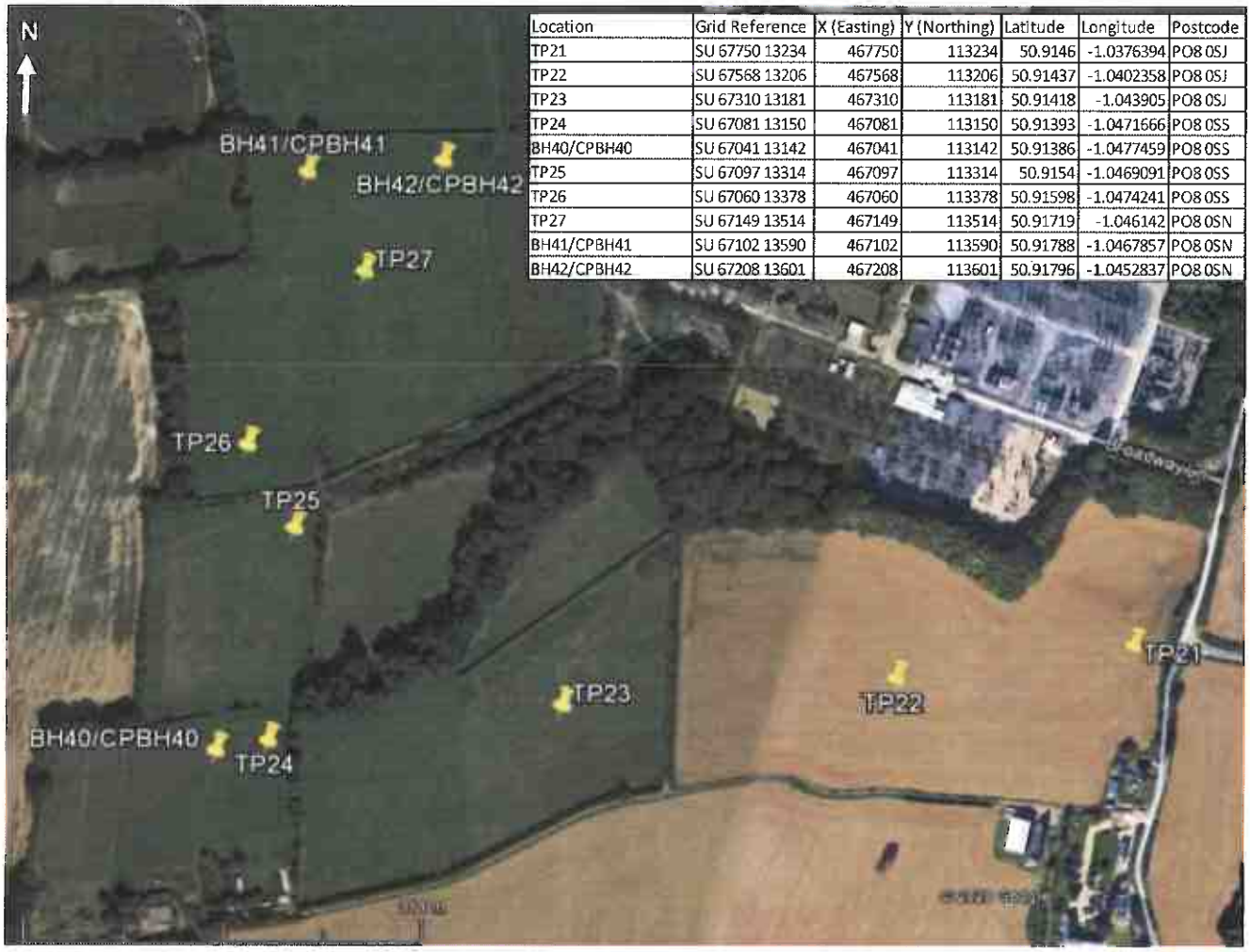
Should the rate/flow of water during the test be faster than expected and/or pressure lost during the packer testing then the test shall be stopped immediately and WSP and Portsmouth Water will be contacted.

APPENDIX B

- **Exploratory Hole plan**

APPENDIX A

Figure 1 Converter Station Infiltration Testing Plan



Location	Grid Reference	X (Easting)	Y (Northing)	Latitude	Longitude	Postcode
TP21	SU 67750 13234	467750	113234	50.9146	-1.0376394	PO8 0SJ
TP22	SU 67568 13206	467568	113206	50.91437	-1.0402358	PO8 0SJ
TP23	SU 67310 13181	467310	113181	50.91418	-1.043905	PO8 0SJ
TP24	SU 67081 13150	467081	113150	50.91393	-1.0471666	PO8 0SS
BH40/CPBH40	SU 67041 13142	467041	113142	50.91386	-1.0477459	PO8 0SS
TP25	SU 67097 13314	467097	113314	50.9154	-1.0469091	PO8 0SS
TP26	SU 67060 13378	467060	113378	50.91598	-1.0474241	PO8 0SS
TP27	SU 67149 13514	467149	113514	50.91719	-1.046142	PO8 0SN
BH41/CPBH41	SU 67102 13590	467102	113590	50.91788	-1.0467857	PO8 0SN
BH42/CPBH42	SU 67208 13601	467208	113601	50.91796	-1.0452837	PO8 0SN

Figure 2 ORS Building Infiltration Testing Plan

Location	Grid Reference	X (Easting)	Y (Northing)	Latitude	Longitude	Postcode
TP28	SZ 67821 99126	467821	99126	50.78775	-1.0392353	PO4 9LP
BH43/CPBH43	SZ 67851 99131	467851	99131	50.78779	-1.0388169	PO4 9LP

APPENDIX C

- **TECHNICAL SPECIFICATION**

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The Geotechnical Centre
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Tel: 01392 463 110
Fax: 01392 163 111

The Geotechnical Centre
Unit 1 Bypass Industrial Estate,
Sherburn in Elmet, North Yorkshire
LS25 6EP
Tel: 01977 525 037

MEMO

TO	Hamid Mojtabavi	**FROM**	Joshua Kaufmann & Tristan Morgan
DATE	**17 April 2020**	**CONFIDENTIALITY**	**Confidential**
SUBJECT	**Aquind Additional Ground Investigation Specification for Drainage Design at the Converter Station and ORS Building (Phase 3)**		

INTRODUCTION

At the time of the original 2018 ground investigation the location of detention/retention ponds and drainage design for the project were unknown and so could not be investigated. Further to receipt of comments from key stakeholders and a preliminary drainage design it is considered that additional ground investigation is required to confirm/prove the drainage design assumptions.

This specification is to provide a preliminary scope of works for additional ground investigation, including in-situ testing and sampling to inform the drainage design for the UK Converter Station and ORS Building (landfall) for the Aquind Interconnector. This scope of works aims to outline a ground investigation that will prove ground conditions at key locations (ponds, swales, soakaways etc) and provide information on ground permeability and porosity to allow drainage design in addition to other geotechnical testing.

SCHEDULE 2: DRAINAGE DESIGN

The following assumptions have been made during the preparation of the Schedule 2 for the drainage design, these should be reviewed, and revisions made as necessary.

Ground Investigation to be undertaken in accordance with UK Specification for Ground Investigation (SISG).

All in-situ and laboratory testing are to be confirmed by the Investigation Supervisor.

The ground investigation has been scoped with prior site knowledge from Phase 1 and 2 ground investigations. Positions shown on preliminary plans in Appendix A are approximate only and may require adjustment during the site works.

Abbreviations

- BH = Borehole
- TP = Trial pit
- CP = Cable Percussion
- Rot = Rotary Core
- WS = Window Sample
- CPBH, CPWS and CPTP = Cone Penetration Test with magnetometer

Note 1 - Please note that the scheduled exploratory hole depths and installation details are provisional and are to be confirmed by the Investigation Supervisor.

Note 2 - See drawing(s) in Appendix A for coordinates

Note 3 - Where UXO risks have been identified, the magnetometer cone CPT shall be carried out within less than 1.5m and prior to the borehole to provide UXO clearance.

For provisional exploratory hole locations see location plan, Appendix A, locations to be confirmed on site. Scheduled exploratory hole depths are also provisional and are to be confirmed by the investigating supervisor. Boreholes – combined cable percussive and rotary, or equivalent, boring to log ground conditions, obtain samples and undertake in-suit testing.

CPT – primarily to provide magnetometer probing for UXO clearance, but also obtaining data on ground and groundwater conditions.

Trial pits – mechanically excavated trial pits for logging ground conditions, carrying out in situ tests and obtaining samples for laboratory testing.

CONVERTER STATION AND ACCESS TRACK

Table 1 Schedule 2 Converter Station and Access Track

HOLE NUMBER	UXO SEARCH	SCHEDULED DEPTH (M)	PURPOSE	TESTING	COMMENT
BH40	CPBH40	5m	Prove ground conditions to allow design of the infiltration pond and the converter station gravel infiltration zones. CPT twinned with boreholes holes with magnetometer probe and piezocone to prove absence or otherwise of UXO at borehole locations, as well as CPT results. To provide data on permeability, porosity as well as soil strength parameters. Waste acceptance criteria testing required (Suite H).	Every metre alternate SPT and Bulk sample (granular) or OS-T/W U100 (cohesive), sampling to occur before the metre interval if change in strata. Testing and sampling is to be to CIRIA C574 and BS 5930:2015. Environmental testing to be specified in the detailed specification. Two packer permeability tests per a hole, testing to be to CIRIA C574, BS EN ISO 22282 and BS 5930:2015.	As directed by Investigation Supervisor. A minimum of three suitable samples will need to be collected from BH41 and BH42 for laboratory permeability and porosity testing. Locations within SPZ1.
BH41 – BH42	CPBH41 – CPBH42	10m			
TP21-TP27	CPTP21-CPTP27	Assume 1.75m (1.0-2.5m) depth (machine dug).	Prove ground conditions to allow design of the Soakaways, infiltration pond and swale infiltration CPT twinned with trial pits with magnetometer probe and piezocone to prove absence or otherwise of UXO at borehole locations, as well as CPT results. Infiltration testing providing permeability, porosity as well as soil strength parameters. Waste acceptance criteria testing required (Suite H).	One soakaway per trial pit, testing to be to BRE 365. Testing and sampling is to be to CIRIA C574 and BS 5930:2015. Environmental testing to be specified in the detailed specification. One large bulk and one small tub every metre or change of strata.	As directed by Investigation Supervisor. Locations within SPZ1. Depths may vary dependent on location, to be confirmed by supervising engineer.

ORS BUILDING

Table 2 Schedule 2 ORS Building

HOLE NUMBER	UXO SEARCH	SCHEDULED DEPTH (M)	PURPOSE	TESTING	COMMENT
BH44	CPBH43	5m	Prove ground conditions to allow design of the ORS Building infiltration drainage CPT twinned with boreholes holes with magnetometer probe and piezocone to prove absence or otherwise of UXO at borehole locations, as well as CPT results. Infiltration testing providing permeability, porosity as well as soil strength parameters. Ground/groundwater aggressivity testing for potential concrete structure (Suite C (Brownfield site – pyrite absent)). Waste acceptance criteria testing required (Suite H).	Every metre alternate SPT and Bulk sample (granular) or OS-T/W U100 (cohesive), sampling to occur before the metre interval if change in strata. Testing and sampling is to be to BS 5930:2015. Environmental testing to be specified in the detailed specification. Two falling head permeability tests per a hole (3 runs per a test), testing to be to BS EN ISO 22282 and BS 5930:2015.	As directed by Investigation Supervisor.
TP28	CPTP28	Assume 2.0m depth (machine dug).	Prove ground conditions to allow design of the ORS Building infiltration drainage CPT twinned with trial pits with magnetometer probe and piezocone to prove absence or otherwise of UXO at borehole locations, as well as CPT results. Infiltration testing providing permeability, porosity as well as soil strength parameters. Ground/groundwater aggressivity testing for potential concrete structure (Suite C (Brownfield site – pyrite absent)). Waste acceptance criteria testing required (Suite H).	One soakaway per trial pit, testing to be to BRE 365. Testing and sampling is to be to BS 5930:2015. Environmental testing to be specified in the detailed specification. One large bulk and one small tub every metre or change of strata.	As directed by Investigation Supervisor.

OTHER REQUIREMENTS

PERSONNEL

WSP Engineer (Joshua Kaufmann or similar experience) to represent client and undertake role of Investigation Supervisor. Requirements for drilling crew, engineers and support staff to be confirmed by the Contractor.

HEALTH AND SAFETY

The Contractor is to produce suitable and approved health and safety documents including risk registers, safety controls and RAMS, these are to be reviewed by WSP. Detail of health and safety requirements will be included within the detailed specification

METHODOLOGIES

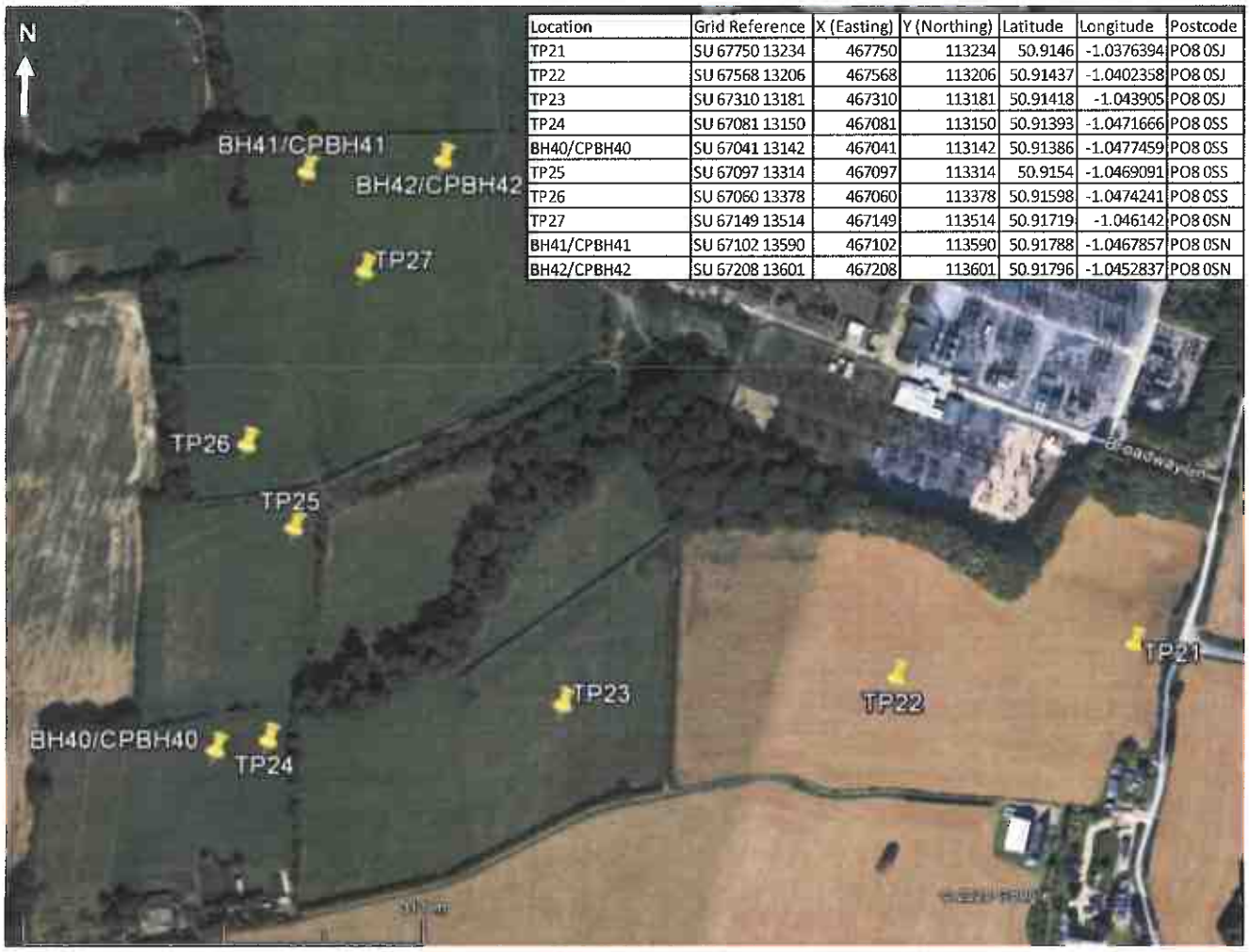
Suitable methodologies will need to be agreed with the local landowners and relevant statutory bodies.

STATUTORY BODIES CONSULTATION AND PERMITS

All works will need to be permitted by local landowners.
Works within the SPZ1 will require consultation and agreement with Portsmouth Water.
Portsmouth City Council will require consultations for any works within the city of Portsmouth.

APPENDIX A

Figure 1 Converter Station Infiltration Testing Plan



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APPENDIX D

COMPANY GENERIC SITE RULES & ANY SITE SPECIFIC RULES

ALL OF OUR SAFETY RULES **MUST** BE OBEYED.

Failure to do so may result in Disciplinary and Criminal action being taken.

1. All personnel working on site under the control of the Company must comply with the requirements of the Health and Safety at Work etc Act 1974 at all times, and all other relevant statutory provisions applicable to the work being carried out.
2. These Site Safety Rules are a minimum requirement and must be read in conjunction with any relevant CDM Construction Phase Plan or Project Method Statement. Any divergence between the two should be referred to the Site Supervisor.
3. Keep your mind on your work at all times. No horseplay on the job.
4. Personal Protective Equipment (PPE) and clothing must be worn as prescribed for each job and as necessary as works progress. Do not enter any area that is a designated Mandatory PPE zone without first putting on the appropriate PPE or clothing.
5. Watch where you are walking. Don't run.
6. The use of illegal drugs or alcohol, or being under the influence of the same on site shall be cause for termination of employment. You **must** inform your Supervisor or Manager if you are taking strong prescription drugs that warn against driving or using machinery.
7. Do not distract the attention of fellow workers. Do not engage in any act which would endanger another employee.
8. If you observe or experience any Near-Miss, Incident or Accident, report it immediately to the Site Supervisor. The Site Supervisor should ensure that a relevant record is made of the occurrence and submitted to the Health and Safety Manager at the first available opportunity.
9. Sanitation and welfare facilities have been or will be provided for your use. Defacing or damaging those facilities is forbidden.
10. A good job is a clean job, and a clean job is the start of a safe job.
11. Keep your work area free of debris and rubbish and ensure that the area is left in a clean and safe state on completion.
12. Know where the firefighting equipment is located and the arrangements to take in the event of an emergency including the location of the designated assembly point(s).
13. Do not use fire extinguishers unless you are trained to do so.
14. Know where the first aid provision is kept, who the first-aid trained personnel are, and how they can be contacted.
15. Lift correctly – with legs, not your back. Use mechanical aids where possible. If the load is too heavy or awkward, GET HELP!
16. Do not ride on machinery or equipment unless proper seating is provided.

17. Do not use power tools and equipment unless properly instructed and trained in the safe work methods.
18. All power tools shall be 110-volt supply unless a specific dispensation to use 240-volt equipment has been granted by the Client.
19. In the event that 240-volt equipment is used on site, this will also require the use of a suitable circuit breaker / residual current device between the equipment and source of supply.
20. Never oil, lubricate, or refuel equipment or machinery whilst it is running or in motion.
21. Before servicing, repairing, or adjusting any powered tool or piece of equipment, disconnect or isolate it from the source of power.
22. Be sure that all guards are in place. Do not remove, displace, damage, or destroy any safety device or safeguard furnished or provided for use on the job, or interfere with the use thereof.
23. Never enter trial pits or other excavations that are deeper than 1.2 metres or less if there are signs of instability, without first assessing the requirements for additional support, benching or other protection measure, and ensuring that the findings of the assessment are actioned prior to any such entry.
24. Never use or permit use by another, any defective tools or equipment. The defective tools or equipment should be taken out of use and reported to the responsible person in control of the stores at each respective office. The responsible person shall ensure that the defective tools or equipment are either repaired or replaced accordingly.
25. Any ground penetration will require a "**Company Permit to Dig/Drill**" and works should not proceed unless the person undertaking the works is in receipt of a copy of said permit.

"NO PERMIT = NO DIG OR DRILL"

26. Adhere to site traffic rules including speed limits at all times.
27. Adhere to all on site safety signs and instructions at all times.
28. Never use a compressor to clean down equipment, clothing or personnel.

APPENDIX E

ACCIDENT AND EMERGENCY LOCATION AND DIRECTIONS

QUEEN ALEXANDER HOSPITAL A&E
SOUTHWICK HILL ROAD
COSHAM
PORTSMOUTH
HAMPSHIRE
PO6 3LY

DIRECTIONS FROM LOVEDEAN ELECTRICAL SUBSTATION

- Follow Broadway Ln, Anmore Ln and Soake Rd to Hambledon Rd/B2150 in Denmead
  - Head south on Broadway Ln
  - Continue onto Anmore Ln
  - Turn left onto Soake Rd
  - Turn right to stay on Soake Rd
- Follow Hambledon Rd/B2150 and A3 to Nightingale Rd in Portsmouth
  - Turn left onto Hambledon Rd/B2150
  - At the roundabout, take the 2nd exit and stay on Hambledon Rd/B2150
  - At the roundabout, take the 3rd exit onto Maurepas Way/A3
  - At the roundabout, take the 3rd exit onto London Rd/A3
  - Turn right onto Southwick Hill Rd/B2177
  - Turn left onto Nightingale Rd
    Destination will be on the left

DIRECTIONS FROM FORT CUMBERLAND

Geotechnics Limited ©
The Geotechnical Centre
203 Torrington Avenue
Tile Hill, Coventry
CV4 9AP
Tel: 0247 669 4664
Fax: 0247 669 4642

The Geotechnical Centre
Unit 1, Borders Industrial Estate
River Lane, Saltney, Chester
CH4 8RJ
Tel: 01244 671 117
Fax: 01244 671 122

The Geotechnical Centre
5 Orchard Court, Heron Road, Exeter
EX2 7NR
Tel: 01392 463 110
Fax: 01392 163 111

The Geotechnical Centre
Unit 1 Bypass Industrial Estate,
Sherburn in Elmet, North Yorkshire
LS25 6EP
Tel: 01977 525 037

Fort Cumberland Rd

Southsea Portsmouth Southsea

- Take Bransbury Rd to Eastney Rd/A288

  3 min (0.7 mi)

  - Head west on Fort Cumberland Rd towards Ferry Rd

    0.1 mi

  - Turn right onto Henderson Rd

    0.5 mi

  - Continue onto Bransbury Rd

    0.3 mi

- Take A2030 and Northern Rd/A397 to Sevenoaks Rd in Cosham

  14 min (6.0 mi)

  - Turn right onto Eastney Rd/A288
    Go through 1 roundabout

    0.6 mi

  - Turn right at Rodney Rd

    295 ft

  - Continue onto Velder Ave/A2030
    Continue to follow A2030

    2.9 mi

  - At the roundabout, take the 1st exit onto the A27 slip road to M27/M275/Portsmouth (W)/Southsea

    2.3 mi

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Tel: 01392 463 110
Fax: 01392 163 111

The Geotechnical Centre
Unit 1 Bypass Industrial Estate,
Sherburn in Elmet, North Yorkshire
LS25 6EP
Tel: 01977 525 037

Merge onto Havant Bypass/A27

0.6 mi

Take the A3(N)/A3(S) exit towards Cosham/Hilsea

0.3 mi

At Portsbridge Roundabout, take the 3rd exit onto Northern Rd/A397

0.8 mi

At the roundabout, take the 2nd exit and stay on Northern Rd/A397

0.1 mi

At Spur Rd Roundabout, take the 1st exit onto Southampton Rd/A3

0.3 mi

Continue on Sevenoaks Rd to your destination

2 min (0.2 mi)

Turn right onto Sevenoaks Rd

302 ft

Turn right towards Pasteur Rd

328 ft

Continue onto Pasteur Rd

354 ft

Turn right

Destination will be on the left

85 ft

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Fax: 01392 163 111

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LS25 6EP
Tel: 01977 525 037

Utility Services Emergency Contact Numbers: (correct as of March 2013)

Please ensure that you have ascertained the correct Emergency Numbers for the locality in which the work is to be carried out. In the event that the Emergency number is not listed, please advise the Health and Safety Manager.

Company	Emergency Number	Company	Emergency Number
Environment Agency (incident hot line)	0800 807 060	United Utilities (Northwest & Lake district)	0800 195 4141
Virgin Media (dial before you dig)	0845 454 1111	East Midlands - Central Networks	0800 0568 090
British Telecom (dial before you dig)	0800 017 3993	Eastern Region - EDF Energy	0800 783 8838
		London - EDF Energy	0800 028 0247
Yorkshire Water Services Ltd	0800 573 553	Manweb - Scottish Power	0845 272 7999
Severn Trent Water plc	0800 783 4444	Midlands - Central Networks	0800 328 1111
United Utilities Water Ltd	0800 330 033	Northern Electric - NEDL	0800 668 877
Southern Water	0845 278 0845	Scottish power	0845 272 7999
South West Water Ltd	0800 169 1144	Scottish Hydro-Electric	0800 300 999
Scottish Water	0845 600 8855	Southern Electric - S&SE	08457 70 80 90
Northumbrian Water	0800 393 084	South Wales - Western Power	0800 052 0400
Anglian Water Services Ltd	0800 771 881	South West - Western Power	0800 365 900
Thames Water Utilities Ltd	0800 714 614	Yorkshire Electricity - YEDL	0800 375 675
		National Grid UK (GAS)	0800 111 999

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APPENDIX F

ENVIRONMENTAL CONSIDERATIONS - EN301B – RISK ASSESSMENT.

Geotechnics Ltd Environmental Policy Statement

Geotechnics Limited provides a wide range of Geotechnical and Geoenvironmental services to the Construction Industry, landowners, developers, and to any stakeholders concerned with ground quality. It has offices in Coventry, Chester, Exeter and Yorkshire.

The Company is committed to the protection and enhancement of the environment. Its aim is to achieve this through the development, delivery and continual improvement of high quality professional and client-focussed services which consider the environmental impacts of its decision-making in all aspects of its activities. Procedures embrace both ISO 14001 Quality Management and Health and Safety considerations together with environmental issues. Geotechnics Limited will: -

- Operate and maintain an Environmental Management System to meet the requirements of ISO 14001.
- Continually improve its environmental performance and, by identifying and targeting any significant adverse Environmental Aspects of its activities, seek to reduce their impacts on the environment and prevent pollution.
- Identify the significant Environmental Aspects of the Company's activities including the use of resources and materials, non-renewable energy, potential noise and dust emissions, hydrocarbon emissions, waste production, and the potential to cause discharges of untreated water to land and controlled waters.
- Be committed to the protection of the environment by compliance with all environmental legislation, regulations and other requirements in carrying out its activities and in providing advice to enable clients to do likewise.
- Provide a strong framework for setting and reviewing environmental objectives, ensuring that targets are met and ensuring that its environmental programme is consistent with EMS commitments through regular auditing and reviews.
- Communicate this Policy to staff, clients, suppliers, and sub-contractors using its Website, the Intranet and internal memoranda and newsletters.

This Policy is a public statement and will be made freely available on request to any interested parties.

Basic Environmental Site Rules

To prevent damage and pollution to the environment and ecology, always please observe the following rules:

- Do not allow the spread of contaminated soil or arisings onto 'clean' areas of the site.
- Ensure that the site is kept clean and tidy and that wastes are disposed of appropriately and immediately.
- Be considerate to other site users and local residents – keep nuisance to a minimum.
- Respect wildlife and wildlife habitat.
- Minimise waste and be energy efficient.
- If in doubt, call your office or talk to a member of the Environmental Team. There is also an expanding range of Environmental Data Sheets which you may find useful.

Environmental Notes

To ensure our commitment to avoid damage and pollution to the environment please observe the following rules:

- At all times please try to ensure that no potentially contaminative material enters adjacent ground or waters
- Please ensure the site is kept tidy and that wastes are disposed of appropriately and immediately
- Please consider the potential for local nuisance and be considerate at all times
- Always wear appropriate protective equipment and ensure it is in good working condition
- Please report any unusual finds immediately to the engineer
- When in doubt, please ask

EN301B – Risk Assessment.

Note: See Guidance Notes as an aid to completion

BDA Site Classification (Circle) **Green** **Yellow** **Red**

1) Contaminated Soil: What special precautions are required? (e.g. ground protection)
None expected – excess spoil to be removed from working area and disposed of in licensed skip.

2) Controlled Surface Waters (i.e. rivers, streams, canals, lakes, estuaries, coastal waters etc.)
Is the site crossed or bordered by any of the above? If "Yes", what precautions are to be taken to mitigate contamination?
The nature of investigation works should not lead to the spread of arisings (solid or liquid) to nearby watercourses. Should it become evident that unexpectedly high levels of arisings are generated, the spread of any arisings will be controlled with the use of sandbags, plastic sheeting (to be available at the site compound).

3) Controlled Ground Waters (Aquifers): Has Geotechnics Ltd been advised that the site is over or adjacent to an aquifer?
If "Yes", what precautions are to be taken to mitigate contamination?
Yes. Shallow boreholes not deeper than 10m and will use telescopic drilling techniques to case off overburden and stop any pathways forming to the aquifer below.

4) Wildlife Habitat, Invasive Plants etc.: Has Geotechnics Ltd been advised that the site is the habitat of identified species?
If "Yes", what precautions are to be taken to mitigate the effects of the investigation on them or vice versa?
Yes. Ecological Clerk of Works to be present throughout the works to ensure no unacceptable disturbance to plants and wildlife occurs.

5) Nuisance (e.g. noise, dust, smoke, odour, visual etc): Has Geotechnics Ltd been advised that special precautions will be necessary to mitigate "nuisance" caused by its normal operations? If "Yes", what mitigation measures are to be taken?
No – should dust become an issue then dust suppression techniques would be adopted (water sprays), however investigation methods and the likelihood of all buried soils being damp mean this risk is negligible.

6) Waste: How are waste soils, other solids and liquids to be disposed of?
No excess spoil expected – all arising will be replaced on the ground.

7) Other things to consider (e.g. special considerations or instructions outlined by the client or regulatory authority)

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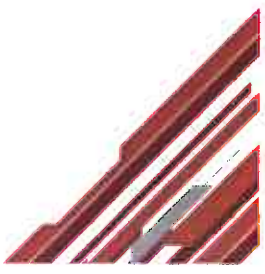
Geotechnics' Waste Carrier Licence



Certificate of Registration under the Waste (England and Wales) Regulations 2011

Regulation authority

Name	Environment Agency
Address	National Customer Service Centre 99 Parkway Avenue Sheffield S9 4WF
Telephone number	03708 506506

The Environment Agency certify that the following information is entered in the register which they maintain under regulation 28 of the Waste (England and Wales) Regulations 2011.

Carriers details

Name of registered carrier	GEOTECHNICS LTD
Registered as	an upper tier waste carrier, broker and dealer
Registration number	CBDU42309
Address of place of business	GEOTECHNICS LIMITED THE GEOTECHNICAL CENTRE 203 TORRINGTON AVENUE COVENTRY CV4 9AP
Telephone number	02476694664
Date of registration	Wednesday 3rd October 2018
Expiry date of registration (unless revoked)	Monday 8th November 2021

Making changes to your registration

Your registration will last 3 years and will need to be renewed after this period. If any of your details change, you must notify us within 28 days of the change.

You can do this by calling the Environment Agency and providing your access code. Your access code is: .

APPENDIX G

INDUCTION & BRIEFING RECORD

This form should be completed and signed on every occasion that the Induction is provided.
This includes visitors to site and any additional site labour.

Project Name: **The Moors at Arne Coastal Change** Project Number: **PE201643**

Name:	Position:	CSCS/CPCS Card No:	Company:	Contact No:	Signature:	Time & Date:

Briefed on site by Geotechnics Limited Site Supervisor.

The above have been briefed on the Salient points of the Project Method Statement, relevant Safe Working Procedures, Company Guidance and Information Sheets, any Specific Method Statements, Site Rules and associated Environmental Considerations, and are aware of the issues and required considerations associated with the site.

Briefed by:

Print Name: ..... Signature: .....

Date and Time: .....

APPENDIX H

REVISION AND AMENDMENT REGISTER

Revision Number	Date	Details	Revised by

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Point Of Work Risk Assessment

Project number	PE201643	**Project name**	**The Moors at Arne Coastal Change**
Geotechnics supervisor		**Date**	
Completed by		**Signed**	

Part 1. Think

Before you start	Yes	No	N/A
Do you have the right documentation for the job?			
Do you have the right PPE for the job?			
Are all power tools, lights and leads PAT tested?			
Has all plant been PUWER inspected?			
Has lifting equipment been LOLER inspected?			
Are sub- contractors being used on site?			
If yes to above name of sub-contractors.			
Are all sub-contractors to be used on the Geocentric approved list?			
Do they have LOLER certificates and PUWER maintenance records for all drilling rigs to be used on site? (obtain copy)			
Are all cable percussion rigs proposed for use on site fitted with an ancillary winch?			
If you answered no to the above is a suitable harness fitted with a personal rescue device available on site.			
Do all sub-contractors due to attend site hold a relevant CSCS card? (obtain copy)			
Do all Lead Drillers proposed for use on site have relevant NVQ training? (obtain copy)			

If you have answered 'no' to any of the above, take the required action or report to your supervisor. If in doubt always ask!

Details of any actions taken as a result to a 'no' answer to any of the above:

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Point Of Work Risk Assessment

Part 2. Assess

Unforeseen hazards that require further considerations *(if the hazard is present tick the box)*					
Falls from height		***Entry into a confined space***		Poor lighting	
Falling or flying objects		Dust		Temperature (high/low)	
Chemicals or harmful substances		Fumes		Adverse weather	
Heat, fire or explosion		Noise		Uncertified equipment	
Asphyxiation or drowning		Vibration		Risk to you from your work	
Risk to plant		Electricity		Risk to others from your work	
Contact with stationary object		Unstable slopes		Stored energy or insecure load	
Object overturning or collapse		Asbestos/ACM's		Traffic or moving vehicles	
Slips, trips or falls on the same level		Manual handling		Livestock	
Discarded syringes		Invasive plants		Other (state)	

If required, you must have a rescue plan in place (hazards highlighted *blue* will require a rescue plan). Provide brief details.
(You must always be able to provide a way of safe escape in the event of something going wrong)

If no control measure is in place for the hazards identified above, then appropriate control measures need to be included in Part 3 before work commences.

Part 3. Go

Additional safety assessment required	Yes		No		
Hazard	Control measures or precautions	Remaining risk H	M	L

Go to work safely today and go home safely tonight

Part 4. Review

End of job review					
Are there any lessons for next time?		Yes		No	
Has the work created any new hazards?		Yes		No	

If you have answered 'Yes' to either of these questions, make a brief note below and document on the Geocentric close out record

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Engineer's Aide-Memoire for Site Induction

Project Name	**The Moors at Arne Coastal Change**	**Project Number**	**PE201643**
Project Address and Postcode	**Arne Road, Wareham, BH20 5BG / BH20 5BJ**		
Site Supervisor		**Client**	**Kier**

Description of project	Reason for ground investigation
Programme	Proposed programme of ground investigation
Scope	Scope of site works including any specific sampling and installation requirements
Roles and responsibilities	Include details of CDM duty holders particularly on Main Contractor sites
Permit to Dig	Include details of known underground and overhead services
Communication/Coordination	Include arrangements for daily activity briefings and weekly meetings
Security policy	Details of site security and signing in & out requirements
Competence cards	Include requirements for CSCS, CPCS cards and relevant NVQ requirements. Details of CSCS cards to be recorded on the induction and briefing record.
Welfare facilities	Include details of on site welfare facilities.
First Aid	Include details of First Aider and location of First Aid kits.
Accident, Incident and Near Miss Reporting	Detail requirements and procedures for reporting of on site incidents.
Site Rules	Include company policy on drugs & alcohol, use of mobile phones on site, smoking policy.
Personal Protective Equipment	Include details of mandatory PPE requirements and task specific PPE requirements
Fire and Emergency arrangements	Include details on how to raise the alarm, fire assembly point and on site means of fighting a fire (include the requirement for only trained operatives to use fire extinguishers)
Deliveries	Include details of access arrangements for deliveries of materials and equipment
Working at Height	Detail Geotechnics policy and requirements for working at height during the use of cable percussion drilling rigs and machine excavated trial pits
Maintenance of plant and equipment	Detail the requirements for all drilling rigs brought to site to have up to date LOLER and PUWER certification. Confirmation that this has been checked to be recorded on the POWRA.
Site traffic management	Speed limit, traffic routes, parking, designated footpaths etc
Storage of materials and equipment	Include on site arrangements for storage of materials and equipment both within the site compound and at the work location.
Asbestos	Provide details on companies' procedures in the event that any suspected ACM's are encountered on site.
Environmental Considerations	Include the BDA category for the site and any specific procedures to be implemented. Cover requirements for invasive plants/protected species/protection of surface and groundwater bodies as appropriate
CoSHH	Provide details on any hazardous substances to be sued on site and the requirements of the relevant CoSHH assessments.
Waste facility/transfer	Detail waste disposal arrangements on site
Nearest A&E	Quickest and safest route. Display map and directions
Slips, trips and falls	Keep to designated paths and roads, keep off unmade ground
Hypodermic needles/sharps	Do not touch, if observed identify to client or office for safe removal to be arranged
Weils disease	Individuals are responsible for following standard good hygiene practices (hand washing before eating, wearing gloves as per site rules, covering exposed areas of broken skin with water proof plasters etc)
Other site specific safety risks	Provide details of any additional significant risks and hazards identified in the CPP/method statement/risk assessment

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Inductee's Declaration - All inductees are to sign the Site Induction and Briefing Record in the CPP/Method Statement

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Appendix I

Geotechnics COVID-19 Drilling SWP
Geotechnics COVID-19 POWRA

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GEOTECHNICS geotechnical and geoenvironmental specialists	SAFE WORKING PROCEDURES	SOCOTEC
	COVID 19 – Drilling Procedures	

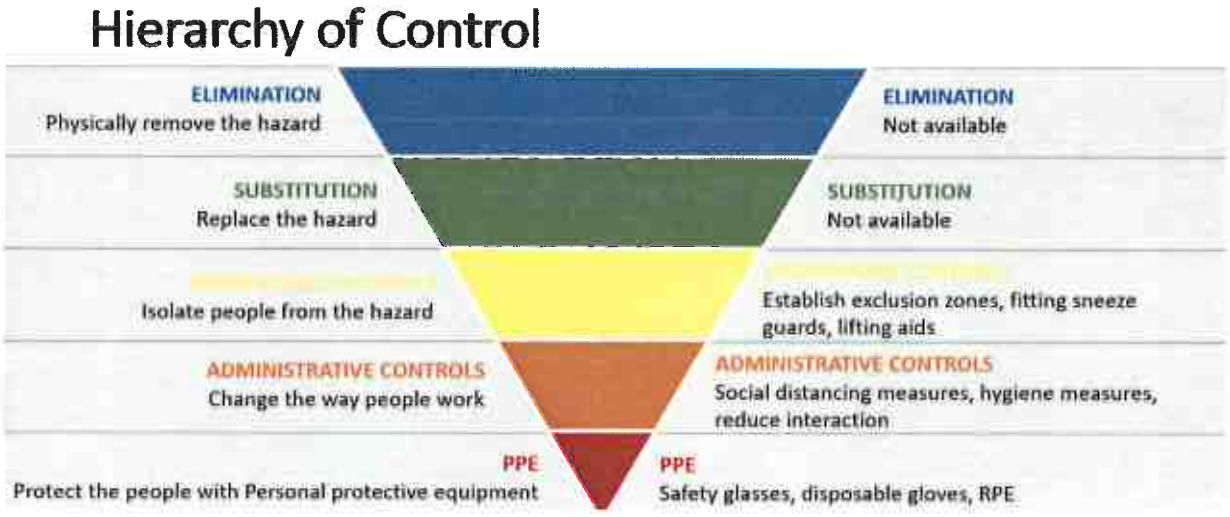
Introduction

Construction sites operating during the Coronavirus Covid-19 pandemic need to ensure they are protecting their workforce and minimising the risk of spread of infection.

These are exceptional circumstances and the industry must comply with the latest Government advice on Coronavirus at all times.

This Safe Working Procedure is intended to introduce consistent measures in line with the Government's recommendations on social distancing and MUST be followed at all times.

Throughout this Safe Working Procedure Geotechnics Limited and Socotec UK Limited with the assistance of Macklin Geotech have taken a collaborative Safety First approach and ensured the controls implemented have been in line with a standard Hierarchy of control:



Transporting equipment and personnel to site

- Personnel will travel to site in separate vehicles to eliminate the possibility of social distances being breached.
- CP Rig – No equipment to be transported on rig to avoid problems in loading and unloading using the preferred handling methods required below.

Manual Handling

The Manual Handling Operations Regulations 1992 establish a clear hierarchy of measures for dealing with risks from manual handling:

- avoid hazardous manual handling operations so far as is reasonably practicable;
- assess any hazardous manual handling operations that cannot be avoided; and
- reduce the risk of injury so far as is reasonably practicable.

Following this Hierarchy where lifting operations cannot be avoided mechanical aids should be considered, this requirement will be addressed in site specific risk assessments but could inlcude:

- Forklift Truck
- Telehandler

Where mechanical aids cannot be used for moving drilling equipment around the work location all manual lifting of loads will be carried out following the kinetic lifting method:

- Keep the load close to the waist
- Adopt a stable position
- Ensure a good hold on the load
- Moderate flexion of the back, hips and knees at the start of the lift
- Don't flex the back any further while lifting
- Avoid twisting the back or leaning sideways

To ensure social distancing is maintained during all manual lifting of loads the following equipment and procedures shall be followed:

SPT Hammer:

- Thread protector sub to be removed from the base of the hammer.
- 1m long standard boring rod to be inserted into the base of the hammer and screwed home.
- Hammer and extension piece to be lifted by 2 persons positioned at either end of the assembly, thereby maintaining 2m distance.
- Hammer slide and extension rod to be marked to illustrate hold points.

Slide Hammer:

- One person affixes 2 No 0.5m endless 1 tonne SWL lifting straps at appropriate locations at each end of the hammer.
- One person inserts 2.4m lifting bar/tube through lifting straps.
- lifting bar/tube to be marked at either end with hold points.
- Slide hammer to be manually moved around the work location with two operatives lifting from opposite ends of the lifting bar/tube to ensure 2m social distance is maintained at all times:

Lifting bar/tube

Casing:

Option 1

- Long handled casing lifters to be used to transport lengths of casing around the work location.
- 1m lengths of casings which can lifted and positioned by one person to be used for up to 8" diameter.
- 10" diameter casing or above to be used in 0.5m lengths

TerraRoc – Factory demonstration

Option 2

- Use slings and lifting bar/tube as per slide hammer system above.
- Consider the use of scaffold clips or clamps to prevent the casing from sliding on the bar during handling.

Core Boxes:

- One person inserts 2 No 1.5m endless 1 tonne SWL lifting straps around the core boxes
- One person inserts 2.4m lifting bar/tube through lifting straps
- Core box to be manually moved around the work location with two operatives lifting from opposite ends of the scaffold tube to ensure 2m social distance is maintained at all times:

Setting up drill rig and working area

- Personnel protection screens to be positioned as per the pictures below:
  - Positioning and removal of the screens to be undertaken by one person.
- Separate zones of protection to be established for the Lead Driller and the Support Operative
  - Cone toppers or Ch8 barriers to be positioned to form zones.

CP Rig – driller and assistant to remain at 2m distancing whilst locatiing the shear legs and stays.

Comacchio GEO205 with guard screen in position

Comacchio GEO405 with guard screen in position

Dando 2000 Mk2 CP rig with guard screen in position

Operating drill rig

Rigs will be operated in accordance with existing SWPs, RAMS documents, and site specific instructions, with additional mandatory requirements as follows:

- Two distinct work zones for the driller and assistant will be set up using the screens and demarcation barriers. Drill crews will remain within their allotted zone unless work requiring 2 persons is required.
- Where such tasks are required, the rig will be made safe and the work required carried out in accordance with the above procedures.
- Visitors and other site staff should not enter either work zone unless separate and additional risk assessments and procedures have been planned and agreed.

Installations

Pipework and instruments will require specific planning to install, but in general, the rig winch will be used to lower pipework which will then need to be clamped at appropriate joints to allow additional lengths to be jointed and postioned without the need for close working.

Demobilising

Standard safe working procedures will apply, but with all equipment loaded as per the manual handling arrangements above.

Social Distancing

Social distancing must be implemented on all proejcts, with a two metre gap between personnel maintained.

However there will be situations where it is not possible or safe for workers to distance themselves from each other by 2 metres.

If you find a situation where you cannot maintain safe social distance complete a (Point of Work Risk Assessment) **POWRA** and agree appropriate control measures.

General Principles

- Non-essential physical work that requires close contact between workers should not be carried out.
- Work requiring skin to skin contact should not be carried out.
- Plan all other work to minimise contact between workers.
- Re-usable PPE should be thoroughly cleaned after use and not shared between workers.
- Single use PPE should be disposed of so that it cannot be reused.
- The use of FFP3, FFP2 (or equivalent) masks should be a last resort as per the hierarchy of control on page one. Note: This is purely for the Covid 19 risk, if other hazards exist these will be highlighted in your site specific risk assessment and may require other RPE according to the site hazards present.

GEOTECHNICS geotechnical and geoenvironmental specialists	**POINT OF WORK RISK ASSESSMENT** COVID 19 – Drilling Procedures	SOCOTEC

Project number		**Project name**	
Supervisor		**Date**	
Completed by		**Signed**	

Part 1. STOP

Detail below tasks where social distancing is not possible.

For all tasks identified above, complete Part 2.
If in doubt always ask!

Part 2. THINK

Complete for tasks where social distancing is not possible.	**Yes**	**No**	**N/A**
Can the tasks be undertaken safely by one person?			
Can the tasks be undertaken using an alternative method that maintains social distancing?			
Can additional equipment be used to maintain social distancing?			

If you have answered 'no' to any of the above, detail required controls in Part 3 or report to your supervisor.
If in doubt always ask!

Part 3. GO

Additional safety assessment required	**Yes**		**No**	

Hazard	**Control measures or precautions**	**Remaining risk**		
		H	**M**	**L**
Potential exposure to COVID 19	RPE – FFP3 Masks. Have all personnel been face fitted			
	Minimise the frequency and time personnel are within 2 metres of each other.			
	All operations requiring personnel to work with 2 metres of each other to be supervised to monitor and manage compliance.			

Go to work safely today and go home safely tonight

Part 4: Review	End of task review					
	Are there any lessons for next time?		Yes		No	
	Has the work created any new hazards?		Yes		No	
	If you have answered 'Yes' to either of these questions, make a brief note below and tell your line manager:					

POWRA BRIEFING RECORD

Name:	Position:	Company:	Contact No:	Signature:	Time & Date:

The above have been briefed on the additional control measure identified in this POWRA.

Briefed by:

Print Name: ..... Signature: .....

Date and Time: .....

GEOTECHNICS geotechnical and geoenvironmental specialists	**SITE INSPECTION**	SOCOTEC
	COVID 19 – Drilling Procedures	

Project number		**Project name**	
Supervisor		**Date**	
Completed by		**Signed**	

INSPECTION CHECKLIST					
Description	**Assessment**			**Action/Positive Observations**	**Action by**
	Y	**N**	**N/A**		
All personnel travelled to site in separate vehicles					
COVID 19 TBT delivered to all personnel					
Social distancing being followed by all personnel					
SPT hammer moved in accordance with SWP					
Slide hammer moved in accordance with SWP					
Casing moved in accordance with SWP					
Core boxes moved in accordance with SWP					
Personnel protection screens in place					
Separate working zones established with physical barriers					
Operatives staying within working zones whilst drill rig is operating					
POWRA completed for all tasks where social distancing not possible					

Operatives on site					
Site Supervisor			**Signed**		
Distribution					

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APPENDIX J

Sub-Contractors

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Contracts Ltd

RISK ASSESSMENT

Explosive Ordnance Mitigation Geotechnical Environmental Site Investigation

[redacted]

		Before Control Measures			Action Needed				After Control Measures		
List all elements of job and identify hazards		FF	SF	RR	Yes/No	Control Measures	By Whom	When	FF	SF	RR
3	Overhead power lines	2	7	14	Yes	• Area to be marked out by client Exclusion zone in force within 20m of any overhead HT power line and remain outside of any substations. • HT lines and stations are to be isolated and a permit to work issued by the power company before work is conducted within the exclusion zone. • Vehicle height restrictions put in place	All	Before	1	2	2
4	Height / Weight Restrictions	3	7	21	Yes	• Exclusion Zones in Force • Safety Briefings to all personnel • Warning signs. • Rumble boards and restrictions to be placed where required	All	Before	2	2	4
5	Soft of unstable ground	3	7	21	Yes	• Avoidance where possible. • Known Hazardous areas to be clearly marked and excluded. • No one is to enter bog or marshy areas where depth of mud is not known or is greater than 0.2m	All	Before /During	2	2	4
6	Underground services	2	7	14	Yes	• Area to be CAT scanned and marked out by client • Service locations to be shown to EOD Contracts Ltd	Client	Before	1	2	2
7	Disease, Hazardous Vegetation or contamination	3	7	21	Yes	• A COSHH assessment is to be completed if hazardous materials are encountered or are known to be on site. • Areas of hazardous vegetation should be marked and avoided.	All	Before /During	1	2	4
8	Site Vehicles or Plant	3	7		Yes	• Safety briefings for ALL personnel. • Pedestrians and vehicles are to be kept separate with a 5mph site speed limit. • All vehicles to be fitted with warning beacons. • Vehicles are only to be reversed with the supervision of a Banksman • Vehicles are only to be operated by qualified personnel. • Hi Visibility clothing to be worn at all times and personnel are to remain alert at all times.	All	Before / During	2	2	4

Senior Technical Advisor is to decide if action is needed or not and then carry out the correct Control Measures.

EOD Contracts Ltd

[redacted]

[redacted]

TECHNICAL COMPONENT

UXO SAFETY MONITOR

1 **A UXO Safety Monitor for intrusive works.** The Monitor (EOD Engineer) will provide specialist support to intrusive works and will risk assess any item encountered. The EOD Engineer would be equipped with sensitive magnetometers to clear the way ahead for drilling whenever possible. Where magnetometers cannot be used, the Engineer will use his specialist knowledge and training to provide as safety as reasonably practicable, monitoring of the excavation process as it is carried out.

1.1 The UXO Monitor will "Risk Assess" all intrusive earthwork activities from the UXO standpoint and will take the appropriate actions to mitigate the risk effectively.

1.2 The UXO Monitor will investigate and Risk Assess any suspicious object believed to be UXO found on site during operations.

1.3 The UXO Monitor will provide UXO advice to the project staff and act as a facilitator in the event of an UXO being encountered.

1.4 The provision of this service is based on a 0800-1700 Work period, Monday to Friday. Overtime or Saturday working can be provided on a time and a half basis and double time for Sundays as per our quote.

1.5 The UXO Monitor is a NATO qualified EOD Engineer working to ECL's Works Method Statements for recognised UXO mitigation techniques. The UXO Monitor will conduct all of his tasks in accordance with ECL Essential Operating Procedures (ESOPs), Works Method Statements (WMS) and Risk Assessments (RA). He will be equipped with all specialist equipment and basic PPE. Any non-standard PPE will be supplied by the client.

1.6 The UXO Monitor will comply with all site safety instructions and requirements including induction briefings.

1.7 The UXO Monitor will provide an accurate record of his activities and on-site occurrences to the construction site manager and ECL Head Office each day.

2 **SUSPICIOUS ANOMALIES**

2.1 **Suspicious Object.** Should a suspicious object be detected during the excavations, the client will be informed and the options available made clear.

3 **GENERAL**

3.1 All of the work is fully documented and reported on completion. EOD Contracts Ltd is a UK **Home Office Authorised and Police Registered EOD Company** for providing EOD services; all of our activities comply with International Standards (ISO), United Nations Standards (UN-IMAS) and industry best practices and are covered by our professional indemnities and insurances.

PRICED COMPONENT

Provision of on-site UXO Safety Monitoring

Item	Description	Unit	Rate	Total
1	Mob/DeMob	Week	£100.00	**Rate Only**
2	Provision of on-site EOD Safety Engineer UXO Safety Monitoring of excavation. (UXO briefing included FOC if engineer on site for 2 days or more)	Per Day	£340.00	**Rate Only**
3	Pre- works meeting: client request		£400.00	
	All figures exclude VAT			**TBC**

ON-SITE SAFETY AWARENESS TRAINING SESSIONS FOR STAFF & OPERATIVES
(Fixed Price)

Item	Description	Quantity	Unit	Rate	Total
1	Provision of a **site specific** UXO safety Awareness Training Pack, inclusive of Response Plan	**Fixed**	Item	£450.00	**£450.00**
			All figures exclude VAT	**Total £**	**£450.00**

Notes:
1. Additional Engineers are available at the same rates if required.
2. Prices exclude VAT.
3. Invoices submitted monthly and due 30 days from submission.
4. Quote valid for 60 days from issue.

EOD CONTRACTS LTD

STANDARD TERMS AND CONDITIONS 2018

The Standard Terms and Conditions set forth are the terms and conditions of: EOD Contracts Ltd. Unit G1 Holly Farm Business Park, Honiley, Kenilworth CV8 1NP Warwickshire, United Kingdom (hereinafter called "EOD).

Third Party. The third party (hereinafter called the "Client")

WHEREAS THE Client requires of EOD to perform work and/or technical services described or similar instruction (hereinafter called the "Work").
AND WHEREAS EOD represents that it has the necessary expertise and qualified personnel to perform the Work for the Client on the terms and conditions set forth in this Agreement.

All parties agree as follows:

1.0 CONTRACT DOCUMENTS

1.1 Without a signed formal contract negotiated between EOD and the client these Terms and Conditions will be deemed to apply in its entirety.

2.0 THE WORK

2.1 EOD shall provide qualified personnel with relevant expertise, and competence to perform the Work

3.0 CONSIDERATION AND PAYMENT

3.1 In full consideration for the performance of the Work, the Client shall pay EOD in pounds sterling.

3.2 EOD shall deliver to the Client its invoices for the Work. The Client shall pay all such invoices within 30 days of the date of the invoices; by electronic telegraphic transfer to EOD Contracts Bank of Scotland bank account or by cheque to EOD Contracts Ltd.

3.3 If, within 7 days of receiving EOD invoices, the client does not bring to EODs attention any problems with the invoices, it shall be deemed to be correct in its entirety.

3.4 ALL works carried out by EOD are professional services and cannot be zero VAT rated for any reason.

4.0 CONFIDENTIALITY

4.1 All information that EOD acquire (orally, written, in disk or electronic form) shall be deemed confidential whether received directly or indirectly, either from the Client or in the performance of the Work and includes (but is not limited to), all corporate, legal and technical information relating to the Client or any third parties who may provide or have provided information as part of the scope of the Work, except:

4.1.1Information in which EOD can prove was in its possession prior to disclosure hereunder, and was not acquired, directly or indirectly, from the Client or its affiliates or from any third party under any confidentiality obligation, in accordance with this agreement.

4.1.2Information in the public domain at the time of the disclosure hereunder.

4.1.3Information which, after disclosure hereunder is published or otherwise becomes part of the public domain through no fault of EOD.

4.1.4Information which, after disclosure hereunder, is lawfully obtained by EOD from a third party without restriction on disclosure, providing that in making the disclosure such third party is not in breach of any obligation of confidentiality owed to the Client with respect to such information.

4.2 EOD shall hold all Confidential Information in the strictest confidence and shall not, without the Client's prior written approval, use it for any purpose other than for the proper performance of the Work or, except as specifically permitted in the Technical Component.

4.3 All reports, summaries and other documents compiled relevant to this Agreement, defined in the Technical Component and prepared by EOD in the performance of the Work shall, unless otherwise provided for herein, be the Client's exclusive property and EOD shall deliver all originals of such documents to the Client at the time or times the Client requires, and, in any event, immediately following the termination or the expiration of this Agreement. Notwithstanding, EOD may retain copies of such reports, summaries, documents and working papers prepared or used in connection with the Work.

5.0 FORCE MAJEURE

5.1 For the purposes of this Agreement Force Majeure shall mean any event.

5.1.1The occurrence of which, by the exercise of reasonable diligence, the affected party is unable to prevent; and the continuation of which, by the exercise of reasonable diligence, is beyond the control of the affected party; and, the consequences of which, in relation to the performance of obligations arising under this Agreement and by the exercise of reasonable diligence, the affected party is unable to prevent.

5.2 A Force Majeure event includes; an act of god; expropriation, confiscation, requisitioning of or commandeering of all or part of the Work or compliance with any oral or written order, directive or request of any governmental authority; act of war or a public enemy whether war be declared or not; sabotage or act of terrorism; explosion, fire, flood, earthquake, lightning, hail, weather conditions, or other natural calamities.

5.3 Neither party to this Agreement shall be liable for any failure to perform any one or more of its obligations arising under this Agreement if and to the extent such failure is directly or indirectly caused by a Force Majeure.

5.4 If an event of a Force Majeure shall occur, the affected party shall as soon as is reasonably possible but not later than 7 days, notify the other party in writing of such occurrence, and shall provide the other party with full and complete information about the event and an estimate of the consequences of such event on the ability of the affected party to perform its obligations under this Agreement. The affected party shall, on a regular basis, keep the other party fully informed regarding the ongoing status of the Force Majeure occurrence including when it ends. Failure to do so will entitle the party not affected by the Force Majeure to require the party affected by the Force Majeure to perform its obligations hereunder as if the Force Majeure had ceased.

5.5 If the Force Majeure continues for a period in excess of 4 weeks, either EOD or the Client may terminate this Agreement by written notice by one party to the other.

6.0 INSURANCE

6.1 EOD shall maintain its insurances throughout the duration of its Agreement.

6.2 At the Client's request, EOD shall furnish the Client with certificates setting forth the stated insurance cover.

7.0 AUDIT

7.1 EOD shall keep proper and accurate records for the Work performed under its Agreements.

8.0 NOTICES

8.1 Notices and other communications required or permitted by this Agreement shall be in writing and may be delivered personally to an authorised representative of either party, sent by courier, or transmitted by written telecommunications.

8.2 A minimum of 5 working days notice is required for all CPT/ Intrusive work cancellations. EOD reserves the right to charge the client 100% of all costs incurred, including manpower, if no such notice is given.

8.3 A minimum of 5 working days notice is required for all EOD Engineer (On Site Support to Geotechnical, Site investigations and shallow excavations, Non Intrusive Surveys) work cancellations. EOD reserves the right to charge the client 100% of all costs incurred, including manpower, if no such notice is given

9.0 ARBITRATION

9.1 EOD will always endeavour to amicably settle all disputes arising out of or in connection with this Agreement directly with the Client. If such settlement cannot be reached, all disputes will fall under English law.

9.2 The parties agree that the results of all disputes shall be final and binding.

10.0 ELECTRONIC AND HARD PRINT INFORMATION

10.1 It is the responsibility of the Client to supply correct charts, lists, drawings, sketches, maps, coordinates and other information to EOD in relation to the work. There may be a requirement for EOD to amend such documents, as requested by the Client; however, the responsibility to check and authorise all such changes and to mark out all borehole/probe positions, prior to the start of any work, falls to the Client. All markings and or recordings of positions throughout the project clearly lie with the Client. This is to ensure quality of information is maintained throughout the project/work.

11.0 GOVERNING LAW AND LANGUAGE

11.1 This Agreement shall be governed by and construed in accordance with English law and its language.

12.0 DAMAGE

12.1 EOD shall not be held liable for any costs arising from damage to property or crops where the damage was unavoidable as a result of site operations, or for any consequential costs arising from such damage.

12.2 EOD shall not be held responsible for any costs arising from loss or damage to underground services unless the precise positions of such underground services had been indicated, in writing, to EODs Head Office in Horiley, prior to the commencement of the work. EODs rights and obligations shall be unaffected by any searches we have undertaken.

13.0 MARKING OUT

13.1 The accurate, comprehensive, timely setting out and marking of site positions, services and survey areas are the responsibility of the client to provide.

14.0 TRAFFIC & SITE LIGHTING

14.1 EOD has not included the provision for traffic control, lighting, protective works or banksman duties within our offer, unless stated.

15.0 INSPECTION PITS

15.1 EOD has not made any allowance in our offer for inspection pits to check the presence of underground services, unless stated.

16.0 ACCESS & AVAILABILITY

16.1 Our offer is conditional on the following:

16.1.1 Unhindered physical access onto site for EOD Engineers, men and machines.

16.1.2 Adequate working space for the work to be conducted in an efficient, safe manner.

16.1.3 Sufficient marking available for EOD to work continuously.

16.1.4 All permits, authorisations, licences, certificates, consents required by statue have been obtained and paid for by the client or their agents to permit our men and machines to conduct the work within all required regulations and by-laws.

17.0 WORKING HOURS

17.1 Day rates. Our normal working day of eight hours is from 0800hrs to 1700hrs, Monday to Friday with one hour for lunch. One full day rate is charged, regardless of hours worked within that time. Additional working hours (overtime) are charged at time and a half, including Saturdays. Double time is charged for Sunday working and treble time for Public holidays. Time is charged to the next full hour.

18.0 DELAYS

18.1 Payment will be required for all machinery and plant at the hourly rate set down in our offer for all delays due to circumstances beyond our control, referred to as standing time.

19.0 POLLUTION

19.1 EOD has not taken into account working contaminated land. Such works can be arranged by EOD at cost to be agreed by both parties. Working on land found to be contaminated with unforeseen bio-hazards or chemicals will require EOD to assess the situation as needed. EOD will require payment for additional costs incurred as a result of such changes. EOD does not accept liability for any claim resulting from such works where, EOD has carried out the works in accordance with the Clients instructions which must be provided in writing.

GEOTECHNICS
geotechnical and geoenvironmental specialists

APPENDIX K

COSHH Sheets

Geotechnics Limited ©
The Geotechnical Centre
203 Torrington Avenue
Tile Hill, Coventry
CV4 9AP
Tel: 0247 669 4664
Fax: 0247 669 4642

The Geotechnical Centre
Unit 1, Borders Industrial Estate
River Lane, Saltney, Chester
CH4 8RJ
Tel: 01244 671 117
Fax: 01244 671 122

The Geotechnical Centre
5 Orchard Court, Heron
Road, Exeter
EX2 7NR
Tel: 01392 463 110
Fax: 01392 163 111

The Geotechnical Centre
Unit 1 Bypass Industrial Estate,
Sherburn in Elmet, North Yorkshire
LS25 6EP
Tel: 01977 525 037

GEOTECHNICS
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CoSHH and Environmental Assessment

Name of substance:	Sand	CoSHH Reference:	CA004
Manufactured by:	Hanson	Assessment date:	22/03/2018
Container/quantity:	25kg Bags	Review date:	21/03/2021
Method of application:	Shovel	Assessor:	Michael Coates
Planned use of substance:	Used during borehole installation		

Potential exposure and harm			Control measures
Type	*Exposure*	*Harm*	*Control measures*
Inhalation	Potential for exposure during application or mixing of product.	If inhaled over a prolonged or extended period, respirable dust from natural aggregate can lead to respiratory system damage and disease.	½ face mask fitted with P3 filter or disposable P3 filtered mask to be worn during mixing of product.
Ingestion	Unlikely other than as a result of poor hygiene.	Unlikely to cause any harm.	Maintain good levels of personal hygiene.
Skin contact	Potential for exposure during application or mixing of product.	Prolonged contact with skin may cause irritation and dryness, which may lead to dermatitis.	Gloves to be worn during application or mixing of product.
Eye contact	Potential for exposure during application or mixing of product.	Particles of grit or dust from natural aggregates may irritate or scratch eyes.	Safety glasses to be worn during application or mixing of product.
Environmental	Unlikely other than as the result of an accident.	Not harmful to the environment.	None required

Substance hazard classification:

								
Explosive	Highly Flammable	Oxidising	Compressed gases	Corrosive	Toxic	Irritant	Sensitising	Harmful to environment

Not classified as dangerous in accordance with Directive 67/548/EEC or EC 1272/2008

Personal protective equipment:

								
Hard hat	Safety glasses	Safety goggles	Ear defenders	Gloves	Nitrile gloves	Overalls	Disposable overalls	½ face or disposable mask
	■			■				■

First aid measures:		
	Inhalation	Immediately remove to fresh air. If breathing difficulties are experienced seek medical attention.
	Ingestion	Remove to fresh air. If person is conscious, rinse out mouth and give water to drink. Seek medical advice if symptoms develop.
	Skin contact	Wash with water. Prolonged contact may cause irritation. If symptoms develop or persist seek medical attention.
	Eye contact	Do not rub eyes, as the material is abrasive and may scratch the surface of the eye. Immediately and thoroughly irrigate with eye wash solution or clean water. If symptoms develop or persist seek medical attention.

Fire precautions:	
 	The product is non-combustible.

Spillage:		
	Facilities & equipment required	Water, brush and waste bags.
	Spillage procedures	Dampen product to avoid creating dust and brush up waste.
	Disposal of spilled waste	Place in waste bags for disposal in on site waste skips.

Storage/Handling:	
	Store in original packaging

Disposal of waste – excess material, containers and packaging	
	Place in waste skips.

Aggregates
Material Safety Data Sheet (MSDS)

Hanson
HEIDELBERGCEMENT Group

1. IDENTIFICATION OF SUBSTANCE/ MIXTURE & COMPANY/UNDERTAKING

Name of substance: Natural aggregates

For further details of the specification refer to the relevant Material Safety Data Sheet.

2. HAZARD IDENTIFICATION

NOT classified as dangerous in accordance with Directive 67/548/EEC or EC 1272/2008.

Respirable dust may be released during processing, handling and use of natural aggregates, particularly through crushing, drilling, cutting, loading and unloading of bulk aggregates, or if the aggregate is supplied as a fine powder. If inhaled in excessive quantities over a prolonged period or extended period, respirable dust can constitute a long-term health hazard.

Dusts containing Respirable Crystalline Silica (quartz) present a greater hazard.

Long-term exposure to respirable dust can lead to respiratory system damage and disease. Respirable crystalline silica has been associated with the lung disease silicosis.

Some sand aggregates are unsuitable for sand blasting operations as they may break down, producing respirable dust containing quartz.

The quartz content of the product will vary, and is related to the type of mineral deposit from which the aggregate is produced. Advice on the quartz content and other chemical information is available from the supplying unit.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Produced from naturally occurring rock or sand and gravel mineral deposits.

The mineral composition and characteristics of the aggregate will depend on the type of mineral deposit from which the aggregate is produced. Further information on the composition, including free silica (quartz) content is available from the supplying unit. In general, quartzite, sandstone, sand & gravel will have the highest levels of quartz.

Hazardous Ingredients:

Substance Name	EC No	%	DSD Classification	CLP Classification
Crystalline Silica*	238-878-4	Variable	Xn R48/20	H372

4. FIRST AID MEASURES

Inhalation:
Immediately remove to fresh air. If breathing difficulties are experienced, seek medical attention.

Skin contact:
Wash with water. Prolonged contact may cause irritation. If symptoms develop or persist, seek medical attention.

Eye Contact:
Do not rub eyes, as the material is abrasive and may scratch the surface of the eye. Immediately and thoroughly irrigate with eye wash solution or clean water. If symptoms develop or persist, seek medical attention.

Ingestion:
Remove to fresh air. If person is conscious, rinse out mouth and give water to drink. Seek medical advice if symptoms develop.

5. FIRE FIGHTING MEASURES

Natural aggregates are non-flammable and are not combustible.

Suitable Extinguishing Media: Not applicable.

Unsuitable Extinguishing Media: Not applicable.

Special Exposure Hazards in Fire: None.

Special Protective Equipment for Fire Fighters: None.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:
Avoid breathing in dust. Keep dust out of eyes. See Section 8 for guidance on personal protective equipment. See Section 7 for guidance on handling the product.

Environmental Precautions:
Natural aggregates are inert, but dust and fine particles should be prevented from entering watercourses and drains. Deposition of dust on vegetation and surrounding property should be avoided controlling the release of dust at source.

Methods for Cleaning:
Avoid dry sweeping, which creates dust. Use vacuum cleaning where practicable, or suppress dust using water sprays before cleaning up.

7. HANDLING AND STORAGE

Handling:
The product should be handled to minimise the creation of airborne dust. Conveyor systems should be fitted with covers to minimise wind whipping. Very fine, dry material should be conveyed in an enclosed system. Water sprays and/or local exhaust ventilation and filtration should be used as required to minimise generation of dust.

Manual handling of the product should be avoided where possible. If manual handling is necessary, full account should be taken of the Manual Handling Regulations.

Storage:

The product should be stored to minimise the creation of airborne dust.
Very fine, dry product in bulk should be stored in enclosed silos.

Bulk aggregate containing fine material (<3mm) should not be stored in the open unless it is conditioned with water. Stockpiles should be sited to avoid wind-whipping where possible. Storage bays should be fitted with 3 sides and the aggregate stored below the level of the sides to avoid wind-whipping.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Take Measures to Prevent:

Inhalation of excessive quantities of dust.

Exposure Control Limits / Source

Total Dust	W.E.L.	10mg/m³	8 Hrs	T.W.A.
Respirable Dust	W.E.L.	4mg/m³	8 Hrs	T.W.A.
Respirable Quartz (Crystalline Silica SiO_2)	W.E.L.	0.1mg/m³	8 Hrs	T.W.A.

W.E.L. = Workplace Exposure Limit

T.W.A. = Time Weighted Average

Control Measures:

Dust should be controlled by containment, suppression and extraction/ filtration where possible.

Regular monitoring should be undertaken to identify where people may be exposed to respirable dust so that further measures can be implemented to reduce exposure.

Respiratory Protection:

Suitable respiratory protection should be used to protect against inhalation of dust, and to ensure exposure is below the Workplace Exposure Levels given at the start of this section.

Hand Protection:

Gloves should be worn to avoid abrasion of the skin when handling the product. Wear waterproof gloves if the product is wet.

Eye Protection:

Goggles or protective glasses should be worn to prevent dust entering the eyes if required.

Skin Protection:

Overalls to protect skin and clothes. The use of skin barrier cream is also recommended. Hands should be washed thoroughly before handling or eating food or drink.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Granular solid
Odour	None
pH	Various
Boiling Point / Range	Not determined
Melting Point / Range	Not determined
Flash Point	Not applicable
Auto Flammability	Not applicable
Flammability	Not applicable
Explosive Properties	Not applicable
Oxidising Properties	Not determined
Vapour Pressure:	Not applicable
Relative Density:	Above 2.0
Water Solubility:	Dependant on rock type
Fat Solubility:	Not determined

10. STABILITY AND REACTIVITY

Conditions to Avoid:

None.

Materials to Avoid:

Acids (for aggregates containing $CaCO_3$ & $MgCO_3$)

Hazardous Decomposition Products:

Limestone aggregates may react with acid groundwater to release carbon dioxide gas, which may build up in confined spaces to hazardous concentrations.

11. TOXICOLOGICAL INFORMATION

Inhalation:

If inhaled over a prolonged or extended period, respirable dust from natural aggregate can lead to respiratory system damage and disease. Respirable crystalline silica has been associated with the lung disease silicosis.

Skin Contact:

Prolonged contact with skin may cause irritation and dryness, which may lead to dermatitis.

Eye Contact:

Particles of grit or dust from natural aggregates may irritate and scratch eyes.

Ingestion:

Unlikely to cause any problems.

12. ECOLOGICAL INFORMATION

Environmental Assessment:

When used and disposed of as intended, no adverse environmental effects are foreseen. Aggregates are naturally occurring, inert minerals and do not pose a significant ecological hazard.

Mobility:
Aggregates are non-volatile, inert materials that will sink in water and form a layer on the surface of the ground. Dust may become airborne, leading to deposition on vegetation.

Persistence and Degradability:
Aggregates are resistant to degradation and will persist in the environment.

Ecotoxicity:
Not expected to be toxic to aquatic organisms.

13. DISPOSAL CONSIDERATION

Safe Handling of Residues / Waste Product:
Natural aggregates are classed as 'inert' but should be disposed of in accordance with local and national legal requirements. Natural aggregates can be readily reused or recycled.

14. TRANSPORT INFORMATION

Special Carriage Requirements:
None – not classified as dangerous for transport.

Open vehicles should be sheeted or loads conditioned with water to avoid dust nuisance.

15. REGULATORY INFORMATION

Classification: **Not classified as dangerous.**

However, consideration of the following risk & safety phrases is recommended:

67/548/EEC

Risk Phrases:
R36/37 – Irritating to eyes and respiratory system.

R48/20 – Harmful: danger of serious damage to health by prolonged exposure through inhalation (if respirable silica is present).

Safety Phrases:
S36/ 37/ 39 – Wear suitable protective clothing, gloves and eye/face protection.

EC1272/2008

Hazard Statements:
H317 – May cause skin irritation

H335 – May cause respiratory irritation

H372 – Causes damage to organs through prolonged or repeated exposure (relates possible lung damage if exposed to respirable silica).

Precautionary Statements:
P261 – Avoid breathing dust

P281 – Use personal protective equipment as required (see Section 8)

16. OTHER INFORMATION

Training Advice:
Wear and use of PPE.

Recommended Uses and Applications:
Industrial and construction applications.

Further Information:

Contact Product Technical Support at Hanson UK using the details given in Section 1.

HSE Guidance Note EH40/2007 PPE Regulations 1992

COSHH Regulations 2002 Environmental Protection Act 1990

HSE Crystalline Silica EH59

Dangerous Substances Directive (DSD) 67/548/EEC

Classification, Labelling and Packaging Regulations (CLP) EC1272/2008

Further copies of this Material Safety Data Sheet may be obtained from Hanson UK.

Prepared in accordance with Annex II of the REACH Regulation (EC) 1907/2006

17. DISCLAIMER

The information in this Material Safety Data Sheet was believed to be correct at the time of issue. It does not, however, give assurances of product properties and establishes no contract legal rights.

If you have purchased this product for supply to a third party for use at work, it is your duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet.

If you are an employer, it is your duty to tell your employees and others who may be affected of any hazards described in this sheet and any of the precautions, which should be taken.

This Material Safety Data Sheet does not constitute the user's own assessment of workplace risk, and it is the user's sole responsibility to take all necessary safety precautions when using this product.

The product is to be used exclusively for the applications named in the technical leaflet or in the processing instructions. The receiver of our product is singularly responsible for adhering to existing laws and regulations.

GEOTECHNICS
geotechnical and geoenvironmental specialists

CoSHH and Environmental Assessment

Name of substance:	Cement	CoSHH Reference:	CA005
Manufactured by:	Hanson	Assessment date:	22/03/2018
Container/quantity:	25kg Bags	Review date:	21/03/2021
Method of application:	Shovel	Assessor:	Michael Coates
Planned use of substance:	Mixed to form concrete for use during borehole installation		

Potential exposure and harm			Control measures
Type	*Exposure*	*Harm*	*Control measures*
Inhalation	Potential for exposure during application or mixing of product.	May cause respiratory irritation. Repeated inhalation of dust over a long period of time increases the risk of developing lung disease.	½ face mask fitted with P3 filter or disposable P3 filtered mask to be worn during mixing of product.
Ingestion	Unlikely other than as a result of poor hygiene.	Unlikely to cause any harm.	Maintain good levels of personal hygiene.
Skin contact	Potential for exposure during application or mixing of product.	Dry cement may cause irritation. Wet cement may cause serious burns without the development of pain.	Nitrile gloves to be worn during application or mixing of product.
Eye contact	Potential for exposure during application or mixing of product.	Contact with dement (dry or wet) may cause serious and potentially irreversible injuries.	Safety glasses to be worn during application or mixing of product.
Environmental	Unlikely other than as the result of an accident.	Not harmful to the environment.	None required

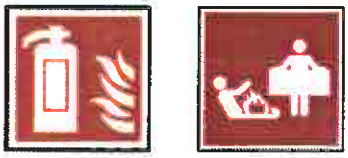
Substance hazard classification:

								
Explosive	Highly Flammable	Oxidising	Compressed gases	Corrosive	Toxic	Irritant	Sensitising	Harmful to environment
				■		■	■	

Personal protective equipment:

								
Hard hat	Safety glasses	Safety goggles	Ear defenders	Gloves	Nitrile gloves	Overalls	Disposable overalls	½ face or disposable mask
	■				■			■

First aid measures:		
	Inhalation	Immediately remove to fresh air. If breathing difficulties are experienced seek medical attention.
	Ingestion	Do not induce vomiting. If the person is conscious, wash out mouth with water. Get medical attention immediately.
	Skin contact	Dry cement – remove and rinse abundantly with water. Wet cement – wash skin with plenty of water. Remove contaminated clothing, footwear, watches etc and clean thoroughly before re-using. Seek medical attention.
	Eye contact	Do not rub eyes in order to avoid possible cornea damage. Remove contact lenses if any. Incline head to injured eye and flush with clean water for at least 20 minutes to remove all particles. Contact a specialist of occupational medicine or an eye specialist.

Fire precautions:	
	The product is non-combustible.

Spillage:		
	Facilities & equipment required	Water, brush and waste bags.
	Spillage procedures	Dry cement - dampen product to avoid creating dust and brush up waste. Wet cement – clean up cement and place in waste container. Allow material to solidify before disposal.
	Disposal of spilled waste	Place in waste bags for disposal in on site waste skips.

Storage/Handling:	
	Store in original packaging in cool dry location.

Disposal of waste – excess material, containers and packaging	
	Place in waste skips.

Hanson Cement

Material Safety Data Sheet – Common Cements

According to Regulation (EC) No 1907/2006 (REACH)

Hanson
HEIDELBERGCEMENT Group

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Products EN 197-1 Common cements and mixtures containing them	
Trade Names	
Bulk Cements	Packed Cements
Hanson Portland Cement Hanson Rapid Hardening Portland Cement Hanson Coarse Ground Portland Cement	Hanson Multicem Hanson General Purpose Cement Hanson +SR Hanson White Cement

The following are the substances in the cement that contribute to the classification of the mixture as regards acute toxicity, skin corrosion or serious eye damage, respiratory or skin sensitisation, specific target organ toxicity (STOT) or aspiration hazard

Substance	EINECS	CAS	Hazard
Portland cement clinker	266-043-4*	65997-15-1	Serious eye damage, Skin sensitisation and STOT SE
Flue dust from production of cement clinker**	270-659-9	68475-76-3	Serious eye damage, Skin sensitisation and STOT SE

* Entry is called Cement, Portland, Chemicals.
** May exist in some products. For the purposes of this SDS information assume this substance exists.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Cements are used in industrial installations to manufacture/formulate hydraulic binders for building and construction work, such as ready-mixed concrete, mortars, renders, grouts, plasters as well as precast concrete.

Common cements and cement containing mixtures (hydraulic binders) are used industrially, by professionals as well as by consumers in building and construction work, indoor and outdoor. The identified uses of cements and cement containing mixtures cover the dry products and the products in a wet suspension (paste).

Any uses not mentioned above, are advised against.

1.3 Details of the supplier of the safety data sheet

Hanson Cement Ltd
Ketton
Stamford
Lincolnshire
PE9 3SX

Hanson Cement Customer Services
Tel: 0330 123 2074
e-mail: cement.customer.services@hanson.biz

1.4 Emergency telephone number

Emergency telephone number: 0330 123 2074
Hours of operation: 08.45 – 17.00 (Monday-Thursday) 08.45 – 16.00 (Friday)

Service is provided in English

Emergency telephone number is not available outside office hours.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

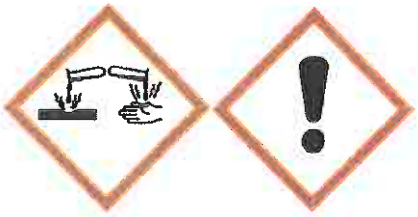
2.1.1 According to Regulation (EC) No 1272/2008 (CLP)

Hazard class	Hazard category	Hazard statements
Skin irritation	2	H318: Causes serious eye damage
Serious eye damage/eye irritation	1	H315: Causes skin irritation
Skin sensitisation	1B	H317: May cause an allergic skin reaction
Specific target organ toxicity single exposure respiratory tract irritation	3	H335: May cause respiratory irritation

2.2 Label elements

According to Regulation (EC) No 1272/2008 (CLP)

Hazard pictograms



Signal word

Danger

Hazard statements

H318 Causes serious eye damage
H315 Causes skin irritation
H317 May cause an allergic skin reaction
H335 May cause respiratory irritation

Precautionary statements

P102	Keep out of reach of children.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338+P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

P302+P352+P333+P313	IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention.
P261+P304+P340+P312	Avoid breathing dust. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
P501	Dispose of product/packaging by hardening with the application of water and dispose of as concrete waste.

Supplemental information

Skin contact with wet cement, fresh concrete or mortar may cause irritation, dermatitis or burns. May cause damage to products made of aluminium or other non-noble metals.

2.3 Other hazards

Cement does not meet the criteria for PBT or vPvB in accordance with Annex XIII of REACH (Regulation (EC) No 1907/2006).

When cement reacts with water, for instance when making concrete or mortar, or when the cement becomes damp, a strong alkaline solution is produced. Due to the high alkalinity, wet cement may provoke skin and eye irritation.

The product contains chromate reducing agent. As a result, the content of soluble chromium (VI) is less than 2 ppm. If the storage conditions are not appropriate or the storage period is exceeded, the effectiveness of the reducing agent can diminish, and the cement can become skin sensitizing.

SECTION 3: Composition/information on ingredients

3.1 Substances

Not applicable

3.2 Mixtures

Common cement types according to the EN 197-1 standard:

CEM I 52,5N
CEM I 52,5R
CEM I 42,5N
CEM II A-LL 32,5R
CEM II A-LL 42,5N
CEM III A 42,5N LH

which contain less than 1% crystalline silica and :

Substance	Concentration Range (W/W in cement)	Registration Number	EINECS	CAS	Classification Regulation 1272/2008	
					Hazard Class	Hazard Statement
Portland cement clinker	5-100%	(a)	266-043-4	65997-15-1	STOT SE 3	H335: May cause respiratory irritation
					Skin irritation 2	H315: Causes skin irritation
					Serious eye damage/eye irritation 1	H318: Causes serious eye damage
					Skin sensitisation 1B	H317: May cause an allergic skin reaction
Flue dust (b)	0-5%	01-2119486767-17-0054	270-659-9	68475-76-3	STOT SE 3	H335: May cause respiratory irritation
					Skin irritation 2	H315: Causes skin irritation
					Serious eye damage/eye irritation 1	H318: Causes serious eye damage
					Skin sensitisation 1	H317: May cause an allergic skin reaction

(a) Portland cement clinker is, according to Art. 2.7(b) and Annex V.10 of EC Regulation 1907/2006 (REACH), exempt from the registration requirement.

(b) "Flue Dust" is a substance (UVCB), arising during production of cement clinker; other conventional names are cement kiln dust, bypass meal, filter dust, ESP dust and clinker dust.

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes

No personal protective equipment is needed for first aid responders. First aid workers should avoid contact with wet cement or wet cement containing mixtures.

Following contact with eyes

Do not rub eyes in order to avoid possible cornea damage as a result of mechanical stress. Remove contact lenses if any. Incline head to injured eye, open the eyelid(s) widely and flush eye(s) immediately by thoroughly rinsing with plenty of clean water for at least 20 minutes to remove all particles. Avoid flushing particles into uninjured eye. If possible, use isotonic water (0.9% NaCl). Contact a specialist of occupational medicine or an eye specialist.

Following skin contact

For dry cement, remove and rinse abundantly with water. For wet cement, wash skin with plenty of water. Remove contaminated clothing, footwear, watches, etc. and clean thoroughly before re-using them. Seek medical treatment in all cases of irritation or burns.

Following inhalation

Move the person to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or later develops or if discomfort, coughing or other symptoms persist.

Following ingestion

Do not induce vomiting. If the person is conscious, wash out mouth with water and give plenty of water to drink. Get immediate medical attention or contact the anti poison centre.

4.2 Most important symptoms and effects, both acute and delayed

Eyes

Eye contact with cement (dry or wet) may cause serious and potentially irreversible injuries.

Skin

Cement may have an irritating effect on moist skin (due to sweat or humidity) after prolonged contact or may cause contact dermatitis after repeated contact. Prolonged skin contact with wet cement or wet concrete may cause serious burns because they develop without pain being felt (for example when kneeling in wet concrete even when wearing trousers).

For more details see Reference (1).

Inhalation

Repeated inhalation of dust of common cements over a long period of time increases the risk of developing lung diseases.

Environment

Under normal use, common cement is not hazardous to the environment.

4.3 Indication of any immediate medical attention and special treatment needed

When contacting a physician, take this MSDS with you.

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Cements are not flammable.

5.2 Special hazards arising from the substance or mixture

Cements are non-combustible and non-explosive and will not facilitate or sustain the combustion of other materials.

5.3 Advice for fire-fighters

Cement poses no fire-related hazards. No need for special protective equipment for fire fighters.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

Wear protective equipment as described under Section 8 and follow the advice for safe handling and use given under Section 7.

6.1.2 For emergency responders

Emergency procedures are not required. However, respiratory protection is needed in situations with high dust levels. Contact should be avoided with wet cement or wet cement containing mixtures.

6.2 Environmental precautions

Do not wash cement down sewage and drainage systems or into bodies of water (e.g. streams).

6.3 Methods and material for containment and cleaning up

Collect the spillage in a dry state if possible.

Dry cement

Use clean up methods such as vacuum clean-up or vacuum extraction (Industrial portable units, equipped with high efficiency air filters (EPA and HEPA filters, EN 1822-1:2009) or equivalent technique) which do not cause airborne dispersion. Never use compressed air. Alternatively, wipe-up the dust by mopping, wet brushing or by using water sprays or hoses (fine mist to avoid that the dust becomes airborne) and remove slurry. If not possible, remove by slurrying with water (see wet cement). When wet cleaning or vacuum cleaning is not possible and only dry cleaning with brushes can be done, ensure that the workers wear the appropriate personal protective equipment and prevent dust from spreading. Avoid inhalation of cement and contact with skin. Place spilled materials into a container. Solidify before disposal as described under Section 13.

Wet cement

Clean up wet cement and place in a container. Allow material to dry and solidify before disposal as described under Section 13.

6.4 Reference to other sections

See Sections 8 and 13 for more details.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

For more information, refer to the practice guidelines adopted under the Social Dialogue Agreement on Workers' Health Protection through the Good Handling and Use of Crystalline Silica and Products Containing it, by Employee and Employer European sectoral associations, among which CEMBUREAU. These safe handling practices It can be found via the following link:

http://www.nepsi.eu/agreement-good-practice-guide/good-practice-guide.aspx.

7.1.1 Protective measures

Follow the recommendations as given under Section 8.
To clean up dry cement, see Subsection 6.3.

Measures to prevent fire

Not applicable.

Measures to prevent aerosol and dust generation

Do not sweep. Use dry clean up methods such as vacuum clean-up or vacuum extraction, which do not cause airborne dispersion.

Measures to protect the environment

No special measures required.

7.1.2 Information on general occupational hygiene

Do not handle or store near food and beverages or smoking materials. In dusty environment, wear dust mask and protective goggles. Use protective gloves to avoid skin contact.

7.2 Conditions for safe storage, including any incompatibilities

Bulk cement should be stored in silos that are waterproof, dry (i.e. with internal condensation minimised), clean and protected from contamination. Engulfment hazard: To prevent engulfment or suffocation, do not enter a confined space, such as a silo, bin, bulk truck, or other storage container or vessel that stores or contains cement without taking the proper safety measures. Cement can build-up or adhere to the walls of a confined space. The cement can release, collapse or fall unexpectedly. Packed products should be stored in unopened bags clear of the ground in cool, dry conditions and protected from excessive draught in order to avoid degradation of quality. Bags should be stacked in a stable manner. Do not use aluminium containers for the storage or transport of wet cement containing mixtures due to incompatibility of the materials.

7.3 Specific end use(s)

No additional information for the specific end uses (see section 1.2).

7.4 Control of soluble Cr (VI)

For cements treated with a Cr (VI) reducing agent according to the regulations given in Section 15, the effectiveness of the reducing agent diminishes with time. Therefore, cement bags and/or delivery documents will contain information on the packaging date, the storage conditions and the storage period appropriate to maintaining the activity of the reducing agent and to keeping the content of soluble chromium VI below 0.0002 % of the total dry weight of the cement ready for use, according to EN 196-10. They will also indicate the appropriate storage conditions for maintaining the effectiveness of the reducing agent.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

8.1.1 Exposure limit values (Workplace Exposure Limits WEL)

Substance	CAS	Long Term Exposure Limit (8hr TWA Reference Method)	Legal Reference
Portland Cement Clinker	65997-15-1	-	COSHH 2002 & HSE EH40/2005
Inhalable dust		10 mg/m^3	
Respirable dust		4 mg/m^3	

Recommendations given here are based on a DNEL level of 3mg/m^3.

8.2 Exposure controls

For each individual PROC, users can choose from either option A) or B) in the table above, according to what is best suited to their specific situation. If one option is chosen, then the same option has to be chosen in the table from section "8.2.2 Individual protection measures such as personal protection equipment" - Specification of respiratory protective equipment. Only combinations between A) – A) and B) – B) are possible.

8.2.1 Appropriate engineering controls

Measures to reduce generation of dust and to avoid dust propagating in the environment such as dedusting, exhaust ventilation and dry clean-up methods which do not cause airborne dispersion.

Exposure Scenario	PROC*	Exposure	Technical Installation	Efficiency
Industrial manufacture/formulation of hydraulic building and construction materials	2, 3	Duration is not restricted (up to 480 minutes per shift, 5 shifts a week)	Not required	-
	14, 26		A) Not required or B) Generic local exhaust ventilation	- 78%
	5, 8b, 9		A) General ventilation or B) Generic local exhaust ventilation	17% 78%
Industrial uses of dry hydraulic building and construction materials (indoor, outdoor)	2		Not required	-
	14, 22, 26		A) Not required or B) Generic local exhaust ventilation	- 78%
	5, 8b, 9		A) General ventilation or B) Generic local exhaust ventilation	17 % 78 %
Industrial uses of wet suspension of hydraulic building and construction materials	7		A) Not required or B) Generic local exhaust ventilation	- 78%
	2, 5, 8b, 9, 10, 13, 14		Not required	-
Professional use of dry hydraulic building and construction material (indoor, outdoor)	2		Not required	-
	9, 26		A) Not required or B) Generic local exhaust ventilation	- 72 %
	5, 8a, 8b, 14		A) Not required or B) Integrated local exhaust ventilation	- 87 %
	19		Localised controls are not applicable, process only in good ventilated rooms or outdoor	-
Professional uses of wet suspensions of hydraulic building and construction materials	11		A) Not required or B) Generic local exhaust ventilation	- 72 %
	2, 5, 8a, 8b, 9, 10, 13, 14, 19		Not required	-

* PROC's are identified uses and defined in section 16.2.

8.2.2 Individual protection measures such as personal protection equipment

General

During work avoid kneeling in fresh mortar or concrete wherever possible. If kneeling is absolutely necessary then appropriate waterproof personal protective equipment must be worn. Do not eat, drink or smoke when working with cement to avoid contact with skin or mouth. Before starting to work with cement, apply a barrier cream and reapply it at regular intervals. Immediately after working with cement or cement-containing materials, workers should wash or shower or use skin moisturisers. Remove contaminated clothing, footwear, watches, etc. and clean thoroughly before re-using them.

Eye/face protection

Wear approved glasses or safety goggles according to EN 166 when handling dry or wet cement to prevent contact with eyes.

Skin protection

Use watertight, wear and alkali resistant gloves (e.g. Nitrile soaked cotton gloves with CE Marking) internally lined with cotton, boots, closed long-sleeved protective clothing as well as skin care products (including barrier creams) to protect the skin from prolonged contact with wet cement. Particular care should be taken to ensure that wet cement does not enter the boots,. For the gloves, respect the maximum wearing time to avoid skin problems. In some circumstances, such as when laying concrete or screed, waterproof trousers or kneepads are necessary.

Respiratory protection

When a person is potentially exposed to dust levels above exposure limits, use appropriate respiratory protection. The type of respiratory protection should be adapted to the dust level and conform to the relevant EN standard, (e.g. EN 149, EN 140, EN 14387, EN 1827) or national standard.

Thermal hazards

Not applicable

Use	PROC*	Exposure	Specification of respiratory protective equipment (RPE)	RPE efficiency - assigned protection factor (APF)
Industrial manufacture/formulation of hydraulic building and construction materials	2, 3	Duration is not restricted (up to 480 minutes per shift, 5 shifts a week)	Not required	-
	14, 26		A) P1 mask (FF, FM) or B) Not required	APF = 4 -
	5, 8b, 9		A) P2 mask (FF, FM) or B) P1 mask (FF, FM)	APF = 10 APF = 4
Industrial uses of dry hydraulic building and construction materials (indoor, outdoor)	2		Not required	-
	14, 22, 26		A) P1 mask (FF, FM) or B) Not required	APF = 4 -
	5, 8b, 9		A) P2 mask (FF, FM) or B) P1 mask (FF, FM)	APF = 10 APF = 4
Industrial uses of wet suspension of hydraulic building and construction materials	7		A) P1 mask (FF, FM) or B) Not required	APF = 4 -
	2, 5, 8b, 9, 10, 13, 14		Not required	-
Professional use of dry hydraulic building and construction material (indoor, outdoor)	2		P1 mask (FF, FM)	APF = 4
	9, 26		A) P2 mask (FF, FM) or B) P1 mask (FF, FM)	APF = 10 APF = 4
	5, 8a, 8b, 14		A) P3 mask (FF, FM) or B) P1 mask (FF, FM)	APF = 20 APF = 4
	19		P2 mask (FF, FM)	APF = 10
Professional uses of wet suspensions of hydraulic building and construction materials	11		A) P2 mask (FF, FM) or B) P1 mask (FF, FM)	APF = 10 APF = 4
	2, 5, 8a, 8b, 9, 10, 13, 14, 19		Not required	-

* PROC's are identified uses and defined in section 16.2.

An overview of the APFs of different RPE (according to EN 529:2005) can be found in the glossary of MEASE (16). Any RPE as defined above shall only be worn if the following principles are implemented in parallel: The duration of work (compare with "duration of exposure" above) should reflect the additional physiological stress for the worker due to the breathing resistance and mass of the RPE itself, due to the increased thermal stress by enclosing the head. In addition, it shall be considered that the worker's capability of using tools and of communicating are reduced during the wearing of RPE. For reasons as given above, the worker should therefore be (i) healthy (especially in view of medical problems that may affect the use of RPE), (ii) have suitable facial characteristics reducing leakages between face and mask (in view of scars and facial hair). The recommended devices above which rely on a tight face seal will not provide the required protection unless they fit the contours of the

face properly and securely. The employer and self-employed persons have legal responsibilities for the maintenance and issue of respiratory protective devices and the management of their correct use in the workplace. Therefore, they should define and document a suitable policy for a respiratory protective device programme including training of the workers.

8.2.3 Environmental exposure controls

Air

Environmental exposure control for the emission of cement particles into air has to be in accordance with the available technology and regulations for the emission of general dust particles. Storing, loading or unloading cement in bulk prior to further transportation in bulk, blending cement in bulk or using cement in bulk other than at a construction site, including the bagging of cement and cement mixtures, the batching of ready-mixed concrete and the manufacture of concrete blocks and other cement products, requires a permit under the Environmental Permitting Regulations 2010.

Water

Do not wash cement into sewage systems or into bodies of water, to avoid high pH. Above pH 9 negative eco-toxicological impacts are possible.

Soil and terrestrial environment

No special emission control measures are necessary for the exposure to the terrestrial environment.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

This information applies to the whole mixture.

(a) Appearance: Dry cement is a finely ground solid inorganic material (grey or white powder). Main particle size: 5-30 µm
(b) Odour: Odourless
(c) Odour threshold: No odour threshold, odourless
(d) pH: (T = 20°C in water, water-solid ratio 1:2): 11-13.5
(e) Melting point: ≥1,250°C
(f) Initial boiling point and boiling range: Not applicable as under normal atmospheric conditions, melting point ≥1,250°C
(g) Flash point: Not applicable as is not a liquid
(h) Evaporation rate: Not applicable as is not a liquid
(i) Flammability (solid, gas): Not applicable as is a solid which is non combustible and does not cause or contribute to fire through friction
(j) Upper/lower flammability or explosive limits: Not applicable as is not a flammable gas
(k) Vapour pressure: Not applicable as melting point ≥1,250°C
(l) Vapour density: Not applicable as melting point ≥1,250 °C
(m) Relative density: 2.75-3.20; Apparent density: 0.9-1.5 g/cm³
(n) Solubility(ies) in water (T = 20°C): slight (0.1-1.5 g/l)
(o) Partition coefficient: n-octanol/water: Not applicable as is inorganic mixture
(p) Auto-ignition temperature: Not applicable (no pyrophoricity – no organo-metallic, organo-metalloid or organo-phosphine bindings or of their derivatives, and no other pyrophoric constituent in the composition)
(q) Decomposition temperature: Not applicable as no organic peroxide present
(r) Viscosity: Not applicable as not a liquid
(s) Explosive properties: Not applicable. Not explosive or pyrotechnic. Not in itself capable by chemical reaction of producing gas at such temperature and pressure and

at such a speed as to cause damage to the surroundings. Not capable of a self-sustaining exothermic chemical reaction.

(t) Oxidising properties: Not applicable as does not cause or contribute to the combustion of other materials

9.2 Other information

Not applicable.

SECTION 10: Stability and reactivity

10.1 Reactivity

When mixed with water, cements will harden into a stable mass that is not reactive in normal environments.

10.2 Chemical stability

Dry cements are stable as long as they are properly stored (see Section 7) and compatible with most other building materials. They should be kept dry.

Contact with incompatible materials should be avoided. Wet cement is alkaline and incompatible with acids, with ammonium salts, with aluminium or other non-noble metals. Cement dissolves in hydrofluoric acid to produce corrosive silicon tetrafluoride gas. Cement reacts with water to form silicates and calcium hydroxide. Silicates in cement react with powerful oxidizers such as fluorine, boron trifluoride, chlorine trifluoride, managanese trifluoride, and oxygen difluoride.

10.3 Possibility of hazardous reactions

Cements do not cause hazardous reactions.

10.4 Conditions to avoid

Humid conditions during storage may cause lump formation and loss of product quality.

10.5 Incompatible materials

Acids, ammonium salts, aluminium or other non-noble metals. Uncontrolled use of aluminium powder in wet cement should be avoided as hydrogen is produced.

10.6 Hazardous decomposition products

Cements will not decompose into any hazardous products.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Hazard class	Cat	Effect	Reference
Acute toxicity - dermal	-	Limit test, rabbit, 24 hours contact, 2,000 mg/kg body weight – no lethality. Based on available data, the classification criteria are not met.	(2)
Acute toxicity- inhalation	-	No acute toxicity by inhalation observed. Based on available data, the classification criteria are not met.	(9)
Acute toxicity - oral	-	No indication of oral toxicity from studies with cement kiln dust.	Literature survey

		Based on available data, the classification criteria are not met.	
Skin corrosion/ irritation	2	Cement in contact with wet skin may cause thickening, cracking or fissuring of the skin. Prolonged contact in combination with abrasion may cause severe burns.	(2) Human experience
Serious eye damage/irritation	1	Portland cement clinker caused a mixed picture of corneal effects and the calculated irritation index was 128. Common cements contain varying quantities of Portland cement clinker, blast furnace slag, gypsum and limestone. Direct contact with cement may cause corneal damage by mechanical stress, immediate or delayed irritation or inflammation. Direct contact by larger amounts of dry cement or splashes of wet cement may cause effects ranging from moderate eye irritation (e.g. conjunctivitis or blepharitis) to chemical burns and blindness.	(10), (11)
Skin sensitisation	1	Some individuals may develop eczema upon exposure to wet cement dust, caused either by the high pH which induces irritant contact dermatitis after prolonged contact, or by an immunological reaction to soluble Cr (VI) which elicits allergic contact dermatitis. The response may appear in a variety of forms ranging from a mild rash to severe dermatitis and is a combination of the two above mentioned mechanisms. If the cement contains a soluble Cr (VI) reducing agent and as long as the mentioned period of effectiveness of the chromate reduction is not exceeded, a sensitising effect is not expected [Reference (3)].	(3), (4)
Respiratory sensitisation	-	There is no indication of sensitisation of the respiratory system. Based on available data, the classification criteria are not met.	(1)
Germ cell mutagenicity	-	No indication. Based on available data, the classification criteria are not met.	(12), (13)
Carcinogenicity	-	No causal association has been established between Portland cement exposure and cancer.The epidemiological literature does not support the designation of Portland cement as a suspected human carcinogen. Portland cement is not classifiable as a human carcinogen (According to ACGIH A4: Agents that cause concern that they could be carcinogenic for humans but which cannot be assessed conclusively because of a lack of data. In vitro or animal studies do not provide indications of carcinogenicity that are sufficient to classify the agent with one of the other notations.). Based on available data, the classification criteria are not met.	(1) (14)
Reproductive toxicity	-	Based on available data, the classification criteria are not met.	No evidence from human experience
STOT-single exposure	3	Cement dust may irritate the throat and respiratory tract. Coughing, sneezing, and shortness of breath may occur following exposures in excess of occupational exposure limits. Overall, the pattern of evidence clearly indicates that occupational exposure to cement dust has produced deficits in respiratory function. However, evidence available at the	(1)

		present time is insufficient to establish with any confidence the dose-response relationship for these effects.	
STOT-repeated exposure	-	There is an indication of COPD. The effects are acute and due to high exposures. No chronic effects or effects at low concentration have been observed. Based on available data, the classification criteria are not met.	(15)
Aspiration hazard	-	Not applicable as cements are not used as an aerosol.	

Apart from skin sensitisation, Portland cement clinker and common cements have the same toxicological and eco-toxicological properties.

Medical conditions aggravated by exposure

Inhaling cement dust may aggravate existing respiratory system disease(s) and/or medical conditions such as emphysema or asthma and/or existing skin and/or eye conditions.

SECTION 12: Ecological information

12.1 Toxicity

The product is not hazardous to the environment. Ecotoxicological tests with Portland cement on Daphnia magna [Reference (5)] and Selenastrum coli [Reference (6)] have shown little toxicological impact. Therefore LC50 and EC50 values could not be determined [Reference (7)]. There is no indication of sediment phase toxicity [Reference (8)]. The addition of large amounts of cement to water may, however, cause a rise in pH and may, therefore, be toxic to aquatic life under certain circumstances.

12.2 Persistence and degradability

Not relevant. After hardening, cement presents no toxicity risks.

12.3 Bioaccumulative potential

Not relevant. After hardening, cement presents no toxicity risks.

12.4 Mobility in soil

Not relevant. After hardening, cement presents no toxicity risks.

12.5 Results of PBT and vPvB assessment

Not relevant. After hardening, cement presents no toxicity risks.

12.6 Other adverse effects

Not relevant.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Do not dispose of into sewage systems or surface waters.

Product - cement that has exceeded its shelf life

EWC entry: 10 13 99 (Wastes not otherwise specified)

(and when demonstrated that it contains more than 0.0002% soluble Cr (VI)): shall not be used/sold other than for use in controlled closed and totally automated processes or should be recycled or disposed of according to local legislation or treated again with a reducing agent.

Product - unused residue or dry spillage

EWC entry: 10 13 06 (other particulates and dust)

Pick up dry unused residue or dry spillage as is. Mark the containers. Possibly reuse depending upon shelf life considerations and the requirement to avoid dust exposure. In case of disposal, harden with water and dispose according to "Product – after addition of water, hardened"

Product – slurries

Allow to harden, avoid entry in sewage and drainage systems or into bodies of water (e.g. streams) and dispose of as explained below under "Product - after addition of water, hardened".

Product - after addition of water, hardened

EWC entries: 10 13 14 (waste from manufacturing of cement – waste concrete or concrete sludge) or 17 01 01 (construction and demolition wastes - concrete).

Dispose of according to the local legislation. Avoid entry into the sewage water system. Dispose of the hardened product as concrete waste. Due to the inertisation, concrete waste is not a dangerous waste.

Packaging

EWC entries:15 01 01 (waste paper and cardboard packaging).15 01 02 (Plastic packaging)

Completely empty the packaging and process it according to local legislation.

SECTION 14: Transport information

Cement is not covered by the international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID), therefore no classification is required.
No special precautions are needed apart from those mentioned under Section 8.

14.1 UN number

Not relevant

14.2 UN proper shipping name

Not relevant

14.3 Transport hazard class(es)

Not relevant

14.4 Packing group

Not relevant

14.5 Environmental hazards

Not relevant

14.6 Special precautions for user

Not relevant

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not relevant

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Cement is a mixture according to REACH and is not subject to registration. Cement clinker is exempt from registration (Art 2.7 (b) and Annex V.10 of REACH).

The marketing and use of cement is subject to a restriction on the content of soluble Cr (VI) (REACH Annex XVII point 47 Chromium VI compounds)

National regulatory information

CONIAC Health Hazard Information Sheet No 26 (CEMENT)

Health & Safety at Work, etc. Act 1974

Control of Substances Hazardous to Health Regulations (COSHH) 2002

Control of Substances Hazardous to Health (Amendment) Regulations 2004

Environmental Protection Act 1990

HSE Guidance Note EH40 (Workplace Exposure Limits)

Any authorised manual on First Aid by St.John's/St. Andrews/Red Cross

Manual Handling Operations Regulations 1992 (as amended)

PORTLAND CEMENT DUST – criteria document for an occupational exposure limit. June 1994 (ISBN 07176 – 0763 – 1)

HSE Guidance Notes EH26 (Occupational Skin Diseases – Health and Safety Precautions)

15.2 Chemical Safety Assessment

No chemical safety assessment has been carried out for this mixture by the supplier.

SECTION 16: Other information

16.1 Indication of changes

This MSDS (Version 3 September 2015) replaces Version 2 'Material Safety Data Sheet – Common Cements' which was published in May 2015. It has been reviewed and rewritten to reflect the new structure to meet changes in legislation to the requirements of the CLP regulations (Regulation EC 1272/2008) according to guidelines published by CEMBUREAU, the representative organisation of the cement industry in Europe.

16.2 Identified uses and use descriptors and categories

The table below gives an overview of all relevant identified uses of cement or cement containing hydraulic binders. All the uses have been grouped in these identified uses because of the specific conditions of exposure for human health and environment. For each specific use, a set of risk management measures or localised controls has been derived (see section 8) which need to be put in place by the user of cement or cement containing hydraulic binders to bring the exposure to an acceptable level.

PROC	Identified Uses - Use Description	Manufacture/ Formulation of building and construction materials	Professional/ Industrial use of building and construction materials
2	Use in closed, continuous process with occasional controlled exposure, e.g. industrial or professional manufacture of hydraulic binders.	X	X
3	Use in closed batch process, e.g. industrial or professional manufacture of ready-mix concrete.	X	X
5	Mixing or blending in batch process for formulation of mixtures and articles, e.g. industrial or professional manufacture of pre-cast concrete.	X	X
7	Industrial spraying, e.g. Industrial use of wet suspensions of hydraulic binders by spraying		X
8a	Transfer of substance or mixture from/to vessels/large containers at non-dedicated facilities, e.g. use of cement in bags to prepare mortar		X
8b	Transfer of substance or mixture from/to vessels/large containers at dedicated facilities, e.g. filling of silos or road/ rail tankers at cement plants.	X	X
9	Transfer of substance or mixture into small containers, e.g. filling of cement bags in cement plants.	X	X
10	Roller application or brushing, e.g. Products to improve adherence between building surfaces and finishing products		
11	Non-Industrial spraying, e.g. professional use of wet suspensions of hydraulic binders by spraying.		X
13	Treatment of articles by dipping and pouring, e.g. covering of construction product with a layer to improve the performance of the product.		X
14	Production of mixtures or articles by tabletting, compression extrusion, palletisation, e.g. production of floor tiling.	X	X
19	Hand-mixing with intimate contact and only PPE available, e.g. mixture of wet hydraulic binder on a construction site.		X
22	Potentially closed processing operations with minerals/metals at elevated temperature in Industrial setting, e.g. production of bricks.		X
26	Handling of solid inorganic substances at ambient temperature, e.g. mixture of wet hydraulic binders.	X	X

16.3 Abbreviations and acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
ADR/RID	European Agreements on the transport of Dangerous goods by Road/Railway
APF	Assigned protection factor
CAS	Chemical Abstracts Service

CLP	Classification, labelling and packaging (Regulation (EC) No 1272/2008)
COPD	Chronic Obstructive Pulmonary Disease
DNEL	Derived no-effect level
EC50	Half maximal effective concentration
ECHA	European Chemicals Agency
EINECS	European INventory of Existing Commercial chemical Substances
EPA	Type of high efficiency air filter
ES	Exposure scenario
EWC	European Waste Catalogue
FF P	Filtering facepiece against particles (disposable)
FM P	Filtering mask against particles with filter cartridge
GefStoffV	Gefahrstoffverordnung
HEPA	Type of high efficiency air filter
H&S	Health and Safety
IATA	International Air Transport Association
IMDG	International agreement on the Maritime transport of Dangerous GoodsLC50 Median lethal dose
MEASE	Metals estimation and assessment of substance exposure, EBRC Consulting GmbH for Eurometaux, http://www.ebrc.de/industrial-chemicals-reach/projects-and-references/mease.php
MS	Member State
MSDS	Material safety Data Sheet
OELV	Occupational exposure limit value
PBT	Persistent, bio-accumulative and toxic
PNEC	Predicted no-effect concentration
PROC	Process category
RE	Repeated exposure
REACH	Registration, Evaluation and Authorisation of Chemicals
RPE	Respiratory protective equipment
SCOEL	Scientific Committee on Occupational Exposure Limit Values
SDS	Safety Data Sheet
SE	Single exposure
STP	Sewage treatment plant
STOT	Specific Target Organ Toxicity
TLV-TWA	Threshold Limit Value-Time-Weighted Average
TRGS	Technische Regeln für Gefahrstoffe
VLE-MP	Exposure limit value-weighted average in mg by cubic meter of air
vPvB	Very persistent, very bio-accumulative
WEL	Workplace exposure limit
w/w	Weight by weight
WWTP	Waste water treatment plant

16.4 Key literature references and sources of data

(1) *Portland Cement Dust - Hazard assessment document EH75/7, UK Health and Safety Executive, 2006.*
Available from: http://www.hse.gov.uk/pubns/web/portlandcement.pdf.

(2) *Observations on the effects of skin irritation caused by cement, Kietzman et al, Dermatosen, 47, 5, 184-189 (1999).*

(3) *European Commission's Scientific Committee on Toxicology, Ecotoxicology and the Environment (SCTEE) opinion of the risks to health from Cr (VI) in cement (European Commission, 2002).*
http://ec.europa.eu/health/archive/ph_risk/committees/sct/documents/out158_en.pdf.

(4) *Epidemiological assessment of the occurrence of allergic dermatitis in workers in the construction industry related to the content of Cr (VI) in cement, NIOH, Page 11, 2003.*

(5) *U.S. EPA, Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 3rd ed. EPA/600/7-91/002, Environmental Monitoring and Support Laboratory, U.S. EPA, Cincinnati, OH (1994a) and 4th ed. EPA-821-R-02-013, US EPA, office of water, Washington D.C. (2002).*

(6) *U.S. EPA, Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, 4th ed. EPA/600/4-90/027F, Environmental Monitoring and Support Laboratory, U.S. EPA, Cincinnati, OH (1993) and 5th ed. EPA-821-R-02-012, US EPA, office of water, Washington D.C. (2002).*

(7) *Environmental Impact of Construction and Repair Materials on Surface and Ground Waters. Summary of Methodology, Laboratory Results, and Model Development. NCHRP report 448, National Academy Press, Washington, D.C., 2001.*

(8) *Final report Sediment Phase Toxicity Test Results with Corophium volutator for Portland clinker prepared for Norcem A.S. by AnalyCen Ecotox AS, 2007.*

(9) *TNO report V8801/02, An acute (4-hour) inhalation toxicity study with Portland Cement Clinker CLP/GHS 03-2010-fine in rats, August 2010.*

(10) *TNO report V8815/09, Evaluation of eye irritation potential of cement clinker G in vitro using the isolated chicken eye test, April 2010.*

(11) *TNO report V8815/10, Evaluation of eye irritation potential of cement clinker W in vitro using the isolated chicken eye test, April 2010.*

(12) *Investigation of the cytotoxic and proinflammatory effects of cement dusts in rat alveolar macrophages, Van Berlo et al, Chem. Res. Toxicol., 2009 Sept; 22(9):1548-58.*

(13) *Cytotoxicity and genotoxicity of cement dusts in A549 human epithelial lung cells in vitro; Gminski et al, Abstract DGPT conference Mainz, 2008.*

(14) *Comments on a recommendation from the American Conference of governmental industrial Hygienists to change the threshold limit value for Portland cement, Patrick A. Hessel and John F. Gamble, EpiLung Consulting, June 2008.*

(15) *Prospective monitoring of exposure and lung function among cement workers, Interim report of the study after the data collection of Phase I-II 2006-2010, Hilde Notø, Helge Kjuus, Marit Skogstad and Karl-Christian Nordby, National Institute of Occupational Health, Oslo, Norway, March 2010.*

(16) *MEASE, Metals estimation and assessment of substance exposure, EBRC Consulting GmbH for Eurometaux,* http://www.ebrc.de/industrial-chemicals-reach/projects-and-references/mease.php

(17) *Occurrence of allergic contact dermatitis caused by chromium in cement. A review of epidemiological investigations, Kåre Lenvik, Helge Kjuus, NIOH, Oslo, December 2011.*

16.5 Relevant H-Statements

H318: Causes serious eye damage
H315: Causes skin irritation
H317: May cause an allergic skin reaction
H335: May cause respiratory irritation

16.6 Training advice

In addition to health, safety and environmental training programs for their workers, companies must ensure that workers read, understand and apply the requirements of this SDS.

16.7 Further information

The data and test methods used for the purpose of classification of common cements, are given or referred to in section 11.1.

16.8 Disclaimer

The information on this data sheet reflects the currently available knowledge and is reliable provided that the product is used under the prescribed conditions and in accordance with the application specified on the packaging and/or in the technical guidance literature. Any other use of the product, including the use of the product in combination with any other product or any other process, is the responsibility of the user.

It is implicit that the user is responsible for determining appropriate safety measures and for applying the legislation covering his/her own activities.

For further information contact:

Hanson House
14 Castle Hill
Maidenhead
SL6 4JJ

Customer Services:

Tel: 01628 774 100
Email: enquiries@hanson.co.uk

hanson.co.uk

GEOTECHNICS
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THINK . ASSESS . GO

CoSHH and Environmental Assessment

Name of substance:	Bentonite Pellets	CoSHH Reference:	CA006
Manufactured by:	Mikolit	Assessment date:	22/03/2018
Container/quantity:	25kg Bags	Review date:	21/03/2021
Method of application:	Shovel	Assessor:	Michael Coates
Planned use of substance:	Used during borehole installation		

Potential exposure and harm			Control measures
Type	*Exposure*	*Harm*	*Control measures*
Inhalation	Potential for exposure during use of product.	The product is toxic to the lungs prolonged exposure can produce target organs damage.	None required product being used in pellet form which does not create a lot of dust and being used in well ventilated areas.
Ingestion	Unlikely other than as a result of poor hygiene.	Unlikely to cause any harm.	Maintain good levels of personal hygiene.
Skin contact	Potential for exposure during use of product.	May cause irritation.	Gloves to be worn during use of product.
Eye contact	Potential for exposure during use of product.	May cause irritation.	Safety glasses to be worn during use of product.
Environmental	Unlikely other than as the result of an accident.	Not harmful to the environment.	None required.

Substance hazard classification:

								
Explosive	Highly Flammable	Oxidising	Compressed gases	Corrosive	Toxic	Irritant	Sensitising	Harmful to environment

Personal protective equipment:

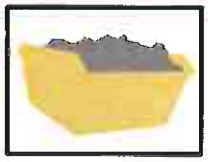
								
Hard hat	Safety glasses	Safety goggles	Ear defenders	Gloves	Nitrile gloves	Overalls	Disposable overalls	½ face or disposable mask

First aid measures:		
	Inhalation	Immediately remove to fresh air. If breathing difficulties are experienced seek medical attention.
	Ingestion	Do not induce vomiting. If large quantities of this material are swallowed get medical attention immediately.
	Skin contact	Wash with soap and water. If irritation develops get medical attention.
	Eye contact	Check for and remove contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Fire precautions:	
	The product is non-combustible.

Spillage:		
	Facilities & equipment required	Shovel, brush and waste bags.
	Spillage procedures	Clean up and place in waste container.
	Disposal of spilled waste	Place in waste bags for disposal in on site waste skips.

Storage/Handling:	
	Store in original packaging in cool dry location.

Disposal of waste – excess material, containers and packaging	
	Place in waste skips.

ScienceLab.com
Chemicals & Laboratory Equipment

Material Safety Data Sheet
Bentonite MSDS

Section 1: Chemical Product and Company Identification

Product Name: Bentonite

Catalog Codes: SLB1441, SLB2935, SLB4435

CAS#: 1302-78-9

RTECS: CT9450000

TSCA: TSCA 8(b) inventory: Bentonite

CI#: Not applicable.

Synonym: Montmorillonite;

Chemical Name: Not available.

Chemical Formula:
(Al,Fe1.67Mg.33)Si10(OH)2Na(+)Ca(++)/2.33

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Bentonite	1302-78-9	100

Toxicological Data on Ingredients: Bentonite LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of eye contact (irritant), of inhalation. Slightly hazardous in case of skin contact (irritant), of ingestion.

Potential Chronic Health Effects:
Hazardous in case of inhalation. CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to lungs. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Do not breathe dust. Avoid contact with eyes. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 10 from ACGIH (TLV) [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid.

Odor: Odorless.

Taste: Not available.

Molecular Weight: Not available.

Color: Beige. (Light.)

pH (1% soln/water): Not available.

Boiling Point: Not available.

Melting Point: Decomposes.

Critical Temperature: Not available.

Specific Gravity: 2.5 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility:
Very slightly soluble in cold water, hot water. Insoluble in methanol, diethyl ether, n-octanol, acetone.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosivity: Not available.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Eye contact. Inhalation.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans: Causes damage to the following organs: lungs.

Other Toxic Effects on Humans:
Hazardous in case of inhalation. Slightly hazardous in case of skin contact (irritant), of ingestion.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations: TSCA 8(b) inventory: Bentonite

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada): CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC): R36- Irritating to eyes.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 0

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:14 PM

Last Updated: 05/21/2013 12:00 PM

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CoSHH and Environmental Assessment

Name of substance:	Diesel	CoSHH Reference:	CA009
Manufactured by:	BP	Assessment date:	22/03/2018
Container/quantity:	Bunded fuel container	Review date:	21/03/2021
Method of application:	Fuel nozzle and pump	Assessor:	Michael Coates
Planned use of substance:	Refuelling mobile plant and equipment		

Potential exposure and harm			Control measures
Type	*Exposure*	*Harm*	
Inhalation	Potential exposure during use of product	Likely to be irritating to the respiratory tract if high concentrations of mist or vapour and inhaled. May cause cancer.	None required minimal release of vapours from fuel nozzle during use, always used in well ventilated environment.
Ingestion	Unlikely other than as a result of poor hygiene.	Aspiration hazard if swallowed. Can enter lungs and cause damage. May cause cancer.	Maintain good levels of personal hygiene.
Skin contact	Potential exposure during use of product.	Likely to cause skin irritation, prolonged exposure may result in chemical burns. May cause cancer.	Nitrile gloves to be work during use of product.
Eye contact	Potential exposure during use of product.	Unlikely to cause more than transient stinging or redness if accidental eye contact occurs.	Safety glasses to be worn during use of product.
Environmental	Unlikely other than as a result of an accident.	Toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment.	Spill kit to be available at the work location.

Substance hazard classification:

								
Explosive	Flammable	Oxidising	Compressed gases	Corrosive	Toxic	Irritant	Carcinogenic	Harmful to environment

Personal protective equipment:

								
Hard hat	Safety glasses	Safety goggles	Ear defenders	Gloves	Nitrile gloves	Overalls	Disposable overalls	½ face mask

First aid measures:		
	Inhalation	Remove to fresh air. If breathing difficulties are experiences seek medical attention immediately. If breathing is laboured or has stopped give CPR and seek medical attention immediately.
	Ingestion	Do not induce vomiting. If the person is conscious, wash out mouth with water. Get medical attention immediately.
	Skin contact	Immediately flush skin with water for at least 15 minutes while removing contaminated clothing. Get medical attention.
	Eye contact	Check for and remove any contact lenses. Immediately flush eyes with water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if irritation occurs.

Fire precautions:	
 	Foam, dry chemical or carbon dioxide fire extinguisher to be available at the work location. DO NOT use water. Extremely flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.

Spillage:		
	Facilities & equipment required	Spill kit and hazardous waste disposal bags.
	Spillage procedures	Stop leak if without risk. Move containers from spill area. Prevent entry into sewers or water courses. Contain and collect spillage using spill kit. Use spark proof tools and explosion proof equipment.
	Disposal of spilled waste	Transfer hazardous waste disposal bag to the office for disposal as a hazardous waste.

Storage/Handling:	
	Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use.

Disposal of waste – excess material, containers and packaging	
	The generation of waste should be avoided or minimised wherever possible. Surplus or waste product should be disposed of via a licensed waste disposal contractor.

Safety Data Sheet

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

Material Name	:	**Diesel (ULSD/Gasoil)**
Recommended Use / Restrictions of Use	:	Fuel for on-road diesel-powered engines. Fuel for use in off-road diesel engines, boilers, gas turbines and other combustion equipment.
Supplier	:	**Shell Eastern Trading (PTE) Ltd** 9 North Buona Vista Drive, #07-01, Tower 1, The Metropolis Singapore 138588 Singapore
Telephone	:	+65-6384 8000
Emergency Telephone Number	:	+44 (0) 151 350 4595

2. HAZARDS IDENTIFICATION

GHS Classification :

Flammable liquids, Category 3
Aspiration hazard, Category 1
Acute toxicity, Category 4, Inhalation
Skin corrosion/irritation, Category 2
Carcinogenicity, Category 2
Specific target organ toxicity - repeated exposure, Category 2, Blood., Thymus., Liver
Hazardous to the aquatic environment - Long-term Hazard, Category 2
Acute hazards to the aquatic environment, Category 2

GHS Label Elements
Symbol(s) :

Signal Words : Danger

Hazard Statement :

PHYSICAL HAZARDS:
H226: Flammable liquid and vapour.

HEALTH HAZARDS:

H304: May be fatal if swallowed and enters airways.
H315: Causes skin irritation.
H332: Harmful if inhaled.
H351: Suspected of causing cancer.
H373: May cause damage to organs or organ systems through prolonged or repeated exposure.

ENVIRONMENTAL HAZARDS:
H411: Toxic to aquatic life with long lasting effects.
H401: Toxic to aquatic life.

GHS Precautionary Statements

Prevention : P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response : P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P331: Do NOT induce vomiting.

Disposal: : P501: Dispose of contents and container to appropriate waste site or reclaimer in accordance with local and national regulations.

Other Hazards which do not result in classification : Vapour in the headspace of tanks and containers may ignite and explode at temperatures exceeding auto-ignition temperature, where vapour concentrations are within the flammability range.
May ignite on surfaces at temperatures above auto-ignition temperature.
This material is a static accumulator. Even with proper grounding and bonding, this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur.

Additional Information : This product is intended for use in closed systems only.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture Description : Complex mixture of hydrocarbons consisting of paraffins, cycloparaffins, aromatic and olefinic hydrocarbons with carbon

numbers predominantly in the C9 to C25 range. May also contain several additives at <0.1% v/v each. May contain cetane improver (Ethyl Hexyl Nitrate) at <0.2% v/v.

May contain catalytically cracked oils in which polycyclic aromatic compounds, mainly 3-ring but some 4- to 6-ring species are present.

Classification of components according to GHS

Chemical Identity	Synonyms	CAS	Hazard Class (category)	Hazard Statement	Conc.
Fuels, diesel	Fuels, diesel	68334-30-5	Flam. Liq., 3; Asp. Tox., 1; Acute Tox., 4; Skin Corr., 2; Carc., 2; STOT RE, 2; Aquatic Chronic, 2; Aquatic Acute, 2;	H226; H304; H332; H315; H351; H373; H411; H401;	60.00 - 100.00 %
Distillates (Fischer-Tropsch) C8-26 - Branched and Linear	Distillates (Fischer-Tropsch) C8-26 - Branched and Linear	848301-67-7	Asp. Tox., 1; Flam. Liq., 4;	H304; H227;	0.00 - 30.00 %
Kerosine (Fischer Tropsch), Full range, C8-C16 branched and linear alkanes	Kerosine (Fischer Tropsch), Full range, C8-C16 branched and linear alkanes	848301-66-6	Asp. Tox., 1; Flam. Liq., 3;	H304; H226;	0.00 - 10.00 %

Additional Information : Dyes and markers can be used to indicate tax status and prevent fraud. Contains Cumene, CAS# 98-82-8 Contains Naphthalene, CAS # 91-20-3.

Refer to Ch 16 for full text of H phrases.

4. FIRST-AID MEASURES

Inhalation : Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.

Skin Contact : Remove contaminated clothing. Immediately flush skin with

		large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment. When using high pressure equipment, injection of product under the skin can occur. If high pressure injuries occur, the casualty should be sent immediately to a hospital. Do not wait for symptoms to develop.
Eye Contact	:	Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.
Ingestion	:	If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101° F (38.3°C), shortness of breath, chest congestion or continued coughing or wheezing. Give nothing by mouth.
Most Important Symptoms/Effects, Acute & Delayed	:	If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever. The onset of respiratory symptoms may be delayed for several hours after exposure. Skin irritation signs and symptoms may include a burning sensation, redness, or swelling.
Immediate medical attention, special treatment	:	Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

Specific hazards arising from Chemicals	:	Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Oxides of sulphur. Unidentified organic and inorganic compounds. Carbon monoxide may be evolved if incomplete combustion occurs. Will float and can be reignited on surface water. Flammable vapours may be present even at temperatures below the flash point. The vapour is heavier than air, spreads along the ground and distant ignition is possible.
Suitable Extinguishing Media	:	Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable Extinguishing Media	:	Do not use direct water jets on the burning product as they could cause a steam explosion and spread of the fire. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

Protective Equipment & Precautions for Fire Fighters	:	Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).
Additional Advice	:	Keep adjacent containers cool by spraying with water. If possible remove containers from the danger zone. If the fire cannot be extinguished the only course of action is to evacuate immediately. Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways.

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal. Observe the relevant local and international regulations. Evacuate the area of all non-essential personnel. Ventilate contaminated area thoroughly. Take precautionary measures against static discharges.

Personal Precautions, Protective Equipment and Emergency Procedures	:	Do not breathe fumes, vapour. Do not operate electrical equipment. Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area and evacuate all personnel. Attempt to disperse the gas or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Monitor area with combustible gas meter.
Environmental Precautions	:	Take measures to minimise the effects on groundwater. Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways. Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers.
Methods and Material for Containment and Cleaning Up	:	Take precautionary measures against static discharges. For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate

		absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. Shovel into a suitable clearly marked container for disposal or reclamation in accordance with local regulations.
Additional Advice	:	Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained. Maritime spillages should be dealt with using a Shipboard Oil Pollution Emergency Plan (SOPEP), as required by MARPOL Annex 1 Regulation 26.

7. HANDLING AND STORAGE

General Precautions	:	Avoid breathing vapours or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. Air-dry contaminated clothing in a well-ventilated area before laundering. Prevent spillages. Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Never siphon by mouth. Contaminated leather articles including shoes cannot be decontaminated and should be destroyed to prevent reuse. Maintenance and Fuelling Activities - Avoid inhalation of vapours and contact with skin.
Precautions for Safe Handling	:	Avoid inhaling vapour and/or mists. Avoid prolonged or repeated contact with skin. When using do not eat or drink. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Earth all equipment. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. The vapour is heavier than air, spreads along the ground and distant ignition is possible.
Conditions for Safe Storage	:	Drum and small container storage: Drums should be stacked to a maximum of 3 high. Use properly labelled and closeable containers. Tank storage: Tanks must be specifically designed for use with this product. Bulk storage tanks should be diked (bunded). Locate tanks away from heat and other sources of ignition. Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources of heat. Vapours from tanks should not be released to

		atmosphere. Breathing losses during storage should be controlled by a suitable vapour treatment system. The vapour is heavier than air. Beware of accumulation in pits and confined spaces. Keep container tightly closed and in a cool, well-ventilated place. Keep in a cool place. Electrostatic charges will be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment to reduce the risk. The vapours in the head space of the storage vessel may lie in the flammable/explosive range and hence may be flammable. Refer to section 15 for any additional specific legislation covering the packaging and storage of this product. Keep in a bunded area with a sealed (low permeability) floor, to provide containment against spillage. Prevent ingress of water.
Product Transfer	:	Avoid splash filling. Wait 2 minutes after tank filling (for tanks such as those on road tanker vehicles) before opening hatches or manholes. Wait 30 minutes after tank filling (for large storage tanks) before opening hatches or manholes. Keep containers closed when not in use. Contamination resulting from product transfer may give rise to light hydrocarbon vapour in the headspace of tanks that have previously contained gasoline. This vapour may explode if there is a source of ignition. Partly filled containers present a greater hazard than those that are full, therefore handling, transfer and sampling activities need special care. Even with proper grounding and bonding, this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur. Be aware of handling operations that may give rise to additional hazards that result from the accumulation of static charges. These include but are not limited to pumping (especially turbulent flow), mixing, filtering, splash filling, cleaning and filling of tanks and containers, sampling, switch loading, gauging, vacuum truck operations, and mechanical movements. These activities may lead to static discharge e.g. spark formation. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (<= 1 m/s until fill pipe submerged to twice its diameter, then <= 7 m/s). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations.
Recommended Materials	:	For containers, or container linings use mild steel, stainless steel. Aluminium may also be used for applications where it does not present an unnecessary fire hazard. Examples of suitable materials are: high density polyethylene (HDPE) and Viton (FKM), which have been specifically tested for compatibility with this product. For container linings, use

amine-adduct cured epoxy paint. For seals and gaskets use: graphite, PTFE, Viton A, Viton B.

Unsuitable Materials : Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Examples of materials to avoid are: natural rubber (NR), nitrile rubber (NBR), ethylene propylene rubber (EPDM), polymethyl methacrylate (PMMA), polystyrene, polyvinyl chloride (PVC), polyisobutylene. However, some may be suitable for glove materials.

Container Advice : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

Other Advice : Ensure that all local regulations regarding handling and storage facilities are followed. See additional references that provide safe handling practices for liquids that are determined to be static accumulators: American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices on Static Electricity). CENELEC CLC/TR 50404 (Electrostatics – Code of practice for the avoidance of hazards due to static electricity).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

If the American Conference of Governmental Industrial Hygienists (ACGIH) value is provided on this document, it is provided for information only.

Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
Naphthalene	ACGIH	TWA	10 ppm		
	ACGIH	STEL	15 ppm		
	ACGIH	SKIN_DES			Can be absorbed through the skin.
	SG OEL	TWA	10 ppm	52 mg/m3	
	SG OEL	STEL	15 ppm	79 mg/m3	

Fuels, diesel	ACGIH	SKIN_DES(Inhalable fraction and vapor.)			Can be absorbed through the skin.as total hydrocarbons
	ACGIH	TWA(Inhalable fraction and vapor.)		100 mg/m3	as total hydrocarbons
Cumene	ACGIH	TWA	50 ppm		
	SG OEL	TWA	50 ppm	246 mg/m3	

Additional Information : Skin notation means that significant exposure can also occur by absorption of liquid through the skin and of vapour through the eyes or mucous membranes.

Biological Exposure Index (BEI)

Material	Determinant	Sampling Time	BEI	Reference
Naphthalene	1-Naphthol, with hydrolysis + 2-Naphthol, with hydrolysis	Sampling time: End of shift.		ACGIH BEL (02 2013)

Appropriate Engineering Controls : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Use sealed systems as far as possible. Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Local exhaust ventilation is recommended. Eye washes and showers for emergency use. Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping. Define procedures for safe handling and maintenance of controls.

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		Educate and train workers in the hazards and control measures relevant to normal activities associated with this product. Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation. Firewater monitors and deluge systems are recommended. Drain down system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle.
Individual Protection Measures	:	Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.
Respiratory Protection	:	If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. All respiratory protection equipment and use must be in accordance with local regulations. Select a filter suitable for combined particulate/organic gases and vapours [boiling point >65°C(149 °F)].
Hand Protection	:	Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same, but recognise that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time may be acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Select gloves tested to a relevant standard (e.g. Europe EN374, US F739). When prolonged or frequent repeated contact occurs, Nitrile gloves may be suitable. (Breakthrough

		time of > 240 minutes.) For incidental contact/splash protection Neoprene, PVC gloves may be suitable.
Eye Protection	:	Chemical splash goggles (chemical monogoggles). If a local risk assessment deems it so, then chemical splash goggles may not be required and safety glasses may provide adequate eye protection.
Protective Clothing	:	Chemical resistant gloves/gauntlets, boots, and apron (where risk of splashing).
Thermal Hazards	:	Not applicable.
Monitoring Methods	:	Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory. Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available. National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods http://www.cdc.gov/niosh/ Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha.gov/
Environmental Exposure Controls	:	Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour. Information on accidental release measures are to be found in section 6. Take appropriate measures to fulfil the requirements of relevant environmental protection legislation. Avoid contamination of the environment by following advice given in Chapter 6. If necessary, prevent undissolved material from being discharged to waste water. Waste water should be treated in a municipal or industrial waste water treatment plant before discharge to surface water.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Colourless to yellowish. Liquid.
Odour	:	May contain a reodorant
Odour threshold	:	Data not available
pH	:	Not applicable
Initial Boiling Point and Boiling Range	:	170 - 390 °C / 338 - 734 °F
Pour point	:	<= 6 °C / 43 °F
Flash point	:	> 55 °C / 131 °F
Upper / lower Flammability or	:	1 - 6 %(V)

Explosion limits		
Auto-ignition temperature	:	> 220 °C / 428 °F
Vapour pressure	:	1 hPa at 20 °C / 68 °F
Relative Density	:	Data not available
Density	:	0.8 - 0.89 g/cm3 at 15 °C / 59 °F
Water solubility	:	Data not available
Solubility in other solvents	:	Data not available
n-octanol/water partition coefficient (log Pow)	:	3 - 6
Dynamic viscosity	:	Data not available
Kinematic viscosity	:	1.5 - 6 mm2/s at 40 °C / 104 °F
Vapour density (air=1)	:	Data not available
Electrical conductivity	:	Low conductivity: < 100 pS/m, The conductivity of this material makes it a static accumulator., A liquid is typically considered nonconductive if its conductivity is below 100 pS/m and is considered semi-conductive if its conductivity is below 10 000 pS/m., Whether a liquid is nonconductive or semi-conductive, the precautions are the same., A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid.
Evaporation rate (nBuAc=1)	:	Data not available
Decomposition Temperature	:	Data not available
Flammability	:	Not applicable.

10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal use conditions.
Possibility of Hazardous Reactions	:	No hazardous reaction is expected when handled and stored according to provisions.
Conditions to Avoid	:	Avoid heat, sparks, open flames and other ignition sources.
Incompatible Materials	:	Strong oxidising agents.
Hazardous Decomposition Products	:	Hazardous decomposition products are not expected to form during normal storage. Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.
Sensitivity to Static Discharge	:	Yes, in certain circumstances product can ignite due to static electricity.

11. TOXICOLOGICAL INFORMATION

Information on Toxicological effects

Basis for Assessment	:	Information given is based on product data, a knowledge of the components and the toxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
Likely Routes of Exposure	:	Exposure may occur via inhalation, ingestion, skin absorption, skin or eye contact, and accidental ingestion.
Acute Oral Toxicity	:	Low toxicity: LD50 > 5000 mg/kg , Rat
Acute Dermal Toxicity	:	Low toxicity: LD50 >2000 mg/kg , Rabbit
Acute Inhalation Toxicity	:	Harmful if inhaled. LC50 > 1.0 - <= 5.0 mg/l , 4 h, Rat High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.
Skin corrosion/irritation	:	Irritating to skin.
Serious eye damage/irritation	:	Expected to be slightly irritating.
Respiratory Irritation	:	Inhalation of vapours or mists may cause irritation to the respiratory system.
Respiratory or skin sensitisation	:	Not expected to be a sensitiser.
Aspiration Hazard	:	Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.
Germ cell mutagenicity	:	Positive in in-vitro, but negative in in-vivo mutagenicity assays.
Carcinogenicity	:	Limited evidence of carcinogenic effect. Repeated skin contact has resulted in irritation and skin cancer in animals.

Material	:	Carcinogenicity Classification
Naphthalene	:	ACGIH Group A4: Not classifiable as a human carcinogen.
Naphthalene	:	NTP: Reasonably Anticipated to be a Human Carcinogen.
Naphthalene	:	IARC 2B: Possibly carcinogenic to humans.
Naphthalene	:	GHS / CLP: Carcinogenicity Category 2

Fuels, diesel	:	ACGIH Group A3: Confirmed animal carcinogen with unknown relevance to humans.
Fuels, diesel	:	GHS / CLP: Carcinogenicity Category 2
Distillates (Fischer-Tropsch) C8-26 - Branched and Linear	:	GHS / CLP: No carcinogenicity classification
Kerosine (Fischer Tropsch), Full range, C8-C16 branched and linear alkanes	:	GHS / CLP: No carcinogenicity classification
Cumene	:	IARC 2B: Possibly carcinogenic to humans.
Cumene	:	GHS / CLP: No carcinogenicity classification

Reproductive and Developmental Toxicity : Not expected to impair fertility. Not expected to be a developmental toxicant.

Specific target organ toxicity - single exposure : Not classified.

Specific target organ toxicity - repeated exposure : May cause damage to organs or organ systems through prolonged or repeated exposure. Blood. Thymus. Liver.

Additional Information : Classifications by other authorities under varying regulatory frameworks may exist.

12. ECOLOGICAL INFORMATION

Basis for Assessment : Information given is based on a knowledge of the components and the ecotoxicology of similar products. Fuels are typically made from blending several refinery streams. Ecotoxicological studies have been carried out on a variety of hydrocarbon blends and streams but not those containing additives. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

Acute Toxicity : Expected to be toxic: LL/EL/IL50 > 1 <= 10 mg/l (to aquatic organisms) LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract.

Fish : Expected to be toxic: LL/EL/IL50 > 1 <= 10 mg/l

Aquatic crustacea : Expected to be toxic: LL/EL/IL50 > 1 <= 10 mg/l

Algae/aquatic plants : Expected to be toxic: LL/EL/IL50 > 1 <= 10 mg/l

Microorganisms : Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l

Chronic Toxicity

Fish : NOEC/NOEL expected to be > 0.01 - <= 0.1 mg/l (based on

		modeled data)
Aquatic crustacea	:	NOEC/NOEL expected to be > 0.1 - <= 1.0 mg/l (based on modeled data)
Mobility	:	Partly evaporates from water or soil surfaces, but a significant proportion will remain after one day. If product enters soil, one or more constituents will be mobile and may contaminate groundwater. Large volumes may penetrate soil and could contaminate groundwater. Floats on water.
Persistence/degradability	:	Major constituents are inherently biodegradable. The volatile constituents will oxidize rapidly by photochemical reactions in air.
Bioaccumulative Potential	:	Contains constituents with the potential to bioaccumulate. Log Kow > =4
Other Adverse Effects	:	Films formed on water may affect oxygen transfer and damage organisms.

13. DISPOSAL CONSIDERATIONS

Material Disposal	:	Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses. Do not dispose of tank water bottoms by allowing them to drain into the ground. This will result in soil and groundwater contamination. Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.
Container Disposal	:	Send to drum recoverer or metal reclaimer. Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard if heated above the flash point. Do not puncture, cut or weld uncleaned drums. Do not pollute the soil, water or environment with the waste container. Comply with any local recovery or waste disposal regulations.
Local Legislation	:	Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be in compliance.

14. TRANSPORT INFORMATION

Land (as per ADR classification): Regulated

Class	:	3
Packing group	:	III
Hazard Indentification no.	:	30
UN number	:	1202
Danger label (primary risk)	:	3
Proper shipping name	:	DIESEL FUEL
Environmentally Hazardous	:	Yes

IMDG

Identification number	UN 1202
Proper shipping name	DIESEL FUEL
Class / Division	3
Packing group	III
Environmental hazards:	Yes

IATA (Country variations may apply)

UN number	:	1202
Proper shipping name	:	Diesel fuel
Class / Division	:	3
Packing group	:	III

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Pollution Category	:	Not applicable.
Ship Type	:	Not applicable.
Product Name	:	Not applicable.
Special Precaution	:	Not applicable.
Additional Information	:	MARPOL Annex 1 rules apply for bulk shipments by sea.

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Local Regulations

Workplace Safety and Health Act & Workplace Safety and Health (General Provision) Regulations	:	This product is subject to the requirement in the Act/ Regulations.
Environmental Protection and Management Act and Environmental Protection and Management	:	This product is subject to the requirement in the Act/ Regulations.

(Hazardous Substances) Regulations		
Maritime and Port Authority of Singapore (Dangerous Goods, Petroleum and Explosives) Regulations	:	This product is subject to the requirement in the Act/ Regulations.
Fire Safety Act and Fire Safety (Petroleum & Flammable Materials) Regulations	:	This product is subject to the requirement in the Act/ Regulations.
Classification triggering components	:	Contains fuels, diesel.
Other Information	:	IARC has classified diesel exhaust emissions as a Class 1 carcinogen - carcinogenic to humans. Steps should be taken to prevent personal exposure to diesel exhaust emissions.

16. OTHER INFORMATION

Hazard Statement

H226	Flammable liquid and vapour.
H227	Combustible liquid.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H332	Harmful if inhaled.
H351	Suspected of causing cancer.
H373	May cause damage to organs or organ systems through prolonged or repeated exposure.
H401	Toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.

Additional Information	:	This document contains important information to ensure the safe storage, handling and use of this product. The information in this document should be brought to the attention of the person in your organisation responsible for advising on safety matters.
SDS Version Number	:	1.1
SDS Effective Date	:	10.03.2014
SDS Revisions	:	A vertical bar (|) in the left margin indicates an amendment from the previous version.
Uses and Restrictions	:	This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier. This product is not to be used as a solvent or cleaning agent;

Safety Data Sheet

for lighting or brightening fires; as a skin cleanser.

SDS Distribution : The information in this document should be made available to all who may handle the product.

Key/Legend to Abbrevations used in this SDS : The standard abbreviations and acronyms used in this document can be looked up in reference literature (e.g. scientific dictionaries) and/or websites.

Flam. Liq.	Flammable liquids
Asp. Tox.	Aspiration hazard
Acute Tox.	Acute toxicity
Skin Corr.	Skin corrosion/irritation
Carc.	Carcinogenicity
STOT RE	Specific target organ toxicity - repeated exposure

Key Literature References : The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU IUCLID date base, EC 1272 regulation, etc).

Disclaimer : This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

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THINK . ASSESS . GO

CoSHH and Environmental Assessment

Name of substance:	3-IN-ONE Multi-Purpose Oil	CoSHH Reference:	CA010
Manufactured by:	WD-40 Limited	Assessment date:	22/03/2018
Container/quantity:	200ml Can	Review date:	21/03/2021
Method of application:	Direct application from can	Assessor:	Michael Coates
Planned use of substance:	Lubrication of plant and equipment		

Potential exposure and harm			Control measures
Type	*Exposure*	*Harm*	*Control measures*
Inhalation	Potential for exposure during application of product.	There may be irritation of the respiratory tract.	None required product used in minimal quantities in well ventilated areas.
Ingestion	Unlikely other than as a result of poor hygiene.	There may be soreness and redness of the mouth and throat.	Maintain good levels of personal hygiene.
Skin contact	Potential for exposure during application of product.	There may be irritation and redness at the site of contact. Long term contact may cause dermatitis.	Nitrile gloves to be worn during application of product.
Eye contact	Potential for exposure during application of product.	There may be irritation and redness.	Safety glasses to be worn during application of product.
Environmental	Unlikely other than as the result of an accident.	Not harmful to aquatic organisms.	None required.

Substance hazard classification:

								
Explosive	Highly Flammable	Oxidising	Compressed gases	Corrosive	Toxic	Irritant	Sensitising	Harmful to environment
	■					■		

Personal protective equipment:

								
Hard hat	Safety glasses	Safety goggles	Ear defenders	Gloves	Nitrile gloves	Overalls	Disposable overalls	½ face mask
	■				■			

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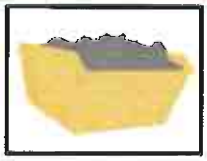
First aid measures:		
	Inhalation	Remove casualty from danger area. Supply person with fresh air and consult doctor according to symptoms.
	Ingestion	Rinse the mouth thoroughly with water. Do not induce vomiting. Consult doctor immediately.
	Skin contact	Remove polluted, soaked clothing immediately, wash thoroughly with plenty of water and soap, in case of irritation of the skin, consult a doctor.
	Eye contact	Remove contact lenses if fitted. Wash thoroughly for several minutes using copious amounts of water. Seek medical help if necessary.

Fire precautions:	
 	Vapours can cause flammable air mixtures. Foam, dry chemical or carbon dioxide fire extinguisher to be available at the work location. DO NOT use water.

Spillage:		
	Facilities & equipment required	Spill kit and hazardous waste disposal bags.
	Spillage procedures	Absorb with spill kit and transfer to a hazardous waste disposal bag.
	Disposal of spilled waste	Transfer hazardous waste disposal bag to the office for disposal as a hazardous waste.

Storage/Handling:	
	Store in cool, well ventilated area. Keep container tightly closed. Keep away from sources of ignition. Must be kept in original packaging.

Disposal of waste – excess material, containers and packaging	
	Make sure containers are empty before discarding. Do not puncture or incinerate even when empty. Return empty containers to the office for correct disposal.

Safety data sheet
according to Regulation (EC) No 1907/2006, Annex II

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

3-IN-ONE ®Multi-Purpose Oil - [Liquid]

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses of the substance or mixture:
Lubricant

Uses advised against:
No information available at present.

1.3 Details of the supplier of the safety data sheet

WD-40 Company Limited, PO Box 440, Kiln Farm, Milton Keynes, MK11 3LF, United Kingdom
Phone: +44 (0) 1908 555400, Fax: +44 (0) 1908 266900
www.wd40.co.uk
IRL

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Qualified person's e-mail address: info@chemical-check.de, k.schnurbusch@chemical-check.de Please DO NOT use for requesting Safety Data Sheets.

1.4 Emergency telephone number

Emergency information services / official advisory body:
IRL

National Poisons Information Centre, Beaumont Hospital, Dublin 9, Ireland, Tel.:
(+353) 01 809 2166 (Public Poisons Info Line, 8am-10pm, 7 days a week)
(+353) 01 837 9964 or 01 809 2566 (Info for Healthcare Professionals ONLY, 24 h)

Telephone number of the company in case of emergencies:
+49 (0) 700 / 24 112 112 (WDC)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) 1272/2008 (CLP)
The mixture is not classified as dangerous in the terms of the Regulation (EC) 1272/2008 (CLP).

2.2 Label elements

Labeling according to Regulation (EC) 1272/2008 (CLP)

Not applicable

2.3 Other hazards

The mixture does not contain any vPvB substance (vPvB = very persistent, very bioaccumulative) or is not included under XIII of the regulation (EC) 1907/2006.
The mixture does not contain any PBT substance (PBT = persistent, bioaccumulative, toxic) or is not included under XIII of the regulation (EC) 1907/2006.
Product can compose a film on the water surface, which can prevent oxygen exchange.
Hazardous to drinking water, on escape of even small quantities.

SECTION 3: Composition/information on ingredients

3.1 Substance

n.a.

3.2 Mixture

--	
Registration number (REACH)	--
Index	-
EINECS, ELINCS, NLP	-
CAS	-
content %	
Classification according to Regulation (EC) 1272/2008 (CLP)	---

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation

Remove person from danger area.
Supply person with fresh air and consult doctor according to symptoms.

Skin contact

Remove polluted, soaked clothing immediately, wash thoroughly with plenty of water and soap, in case of irritation of the skin (flare), consult a doctor.
Unsuitable cleaning product:
Solvent
Thinners

Eye contact

Remove contact lenses.
Wash thoroughly for several minutes using copious water. Seek medical help if necessary.

Ingestion

Rinse the mouth thoroughly with water.
Do not induce vomiting. Consult doctor immediately.

4.2 Most important symptoms and effects, both acute and delayed

If applicable delayed symptoms and effects can be found in section 11 and the absorption route in section 4.1.
The following may occur:
Irritation of the eyes
With long-term contact:
Drying of the skin.
Dermatitis (skin inflammation)
Oil acne
On vapour formation:
Irritation of the respiratory tract
Ingestion:
Gastrointestinal disturbances
Nausea
Vomiting
Danger of aspiration
Chemical pneumonitis (condition similar to pneumonia)
In certain cases, the symptoms of poisoning may only appear after an extended period / after several hours.

4.3 Indication of any immediate medical attention and special treatment needed

n.c.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

CO2
Foam
Dry extinguisher

Unsuitable extinguishing media

High volume water jet

5.2 Special hazards arising from the substance or mixture

In case of fire the following can develop:
Oxides of carbon
Oxides of nitrogen
Oxides of sulphur
Toxic pyrolysis products.

Flammable vapour/air mixtures

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes.
Protective respirator with independent air supply.
According to size of fire
Full protection, if necessary
Cool container at risk with water.
Dispose of contaminated extinction water according to official regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Ensure sufficient supply of air.
Avoid formation of oil mist.
Avoid contact with eyes or skin.
If applicable, caution - risk of slipping

6.2 Environmental precautions

If leakage occurs, dam up.
Resolve leaks if this possible without risk.
Prevent from entering drainage system.
Prevent surface and ground-water infiltration, as well as ground penetration.
If accidental entry into drainage system occurs, inform responsible authorities.

6.3 Methods and material for containment and cleaning up

Soak up with absorbent material (e.g. universal binding agent, sand, diatomaceous earth, sawdust) and dispose of according to Section 13.
Oil binder
Do not wash away with water or watery cleaning agents.

6.4 Reference to other sections

For personal protective equipment see Section 8 and for disposal instructions see Section 13.

SECTION 7: Handling and storage

In addition to information given in this section, relevant information can also be found in section 8 and 6.1.

7.1 Precautions for safe handling

7.1.1 General recommendations

Avoid formation of oil mist.
Ensure good ventilation.
Keep away from sources of ignition - Do not smoke.
Do not heat to temperatures close to flash point.
Avoid contact with eyes.
Avoid long lasting or intensive contact with skin.
Do not carry cleaning cloths soaked in product in trouser pockets.
Eating, drinking, smoking, as well as food-storage, is prohibited in work-room.
Observe directions on label and instructions for use.

7.1.2 Notes on general hygiene measures at the workplace

General hygiene measures for the handling of chemicals are applicable.
Wash hands before breaks and at end of work.
Keep away from food, drink and animal feedingstuffs.
Remove contaminated clothing and protective equipment before entering areas in which food is consumed.

7.2 Conditions for safe storage, including any incompatibilities

Not to be stored in gangways or stair wells.
Store product closed and only in original packing.
Impermeable floor.
Protect against moisture and store closed.
Protect from direct sunlight and warming.

7.3 Specific end use(s)

No information available at present.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

GB Chemical Name	Oil mist, mineral	Content %:

WEL-TWA: 5 mg/m3 (ACGIH)	WEL-STEL: 10 mg/m3 (ACGIH)	---
Monitoring procedures:	- Draeger - Oil 10/a-P (67 28 371) - Draeger - Oil Mist 1/a (67 33 031)	
BMGV: ---	Other information: ---	

Chemical Name	Oil mist, mineral	Content %:
OELV-8h: 0,2 mg/m3 (Mineral oil, used in metal working (inhalable)), 5 mg/m3 (Mineral oil, pure, highly & severely refined (inhalable))	OELV-15min: ---	---
Monitoring procedures:	- Draeger - Oil 10/a-P (67 28 371) - Draeger - Oil Mist 1/a (67 33 031)	
BLV: ---	Other information: ---	

GB WEL-TWA = Workplace Exposure Limit - Long-term exposure limit (8-hour TWA (= time weighted average) reference period) EH40. AGW = "Arbeitsplatzgrenzwert" (workplace limit value, Germany). | WEL-STEL = Workplace Exposure Limit - Short-term exposure limit (15-minute reference period). | BMGV = Biological monitoring guidance value EH40. BGW = "Biologischer Grenzwert" (biological limit value, Germany) | Other information: Sen = Capable of causing occupational asthma. Sk = Can be absorbed through skin. Carc = Capable of causing cancer and/or heritable genetic damage.
** = The exposure limit for this substance is repealed through the TRGS 900 (Germany) of January 2006 with the goal of revision.

IRL OELV-8h = Occupational Exposure Limit Value (8-hour reference period). (IFV) = Inhalable Fraction and Vapour. (I) = Inhalable Fraction. (R) = Respirable Fraction. | OELV-15min = Occupational Exposure Limit Value (15-minute reference period). (IFV) = Inhalable Fraction and Vapour. (I) = Inhalable Fraction. (R) = Respirable Fraction. | BLV = Biological limit value | Other information: Carc1A, Carc1B = carcinogenic substance, Cat. 1A or 1B. Muta1A, Muta1B = mutagenic substance, Cat. 1A or 1B. Repr1A, Repr1B = Substances known to be toxic for reproduction, Cat. 1A or 1B. Sk = can be absorbed through skin. Asphx = asphyxiant. Sen = Respiratory sensitizer. BOELV = Binding Occupational Exposure Limit Values. IOELV = Indicative Occupational Exposure Limit Values.

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Ensure good ventilation. This can be achieved by local suction or general air extraction.
If this is insufficient to maintain the concentration under the WEL or AGW values, suitable breathing protection should be worn.
Applies only if maximum permissible exposure values are listed here.

8.2.2 Individual protection measures, such as personal protective equipment

General hygiene measures for the handling of chemicals are applicable.
Wash hands before breaks and at end of work.
Keep away from food, drink and animal feedingstuffs.
Remove contaminated clothing and protective equipment before entering areas in which food is consumed.

Eye/face protection:
Tight fitting protective goggles (EN 166) with side protection, with danger of projections.

Skin protection - Hand protection:
Protective gloves, oil resistant (EN 374)
If applicable
Protective Neoprene® / polychloroprene gloves (EN 374).
Protective nitrile gloves (EN 374)
Minimum layer thickness in mm:
>= 0,4
Permeation time (penetration time) in minutes:
>= 480
The breakthrough times determined in accordance with EN 374 Part 3 were not obtained under practical conditions.
The recommended maximum wearing time is 50% of breakthrough time.
Protective PVC gloves (EN 374)
Protective hand cream recommended.

Skin protection - Other:
Protective working garments (e.g. safety shoes EN ISO 20345, long-sleeved protective working garments)

Respiratory protection:
Normally not necessary.
With oil mist formation:
Filter A2 P2 (EN 14387), code colour brown, white
Observe wearing time limitations for respiratory protection equipment.

Thermal hazards:

If applicable, these are included in the individual protective measures (eye/face protection, skin protection, respiratory protection).

Additional information on hand protection - No tests have been performed.
In the case of mixtures, the selection has been made according to the knowledge available and the information about the contents.
Selection of materials derived from glove manufacturer's indications.
Final selection of glove material must be made taking the breakthrough times, permeation rates and degradation into account.
Selection of a suitable glove depends not only on the material but also on other quality characteristics and varies from manufacturer to manufacturer.
In the case of mixtures, the resistance of glove materials cannot be predicted and must therefore be tested before use.
The exact breakthrough time of the glove material can be requested from the protective glove manufacturer and must be observed.

8.2.3 Environmental exposure controls

No information available at present.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state:	Liquid
Colour:	According to specification
Odour:	Characteristic
Odour threshold:	Not determined
pH-value:	Not determined
Melting point/freezing point:	Not determined
Initial boiling point and boiling range:	Not determined
Flash point:	~150 °C
Evaporation rate:	Not determined
Flammability (solid, gas):	Not determined
Lower explosive limit:	Not determined
Upper explosive limit:	Not determined
Vapour pressure:	Not determined
Vapour density (air = 1):	Not determined
Density:	0,905 g/ml (15°C)
Bulk density:	Not determined
Solubility(ies):	Not determined
Water solubility:	Insoluble
Partition coefficient (n-octanol/water):	Not determined
Auto-ignition temperature:	Not determined
Decomposition temperature:	Not determined
Viscosity:	>7 mm2/s (40°C)
Explosive properties:	Not determined
Oxidising properties:	Not determined

9.2 Other information

Miscibility:	Not determined
Fat solubility / solvent:	Not determined
Conductivity:	Not determined
Surface tension:	Not determined
Solvents content:	Not determined

SECTION 10: Stability and reactivity

10.1 Reactivity

See also Subsection 10.2 to 10.6.
The product has not been tested.

10.2 Chemical stability

See also Subsection 10.1 to 10.6.
Stable with proper storage and handling.

10.3 Possibility of hazardous reactions

See also Subsection 10.1 to 10.6.
No decomposition if used as intended.

10.4 Conditions to avoid

See also section 7.
Heating, open flame, ignition sources
Protect from humidity.

10.5 Incompatible materials

See also section 7.

Avoid contact with strong oxidizing agents.

10.6 Hazardous decomposition products

See also Subsection 10.1 to 10.5.
See also section 5.2
No decomposition when used as directed.

SECTION 11: Toxicological information

Possibly more information on health effects, see Section 2.1 (classification).

3-IN-ONE ®Multi-Purpose Oil - [Liquid]						
Toxicity / effect	Endpoint	Value	Unit	Organism	Test method	Notes
Acute toxicity, by oral route:						n.d.a.
Acute toxicity, by dermal route:						n.d.a.
Acute toxicity, by inhalation:						n.d.a.
Skin corrosion/irritation:						n.d.a.
Serious eye damage/irritation:						n.d.a.
Respiratory or skin sensitisation:						n.d.a.
Germ cell mutagenicity:						n.d.a.
Carcinogenicity:						n.d.a.
Reproductive toxicity:						n.d.a.
Specific target organ toxicity - single exposure (STOT-SE):						n.d.a.
Specific target organ toxicity - repeated exposure (STOT-RE):						n.d.a.
Aspiration hazard:						n.d.a.
Symptoms:						n.d.a.
Other information:						Classification according to calculation procedure.

SECTION 12: Ecological information

Possibly more information on environmental effects, see Section 2.1 (classification).

3-IN-ONE ®Multi-Purpose Oil - [Liquid]							
Toxicity / effect	Endpoint	Time	Value	Unit	Organism	Test method	Notes
Toxicity to fish:							n.d.a.
Toxicity to daphnia:							n.d.a.
Toxicity to algae:							n.d.a.
Persistence and degradability:							Not readily biodegradable Isolate as much as possible with an oil separator.
Bioaccumulative potential:							Concentration in organisms possible.
Mobility in soil:							n.d.a.
Results of PBT and vPvB assessment							n.d.a.
Other adverse effects:							n.d.a.
Other information:							According to the recipe, contains no AOX.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

For the substance / mixture / residual amounts

Soaked polluted cloths, paper or other organic materials represent a fire hazard and should be controlled, collected and disposed of.

EC disposal code no.:
The waste codes are recommendations based on the scheduled use of this product.
Owing to the user's specific conditions for use and disposal, other waste codes may be allocated under certain circumstances. (2014/955/EU)
13 02 05 mineral-based non-chlorinated engine, gear and lubricating oils
Recommendation:
Sewage disposal shall be discouraged.
Pay attention to local and national official regulations.
E.g. dispose at suitable refuse site.
E.g. suitable incineration plant.

For contaminated packing material

Pay attention to local and national official regulations.
15 01 01 paper and cardboard packaging
15 01 02 plastic packaging
15 01 04 metallic packaging
Empty container completely.
Uncontaminated packaging can be recycled.
Dispose of packaging that cannot be cleaned in the same manner as the substance.

SECTION 14: Transport information

General statements

UN number:	n.a.

Transport by road/by rail (ADR/RID)

UN proper shipping name:	
Transport hazard class(es):	n.a.
Packing group:	n.a.
Classification code:	n.a.
LQ (ADR 2015):	n.a.
Environmental hazards:	Not applicable
Tunnel restriction code:	

Transport by sea (IMDG-code)

UN proper shipping name:	
Transport hazard class(es):	n.a.
Packing group:	n.a.
Marine Pollutant:	n.a
Environmental hazards:	Not applicable

Transport by air (IATA)

UN proper shipping name:	
Transport hazard class(es):	n.a.
Packing group:	n.a.
Environmental hazards:	Not applicable

Special precautions for user

Unless specified otherwise, general measures for safe transport must be followed.

Transport in bulk according to Annex II of MARPOL and the IBC Code

Non-dangerous material according to Transport Regulations.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

For classification and labelling see Section 2.
Observe restrictions:
General hygiene measures for the handling of chemicals are applicable.
Directive 2010/75/EU (VOC): < 0,1 %

15.2 Chemical safety assessment

A chemical safety assessment is not provided for mixtures.

SECTION 16: Other information

EUF0013
Revised sections: 1 - 16

Classification and processes used to derive the classification of the mixture in accordance with the ordinance (EG) 1272/2008 (CLP):

Not applicable

The following phrases represent the posted Hazard Class and Risk Category Code (GHS/CLP) of the product and the constituents (specified in Section 2 and 3).

Any abbreviations and acronyms used in this document:

AC Article Categories
acc., acc. to according, according to
ACGIH American Conference of Governmental Industrial Hygienists
ADR Accord européen relatif au transport international des marchandises Dangereuses par Route (= European Agreement concerning the International Carriage of Dangerous Goods by Road)
AOEL Acceptable Operator Exposure Level
AOX Adsorbable organic halogen compounds
approx. approximately
Art., Art. no. Article number
ATE Acute Toxicity Estimate according to Regulation (EC) 1272/2008 (CLP)
BAM Bundesanstalt für Materialforschung und -prüfung (Federal Institute for Materials Research and Testing, Germany)
BAuA Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (= Federal Institute for Occupational Health and Safety, Germany)
BCF Bioconcentration factor
BGV Berufsgenossenschaftliche Vorschrift (= Accident Prevention Regulation)
BHT Butylhydroxytoluol (= 2,6-Di-t-butyl-4-methyl-phenol)
BMGV Biological monitoring guidance value (EH40, UK)
BOD Biochemical oxygen demand
BSEF Bromine Science and Environmental Forum
bw body weight
CAS Chemical Abstracts Service
CEC Coordinating European Council for the Development of Performance Tests for Fuels, Lubricants and Other Fluids
CESIO Comité Européen des Agents de Surface et de leurs Intermédiaires Organiques
CIPAC Collaborative International Pesticides Analytical Council
CLP Classification, Labelling and Packaging (REGULATION (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures)
CMR carcinogenic, mutagenic, reproductive toxic
COD Chemical oxygen demand
CTFA Cosmetic, Toiletry, and Fragrance Association
DMEL Derived Minimum Effect Level
DNEL Derived No Effect Level
DOC Dissolved organic carbon
DT50 Dwell Time - 50% reduction of start concentration
DVS Deutscher Verband für Schweißen und verwandte Verfahren e.V. (= German Association for Welding and Allied Processes)
dw dry weight
e.g. for example (abbreviation of Latin 'exempli gratia'), for instance
EC European Community
ECHA European Chemicals Agency
EEA European Economic Area
EEC European Economic Community
EINECS European Inventory of Existing Commercial Chemical Substances
ELINCS European List of Notified Chemical Substances
EN European Norms
EPA United States Environmental Protection Agency (United States of America)
ERC Environmental Release Categories
ES Exposure scenario
etc. et cetera
EU European Union
EWC European Waste Catalogue
Fax. Fax number
gen. general
GHS Globally Harmonized System of Classification and Labelling of Chemicals
GWP Global warming potential
HET-CAM Hen's Egg Test - Chorionallantoic Membrane
HGWP Halocarbon Global Warming Potential
IARC International Agency for Research on Cancer
IATA International Air Transport Association
IBC Intermediate Bulk Container
IBC (Code) International Bulk Chemical (Code)

IC Inhibitory concentration
IMDG-code International Maritime Code for Dangerous Goods
incl. including, inclusive
IUCLID International Uniform ChemicaL Information Database
LC lethal concentration
LC50 lethal concentration 50 percent kill
LCLo lowest published lethal concentration
LD Lethal Dose of a chemical
LD50 Lethal Dose, 50% kill
LDLo Lethal Dose Low
LOAEL Lowest Observed Adverse Effect Level
LOEC Lowest Observed Effect Concentration
LOEL Lowest Observed Effect Level
LQ Limited Quantities
MARPOL International Convention for the Prevention of Marine Pollution from Ships
n.a. not applicable
n.av. not available
n.c. not checked
n.d.a. no data available
NIOSH National Institute of Occupational Safety and Health (United States of America)
NOAEC No Observed Adverse Effective Concentration
NOAEL No Observed Adverse Effect Level
NOEC No Observed Effect Concentration
NOEL No Observed Effect Level
ODP Ozone Depletion Potential
OECD Organisation for Economic Co-operation and Development
org. organic
PAH polycyclic aromatic hydrocarbon
PBT persistent, bioaccumulative and toxic
PC Chemical product category
PE Polyethylene
PNEC Predicted No Effect Concentration
POCP Photochemical ozone creation potential
ppm parts per million
PROC Process category
PTFE Polytetrafluorethylene
REACH Registration, Evaluation, Authorisation and Restriction of Chemicals (REGULATION (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals)
REACH-IT List-No. 9xx-xxx-x No. is automatically assigned, e.g. to pre-registrations without a CAS No. or other numerical identifier. List Numbers do not have any legal significance, rather they are purely technical identifiers for processing a submission via REACH-IT.
RID Règlement concernant le transport International ferroviaire de marchandises Dangereuses (= Regulation concerning the International Carriage of Dangerous Goods by Rail)
SADT Self-Accelerating Decomposition Temperature
SAR Structure Activity Relationship
SU Sector of use
SVHC Substances of Very High Concern
Tel. Telephone
ThOD Theoretical oxygen demand
TOC Total organic carbon
TRGS Technische Regeln für Gefahrstoffe (=Technical Regulations for Hazardous Substances)
UN RTDG United Nations Recommendations on the Transport of Dangerous Goods
VbF Verordnung über brennbare Flüssigkeiten (= Regulation for flammable liquids (Austria))
VOC Volatile organic compounds
vPvB very persistent and very bioaccumulative
WEL-TWA, WEL-STEL WEL-TWA = Workplace Exposure Limit - Long-term exposure limit (8-hour TWA (= time weighted average) reference period), WEL-STEL = Workplace Exposure Limit - Short-term exposure limit (15-minute reference period) (EH40, UK).
WHO World Health Organization
wwt wet weight

The statements made here should describe the product with regard to the necessary safety precautions - they are not meant to guarantee definite characteristics - but they are based on our present up-to-date knowledge.
No responsibility.
These statements were made by:
Chemical Check GmbH, Chemical Check Platz 1-7, D-32839 Steinheim, Tel.: +49 5233 94 17 0, Fax: +49 5233 94 17 90

The land app

Photographic Record of Condition
At Little Denmead Farm

Prior to access by Aquind in relation to
Intrusive Ground Surveys

Photographs taken between14.22-16.06
on Friday 13th November 2020

Prepared by Henry Brice MRICS FAAV
Ian Judd and Partners LLP

Photograph No 1

Photograph No 2

Photograph No 3

Photograph No 4

Photograph No 5

Photograph No 6

Photograph No 7

Photograph No 8

Photograph No 9

Photograph No 10

Photograph No 11

Photograph No 12

Photograph No 13

Photograph No 14

Photograph No 15

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