

Project/location	Geoenvironmental Investigation: Former Shredded Wheat Factory in Welwyn Garden City, Hertfordshire	Document ref	AJS/QUO/6547A
		Revision status	First revision
		Project no	15503SI
Client	Higgins Construction PLC	Prepared by	Luke Stockdale
Consultant		Date of issue	23/10/19

Scope of work

Description of work activity

Review the existing third-party desk study and ground investigation data, site reconnaissance and supplementary ground investigation: including a series of window sample boreholes; gas/groundwater monitoring (three wells, six visits); environmental testing; and interpretative report.

Tools, plant and equipment

Track-driven window sampling rig. (Hand portable equipment may be used for positions inaccessible to the tracked rig).
 Hand excavation tools. (Hydraulic breaker and light-weight power pack may be required for hard surface break-out).
 Hand-held battery powered ground gas monitor.

Anticipated start date/likely duration

30/10/2019 - one day

Contact details

Management team	Contact name	Contact number
Project manager	Adrian Phillips	07720 556 434
Health and safety manager / adviser	Andy Symis	07775 533 953
Supervising engineer	Luke Stockdale	07766 492 881
Site manager	Joseph Kulesa	07720 556 438
Site operatives	Contact name	Contact number
Senior site technician / site supervisor	Adam Durrant	07775 927 235
Site technician	Lee Girling	07764 654 789
Client/consultant	Contact name	Contact number
Higgins Construction	Colin Ricketts	07730 821 489

Welfare and first-aid arrangements

The work is short duration and portable welfare will not be provided. Our operatives will use the nearest public toilet and their vehicles will be available for rest and shelter. Each vehicle shall be equipped with an appropriately equipped first-aid kit and eye wash materials. A mobile phone shall be available on-site for contacting the emergency services, if required.

Nearest accident and emergency department

Lister Hospital, Coreys Mill Lane, Stevenage, Hertfordshire, SG1 4AB (01438 314 333)

Hazard identification and control measures			
Hazard	Who might be harmed and how	Risk reduction and control measures	Residual risk rating
Asbestos - release and inhalation of respirable fibres	Disturbance of asbestos containing materials (ACMs) can potentially result in anyone in the vicinity developing asbestosis, lung cancer or mesothelioma, if respirable fibres are inhaled. Samples of ACMs or asbestos contaminated soil may need to be recovered for laboratory analysis. All work must be carried out with due regard to the 'asbestos management policy and procedures'.	Only trained operatives are approved to sample asbestos contaminated soil. Before sampling make sure the materials are dampened to suppress fibre release. Use P3 face-mask or respirator and type 5-6 disposable coveralls and disposable gloves. Place samples into a sealed and taped container or double bag to prevent escape of air-borne fibres. Cover suspected ACMs left in the ground with a layer of clean soil or secure sheeting. Wipe down all equipment. Double bag and seal waste materials and contaminated clothing.	Low
Buried services - contact with live cables or pipework	Electrical cables, pipelines and sewers all present a risk to safety when work involves penetrating the ground. When live cables or pipework are damaged or disrupted, people can be injured or killed by electric shock; fire; explosion; flammable vapour or asphyxiation.	Competent person to review utility plans and use cable avoidance tool and generator to locate, identify and mark underground services. Excavation work must be carried out carefully and follow recognised safe digging practices using suitable hand tools. When working close to buried or overhead services flame retardant overalls must be worn. Damaged underground services must be reported.	Medium
Contaminated soil or water - exposure to chemical or biological hazards	Anyone in the vicinity may risk asphyxiation, injury or death if exposed to chemical or biological hazards including: toxic gases, asbestos, carcinogens, flammable residue, biodegradable waste, decaying mud or spoil. Injuries include: asphyxiation, absorption, ingestion, inhalation, and fire/explosion.	Wear disposable overalls, gloves and masks to prevent inhalation of dust or toxic particles. Work upwind. Ensure contamination does not contact streams, rivers, drains and sewers. On completion, remove protective clothing and wrap to prevent spread of contamination. Wash or wrap sampling tools before removing from site. Contaminated surplus spoil cleared by burial or removal.	Medium
Dust - inhalation	Silicosis is caused by inhaling silica (quartz) dust. Other dust-related diseases include lung cancer, asthma and chronic obstructive pulmonary disease. Drilling through concrete, stone or masonry have potential to generate silica dust. Operatives may be particularly at risk in confined spaces.	Using a water flush when drilling will substantially reduce dust generation. Ensure work carried out in well ventilated areas. Minimise dust creation and use dust suppression. Avoid skin and eye contact. Use goggles, face mask and gloves. Dry sweeping must be avoided, and wet cleaning or vacuuming must be used. The health risks are insignificant when exposure to dust is controlled.	Low
Electrical safety - use of powered hand tools	Operatives may suffer health risks if using electrical equipment exposed to: mechanical damage; the effects of weather, temperature or pressure; the effects of wet, dirty, dusty or corrosive conditions; or any flammable or explosive substance.	Electrical tools used on site must be powered by a 110V supply. Extension leads must be uncoiled before use. Never touch electrical tools or switches with wet hands. Check condition of cables regularly; if the outer insulation is damaged the cable must be replaced. Inspection of portable electrical equipment. Report faults and repair.	Low
Excavations - instability and unsupported manned entry	Unsupported excavations collapse without warning and operatives risk death or serious injury. Unsupported manned entry must be avoided. There is no safe depth. Hazards include: contact with plant, live services or hazardous substances; material/equipment falling into excavation; water; entrapment in soft soil; stability of adjacent structure; access / egress; fumes and low oxygen.	Excavations must be supervised. Review service plans and follow control measures for avoiding buried services and recognised safe digging practices. If the excavation is left open or unattended a secure cover or barrier must be provided. If manned entry is required: a suitable means of access and egress must be in place; the side walls must be prevented from collapse by digging at a safe angle or shoring; and make sure that plant, equipment or materials are not near the excavation.	Medium
Explosive or toxic gas and vapours	Personnel or others in the vicinity could risk death, illness or become incapacitated if atmosphere has hazardous levels of flammable or toxic gas. Elevated oxygen can create a fire or explosion risk. Low oxygen can cause drowsiness and nausea. An oxygen deficient atmosphere may lead to impaired judgement; lack of coordination and may result in unconsciousness or death.	If a potential risk is established, monitor for carbon monoxide, carbon dioxide, methane and other hazardous gases or vapours. The monitoring process is low risk if carried out in well ventilated areas. However, care must be taken if working in a building or an area of poor ventilation. If work is carried out in confined space then the quality of the breathable air must be measured using a personal detector and if the air quality deteriorates to the pre-set danger level, the work must be terminated.	Low
Falling objects and protection from falls	Personnel and others in the vicinity need to be protected to make sure that no injury is caused by falls or falling objects.	Head protection must be worn when there is a risk of head injury from falling objects. Safety helmets must be replaced when they are damaged in any way.	Low

Fire prevention	Fires can kill, injure and cause suffering. Fires can be caused by; damaged services such as electric or gas, poor maintenance of plant and equipment and misuse and poor storage of flammable substances.	Eliminate the fuel and sources of ignition which include; controlling oils and grease used with plant and equipment; good maintenance and safety checks, especially electrical items; good housekeeping; and safe use and storage of flammable chemicals and gases.	Low
Inclement and adverse weather	Personnel may be exposed to adverse weather leading to hypothermia, hyperthermia, sun stroke and disorientation. Poor visibility and/or poor underfoot conditions may lead to disabling injuries caused by slips, trips and falls.	Personnel must be aware of imminent weather and manage their work appropriately ensuring proper footwear, clothing, sun cream and equipment is worn/carried to reduce the chance of exposure. Operatives must be vigilant of any features which may be dangerous in poor weather, e.g. water-courses or slopes.	Low
Manual handling - sprain, strain and musculoskeletal injuries	All operatives may suffer sprain, strain or musculoskeletal injury, if handling of heavy items is not carried out carefully. Manual handling must be avoided if there is a risk of injury. Workers must ask for help if there is any danger of strain. Use mechanical means of moving loads wherever possible in preference to manually handling.	Use mechanical aids or team lifting for heavy objects. Wear gloves when lifting heavy or awkward loads or if risk from sharp objects. Assess stability before lift commences. Check route to ensure no obstacles could cause trips or falls. Make sure loads are within capacity, avoid lifting with bent back, avoid lifting over long distance, and keep loads close to body. Order materials in manageable quantities and deliver close to destination.	Low
Movement and use of plant and equipment	Workers may suffer injury from movement of plant and equipment ranging from cuts and burns to broken bones, amputation and death. Hazards include; unskilled/incorrect use, unchecked defects, unsupervised reversing, collision and trapped fingers.	Site operatives and visitors must wear safety helmets, safety footwear and high visibility clothing. Banksman to supervise reversing. Plant and equipment must be in good order, fitted with guarding and immobilised when unattended. A daily check must be carried out. Where defects affect safety, the fault must be repaired.	Medium
Noise	Exposure to noise can cause permanent hearing loss or tinnitus. Noise can interfere with communications, make warnings difficult to hear, and reduce awareness of surroundings. Attention should be given to sites where other noisy activities are taking place, such as demolition or construction.	Limit exposure times for workers in noisy areas. Use ear defenders in hearing protection zones or where exposure to loud noise is unavoidable. Minimise use of generators and power tools. Do not leave plant or equipment running unnecessarily. Hearing protection must be enough to eliminate risks from noise but prevent isolation from the surroundings.	Low
Slips, trips and falls	Uneven or poor ground conditions can cause slips, trips and falls. Operatives can trip over cables, equipment or other obstacles. Operatives may suffer injuries to feet, ankles, legs, pelvis and lower spine.	Personnel must wear appropriate footwear; ideally boots that give ankle support; allowing for foot-lower leg flexibility. Access routes and work areas to be kept clear of slippery surfaces and obstructions, as far as reasonably practical. Avoid trailing cables or ropes.	Low
Sun protection	Exposure to ultraviolet radiation can cause skin damage including sunburn, blistering, skin ageing and can lead to skin cancer. Outdoor workers can experience excessive exposure to the sun's radiation and, are at more risk from skin cancer.	The HSE recommends a six-point protection code: wear a long-sleeved shirt; wear a hat with a brim or flap that covers the ears and back of neck; stay in shade where possible; use a high factor sunscreen of at least SPF15; drink plenty of water to avoid dehydration; and, check your skin regularly for unusual moles or spots.	Low
Vibration	Hand-arm vibration (HAV) is caused by using hand-held power tools. Frequent exposure can lead to vibration white finger and carpal tunnel syndrome. The symptoms include; tingling and numbness in fingers; loss of feeling in fingers; loss of strength in hands; and, in the cold and wet, the finger tips going white then red and being painful.	Use light-weight low-vibration tools. Limit the use of tools wherever possible. Avoid gripping or forcing tools. Maintain equipment in accordance with manufacturer's recommendations. Do not use blunt or damaged chisels. Keep warm and dry, this will encourage good blood circulation. Gloves can be used to keep hands warm but should not be relied upon to provide adequate protection from vibration.	Low

Control of substances hazardous to health (COSHH)

The following materials, substances or compounds may be used or encountered during the works. We have included a summary of our COSHH assessment. The full assessment and hazard data sheets are available on request.

Hazard	Who might be harmed and how	Control measures and first-aid
Bentonite - used to backfill or seal boreholes	Operatives and anyone in close vicinity may be exposed to airborne dust or skin contact. Bentonite is irritating to respiratory system, eyes and skin.	Avoid skin and eye contact. Use gloves and goggles when handling. Seek medical attention if irritation develops. If work generates dust then use a face mask and limit exposure. If ingested do not induce vomiting and seek medical attention if large quantities are swallowed. Flush eyes with clean water and seek medical advice.
Cement - used to make concrete or mortar	Operatives and anyone in close vicinity may be exposed to airborne dust or skin contact. Cement is irritating to the respiratory system, eyes and skin. Continued contact may result in 'cement burns', ulceration and dermatitis.	Ensure work is carried out in well ventilated areas. Avoid skin and eye contact. Use goggles, face mask, long sleeve shirts, long trousers and waterproof or disposable gloves. If dust inhaled or ingested seek medical attention and move to fresh air. Wash out mouth with clean water. Flood eyes immediately with clean water. If wet concrete or mortar gets into boots remove and wash skin and inside of boot.
Silica (quartz) dust - formed when breaking, drilling or cutting concrete, stone or masonry	Operatives and others in the vicinity may be exposed to airborne dust or skin contact. Silica is irritating to respiratory system, eyes and skin. There is a risk of silicosis, a lung disease marked by acute fibrosis.	Ensure work carried out in well ventilated areas. Minimise dust creation and use dust suppression. Avoid skin and eye contact. Use goggles, face mask and gloves. If inhalation occurs move to fresh air and seek medical assistance. Wash skin thoroughly and if contact is made with the eye, flood with plenty of clean water and seek medical help. Vacuum or dampen down before sweeping.
Petrol and diesel fuel - used as fuel for plant and equipment	The fumes are irritating to respiratory system and eyes. The liquid may cause lung damage if swallowed. Repeated skin exposure may cause dryness, cracking and dermatitis. May cause long-term adverse effects to aquatic organisms.	Refuel without engine running to minimise fire risk. Only use in well-ventilated areas. Avoid naked flames. Use gloves and goggles if splashes are likely to occur. If ingested, wash out mouth with water and send to hospital. If inhalation occurs remove to fresh air, if breathing has stopped administer respiration and cardiac massage and seek medical help. Avoid release to the environment.

Personal protective equipment (PPE)

Operatives must make proper use of PPE and report its loss or damage or any fault in it. PPE must be properly looked after and stored when not in use. If it is reusable it must be cleaned and kept in good condition.

- Safety footwear with steel toe cap, steel mid-sole and ankle protection must be worn. Soft shoes, trainers and sandals are strictly prohibited.
- Safety helmets and high visibility clothing must be worn on all construction, drilling and excavation sites, or as required by site-specific rules or safety policies.
- Ear defenders are provided for use in locations posted with hearing protection signs or where exposure to significant noise is unavoidable (such as window sampling/dynamic probing or concrete breaking).
- Gloves and eye protection must be worn, as required by the risk assessment, site-specific rules and when handling sharp material. Disposable gloves must be worn when handling potentially hazardous materials.
- If asbestos or biological material is suspected, it will be necessary to wear extra protection, including P3 face mask or respirator and type 5-6 disposable coveralls and disposable gloves.

Safe working procedures

Training and instruction. Before commencing, site personnel must be briefed by the project manager or supervising engineer or issued with written instructions. All operatives must hold a current CSCS or CPCS card and be competent in the task they have been asked to perform (or under training and proper supervision). All site operatives have been received training in emergency first-aid, avoidance of services, and asbestos awareness. Copies of the training matrix and training attendance certificates are available on request. All work must be carried out with due regard to the risk assessments and in accordance with the measures identified to control residual the risks.

Plant and equipment. All plant and equipment should be used in accordance with the manufacturer’s instructions, and regularly checked and maintained in good order. Before commencing work, a visual inspection must be carried out to check that each item is safe to use. Where defects affect safety, the fault must be repaired before use.

Site access and work area. There should be a suitable access route on and around the site and a safe work area with adequate space to carry out the planned operations. The work area should be relatively firm and flat, with good lighting and ventilation, and clear of debris or obstructions. Do not carry out any work if you feel there is undue risk.

Any conflicts with other activities should be considered and more control measures may be needed to protect people who are affected by the work. For example, if the site is not secure, then the work area may need to be protected with temporary fencing, barriers, cones or bunting.

Avoidance of buried and overhead services. Plans or other suitable information about buried or overhead services in the area should be reviewed before any site work is carried out. However, the plans will only give an indication of the place, configuration, and number of services. Subsequent utility tracing by locating devices is essential.

The work area must be scanned with a cable avoidance tool and signal generator or other pipe and cable locating device, to identify and mark any buried services. Whilst utility tracing is being carried out, a vigilant watch must be kept for any signs of potential buried services, such as manhole covers, marker posts, hydrants or evidence of reinstated trenches. Other potential obstructions such as overhead cables or pipes must also be located.

Exploratory location. Each exploratory location will be recorded on a site plan or indicated by the engineer or client. The exploratory locations must be located to avoid buried or overhead services and marked out on site before proceeding. If any doubt exists on the safety of the planned work at a location, an alternative position must be agreed.

Hand excavated trial pits. Hand excavation is used to prove the location (or avoidance) of underground services or structures. Excavation work must be carried out carefully and follow recognised safe digging practices using suitable hand tools. Sharp tools such as picks or forks should not be used for digging but may be used, with care, to loosen hard ground or obstructions. Whilst hand digging, carry out regular scanning using service location equipment. When excavating within proximity of buried or overhead services flame retardant overalls should be worn.

It may be necessary to 'break-out' hard surfaces using power tools, if utility tracing has proved there are no buried services, or the services are deep enough not to be damaged. Operatives must wear ear defenders and eye protection during the break-out. After surface materials have been broken and removed the excavation base must be re-scanned. If no utilities are detected go ahead with excavation maintaining a vigilant watch.

Contaminated arisings and made ground should be stockpiled on one side, and natural, uncontaminated spoil stockpiled separately. The stability of the side walls must be monitored throughout the excavation. If there is any doubt over stability, such that instability may jeopardise safety, then the excavation must be terminated and the pit backfilled.

Unsupported manned entry is not permitted if the sides of the excavation are unstable. There is no safe generic depth. If manned entry is required the sides must be prevented from collapse, by battering at a safe angle, benching or shoring.

If any services are damaged during the excavation, tell the owner/operator. In the case of electricity cables, pipes or high-pressure water mains, keep people clear of the area until the damage has been repaired or made safe.

Percussive window sampling. Window sampling involves driving small diameter cylindrical steel tubes into the ground using a hydraulic hammer. The drilling rig is mounted on rubber tracks and is designed to work on sites with restricted access, close-up against walls or inside buildings. The rig requires a minimum headroom of 3.1m, access width of 0.8m, and a work area of around 2.5m x 3.5m. If there are access limitations, hand-held equipment may be used.

Sampling is achieved by a percussive action. When using the rubber tracked rig the drive mechanism consists of a chain-driven drop weight that repeatedly strikes an anvil, driving the sample tubes into the ground. When using the hand-held rig, the samples are driven using a pneumatic hammer. Both systems can drive sample tubes into all soil types, but they are not designed for hard rock. The depth achieved will depend on the local ground conditions.

The sample tubes are usually 1m long and have a broad slot, or 'window', cut down one side. The soil is pushed into the sample tube as it is driven into the ground. Drill rods are used to drive the sample tubes to greater depths. The weight and the drop height are adjustable, enabling penetration testing and dynamic probing to be carried out.

On reaching the required depth, the sample tube and drill rods are extracted using a hydraulic jack. Where the ground is unstable, steel casing can be installed to prevent the sides of the borehole from collapsing. After the sample tubes are withdrawn from the ground, the soil core is logged and sampled from the window.

Backfilling and installation. On completion, the borehole may be backfilled with arisings or reinstated with bentonite pellets or gravel, or groundwater/ground gas monitoring well may be installed. The monitoring wells are constructed using slotted plastic pipe and the borehole is backfilled with filter material surrounding the pipe and a bentonite seal installed at the surface. The wells will be protected at ground level with a lockable cover.

Groundwater and ground gas monitoring. The wells will be used to check the levels of groundwater and potentially hazardous ground gases, including methane, carbon dioxide, oxygen, hydrogen sulphide and carbon monoxide. A minimum of three monitoring visits is recommended. Further assessment may be required if high or anomalous gas concentrations or flow rates are observed.

Decommissioning of monitoring wells: Following completion of the monitoring period the wells may need to be decommissioned. In the case of the shallow small diameter ground gas monitoring wells the decommissioning would be achieved by grouting the wells with bentonite pellets or slurry. If deeper and larger diameter wells installed by others need to be decommissioned, it may be necessary to over-drill them to remove the pipework, before grouting up with bentonite. The decommissioning would be subject to a separate appointment.

Workplace safety and good housekeeping. The work area must, so far as reasonably practicable, be kept clean and tidy with clear access routes. Every effort must be made to minimise dust, excessive noise and tripping hazards. All spillage must be cleaned to prevent slip hazards. Equipment and materials must be properly secured when not in use.

Unforeseen hazards. Should an unforeseen circumstance arise, that poses a risk to people or equipment, then work must be suspended. The work may only go ahead when remedial action is implemented and it is safe to continue.

Emergency procedures and evacuation. If an emergency incident occurs: stop work, shut down plant and tools (if it is safe to do so), evacuate the danger area, and report the situation. Do not panic, do not run, and leave the area quickly. Work must stop until deemed safe to continue. If emergency services are required dial '999' and give directions to the site and nature of the emergency. Remove all personnel from the immediate vicinity. Members of the public or other trades should be escorted to a safe distance from the incident area.

Accident investigation. All accidents, dangerous occurrences and near misses must be reported to your supervisor. The supervisor must tell the safety manager, who will notify the HSE if applicable. Records of accidents, incidents and injuries must be recorded.

Remarks/further action required		
Observation/action required	Date	Initials
1 There is potential for asbestos to be present in the MG. Take necessary precautions (damping down arisings) and wearing PPE (disposable overalls and face masks)	17/10/19	LS
2 Record dimensions of locations from salient features and use GPS to fix locations	17/10/19	LS
3 Revisions made to risk assessment and method statement including: revision status; contact details for office-based management team and site operatives; addition of decommissioning details for monitoring wells; and document approval status.	23/10/19	AJS
4		
5		

Persons attending induction briefing (*obtain signatures at end of briefing as a record of attendance*)

By signing this form you confirm that you have read and understood the risk assessment and method statement, and that you agree to comply with the safe working procedures in place.

Date	Name	Signature

Document review / approval

Date	Name	Signature
23/10/10	Andy Symis	

Appendix: Employers and public liability and hired in plant insurance



To Whom It May Concern

18 July 2019

Dear Sirs,

RSA Geotechnics Limited; Ashburnham House, 1 Maitland Road, Lion Barn Estate, Needham Market, Suffolk, IP6 8NZ

We are writing to confirm brief details of our Client's insurance covers for your information as follows:

Employers Liability

Insurer: Barbican Protect Limited
Policy Number: BP04691-1801
Expiry Date: 19 July 2020

Limit of Indemnity: £10,000,000

Public/Products Liability

Insurer: Barbican Protect Limited
Policy Number: BP04691-1801
Expiry Date: 19 July 2020

Limit of Indemnity: £5,000,000 any one occurrence and in the aggregate in respect of Product Liability

Excess Public/Products Liability

Insurer: CNA Hardy
Policy Number: 590608
Expiry Date: 19 July 2020

Limit of Indemnity: £5,000,000 in excess of Primary £5,000,000 any one occurrence and in the aggregate in respect of Product Liability

Hired in Plant Insurance

Insurer: Northern Marine Underwriters
Policy Number: 52/NJ/15785031
Expiry Date: 19 July 2020

Cover Basis: "All Risks" of physical loss or damage to hired in plant
Limit of Indemnity: £250,000 any one occurrence

Extends to include continued hiring charges up to £15,000 any one occurrence.

Your Aston Lark Office: Ross House, Kempson Way, Bury St. Edmunds, Suffolk, IP32 7AR

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