Method Statement & Risk Assessment for Reduced Level Excavation, Underpinning, Basement Construction and minor extension works.

At the Project of: -

32 Ferncroft Avenue,
London,
NW3 7PE.

On Behalf of:

Knowles & Associates Ltd

Knowles

Contents

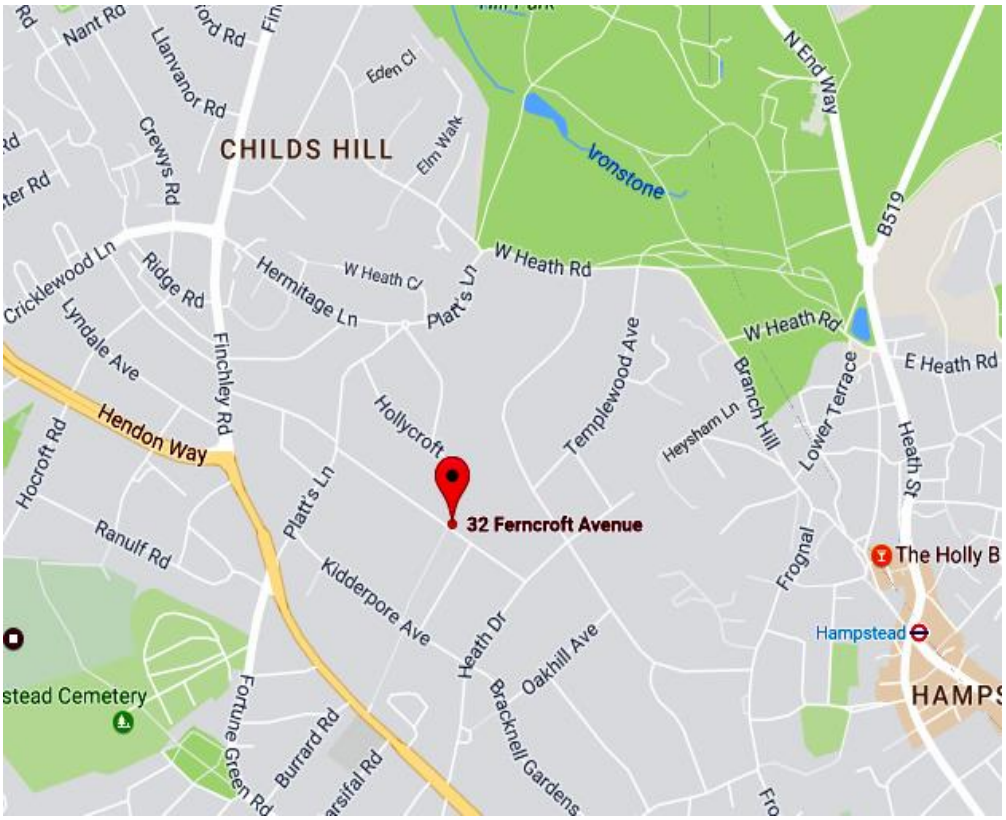
1. Description of works.

The operations referred to within this document comprises of our arrival to site at 32 Ferncroft Avenue NW3, the initial site set-up of conveyor system and unloading of any initially required small tools, plant and materials required to commence with the specified installation of the permanent structural steel frame, temporary propping and enabling works i.e. initial breakout of the existing concrete floor and subsequent underpinning of the existing party walls, together with final excavation and installation of Delta membrane waterproofing system to construct a new basement in accordance with the Project specification, approved construction issue drawings and any temporary works designs or instructions given by the appointed Engineer, Temporary Works Coordinator and the Client/Clients representative.

Normal working hours:

Monday – Friday	08.00 – 18.00.
Saturday	(T.B.C)
Sunday	No works
Bank holidays	No works

Please see attached map:



2. Method of Working

2.1 Knowles & Associates Ltd will obtain authorisation from the Client to commence work on site and will confirm the works area, compound and stockpile area together with any site-specific health and safety rules, requirements and restrictions by way of a project specific safety induction.

Details of Operatives and Supervisor Training, i.e. SMSTS, SSSTS, First Aid at Work certification will be presented, upon request and in any case be available on site whilst the works are in progress.

2.2 Knowles & Associates Ltd will ensure that the area is ready to accept scheduled deliveries by removing any obvious hazards and materials that may impede the safe placement of these materials.

2.3 In addition, all suppliers have been notified of their requirement to implement suitable and sufficient control measures to eliminate or reduce the risks associated with working at height during loading and unloading operations.

Delivery drivers will be requested to provide evidence of training in relation to the operation of any vehicle mounted cranes (HIAB) and certificates of thorough examination for the lifting equipment and any accessories used for lifting the required materials.

Once satisfied that all necessary materials, plant and equipment have been safely unloaded and stored correctly within the designated areas, the designated Site Foreman will fully brief all Knowles & Associates Ltd personnel in relation to the scope and nature of the works and ensure that they are made aware of their responsibilities and the requirements of this method statement and associated risk assessments.

Installation of structural steelwork & propping to support the existing structure.

2.4 The first stage of our works will include for the installation of permanent structural steelwork and temporary propping to the existing structure to ensure the stability of the existing superstructure prior to the commencement of any further dismantling and/or demolition works in accordance with the Structural Engineer's instructions and construction issue drawings provided.

The specified structural steelwork will be manually transported to the desired location and lifted into position, wherever reasonably practicable using Genie SLA10 material hoists to lift and support the steel until such time as they can be welded into position by our competent and coded welders.

2.5 In addition to the above, reinforced concrete padstones will then be constructed to support the new structural steel columns. The new steel columns will then be manually transported and supported whilst the attending operatives drill and fix the holding down bolts into position. The columns will be checked for verticality by our Site Foreman.

2.6 Once satisfied that the existing structure has been adequately supported, any existing redundant steelwork and masonry will be carefully dismantled and removed to a designated area awaiting collection and subsequent disposal by a registered waste carrier to an approved and licensed facility accepting clean/inert material.

2.7 The existing ground floor slab will be broken out using hand held; compressed air fed, anti-vibration medium duty breakers i.e. Breakers (Hand Vibration 3.5m/s^2).

2.8 The extent of the breakout and subsequent reduced level excavation of the sub-strata material will be to suit the nearest "pin" ensuring that operatives are provided with sufficient working space.

2.9 Once satisfied that the excavation works are complete, our Site Foreman will ensure that consideration is afforded to erecting suitable barriers around any part of the excavation giving rise to a risk of injury arising from persons falling into the excavation.

Hazard warning signage E.G. Danger Deep Excavation, Underpinning Works in progress Etc. will be displayed prominently around the perimeter of the excavation.

Conveyor Installation

2.10 Following completion of the structural steel installation and any necessary temporary propping, the Site Foreman will carry out a secondary survey of the building and agree the layout of the proposed conveyor system provided for the purpose of removing all arising's during the breakout and removal of the existing basement slab and excavation of sub-strata material.

It is proposed to install the conveyor system at the front of the building, utilising a designated parking bay (which has a relevant local authority permit in place), to position a wait and load skip/muck away lorry, ensuring that a suitable exclusion zone is established around the skip or lorry location in the interest of preventing access to unauthorised persons and protecting third parties from coming into contact with the conveyor and any arising's, this will be achieved by way of a trained Traffic Marshall being in place to supervise any muck away operations, consideration to the safety of third party users of the footpath will be given at all times.

2.11 Although an initial survey has been carried out and a proposed layout agreed provisionally, the Site Foreman must ensure that our specialist conveyor system is suitable for the length of runs required and is positioned in a manner that does not obstruct any means of escape, fire points or emergency access points.

2.12 In light of the initial survey and proposed location of the conveyor, it is not foreseeable that this will cause any obstruction to existing pedestrian traffic routes or walkways, however where it may be necessary to relocate the conveyor for any reason, then consideration will be afforded to providing crossing points or ramps, where the conveyor may intercede with any access threshold, pedestrian walkways.

2.13 Any such ramp or temporary steps should incorporate handrails and in addition, provide full protection against any person or material from falling onto the conveyor belt.

2.14 Furthermore due to the conveyor system, which by its very nature gives rise to a risk of injury arising from contact with moving machinery parts, particularly where it is not practicable to fully enclose or provide fixed guarding, the Site Foreman shall ensure that suitable and sufficient barriers and hazard warning signage is provided to prevent access.

Emergency stop controls shall be situated in prominent positions, clearly marked and readily available in the event of an emergency.

2.15 The conveyor system will be fitted with a hopper system and protective cowling at the point of loading and will transport the arisings from the site of the excavation works directly to the skip/muck away lorry for subsequent collection and disposal by a licensed and registered waste carrier to an approved facility accepting clean/inert waste.

2.16 The isolation/emergency stop controls will be utilized to effectively isolate the conveyor system, prior to and during any cleaning or maintenance works.

2.17 The Site Foreman will be responsible for ensuring that the conveyor system remains isolated, until such time as the cleaning/maintenance/inspection works are complete.

2.18 The conveyor will be subject to weekly inspection (as for all Plant/Equipment); furthermore where the conveyor belt system is used (inclines only) will be subject to thorough examination, prior to first use and thereafter at intervals not exceeding 12 months.

Excavation and Underpinning.

2.19 Prior to and during any excavation of the area, ground conditions will be assessed by a competent person to determine the means and method of support to ensure the stability of the excavation. Consideration will be afforded to ensuring that advice is sought from our structural/temporary works engineer where ground conditions may indicate that specialised engineering methods may be necessary to ensure the stability of the excavation i.e. de-watering, temporary work designs etc.

2.20 Consideration shall also be afforded to the provision of suitable and sufficient specialised materials i.e. Acrow props, screw jacks, steel sheet piles Etc. so as to ensure that where necessary the excavation can be suitably shored to prevent any unintentional collapse.

2.21 The area to be excavated will be checked using existing service drawings for the location of possible hidden/buried services and scanned by a competent person, using cable avoidance tools and signal generator, where necessary.

2.22 Consideration has been afforded to confined space working, therefore force air ventilation will be provided and monitored during all operations when any combustion engine driven plant is being utilized within the building, in the interest of eliminating the foreseeable risks associated with the ingress of gas, fume or vapor.

Consideration with regards to some of the excavation works being carried out using electric powered hand held tools (clay spades) with consideration afforded to ensuring that operatives are not exposed to levels of hand-arm vibration above the Daily Exposure Level of 2.8m/s^2 8Hr TWA, in the interest of reducing the foreseeable risks associated with the above mentioned hazards.

The Site Foreman will be required to record the vibration levels and operation times of those operative engaged in any excavation and employ task rotation so as to limit the personal daily exposures.

2.23 The initial excavation will commence, to remove sufficient material from below the existing foundation in accordance with the plan and section drawings provided and in accordance with the sequence of underpinning provided by our temporary works engineer.

The areas to be underpinned will be clearly marked upon the existing walls, adjacent to each pin, clearly showing the construction sequence and any datum information considered necessary to ensure that the correct design depth is reached.

2.24 The attending operatives, under the direct Supervision of the Site Foreman will ensure that the initial excavation work provides sufficient working space around each pin location; approximately 1200mm x 1500mm wide bays.

2.25 The excavation will be checked, so as to ensure its stability or to determine the nature of any required additional shoring and to ensure that edge protection or barriers are in place prior to the commencement of works. These checks shall be made at the start of each shift.

2.26 The excavation will proceed to the specified drive design depth, allowing for the attending underpinners to access the excavation, using a timber or steel, industrial (Class 1 or 2) rated pole ladder of sound construction to access the excavation for the purpose of installing the necessary temporary shoring/support in accordance with the temporary works designs provided and facilitating the removal of any further arising's.

2.27 The ladder access will be securely tied and or footed, using timber battening or the trench sheets to secure the ladders and prevent any unintentional displacement.

2.28 Where sub-structure brickwork is encountered, the brickwork will be assessed, in consultation with our structural/Temporary Works Engineer, to determine the necessity and method of providing any additional temporary propping required, ensuring the stability of the s/s brickwork prior to the commencement of any further excavation works.

2.29 Once satisfied that the excavation of the underpinning has reached it specified depth, the Site Foreman will check the pin to satisfy himself that sufficient material has been removed and that the temporary support has been installed correctly, before instructing the attending underpinners to place and secure the required reinforcement in accordance with the structural detailing/section drawings provided.

2.30 All reinforcement will then be secured by way of tying wire in accordance with the structural detailing provided by the appointed engineer.

2.31 Following the completion of the process outlined above, competent underpinners shall commence with the forming of the face shutter and subsequent propping. Propping of the face shutter shall be achieved using a suitable and sufficient number of "Acrow Props" secured through each base plate using timber packers and supported against the central "dumpling" (existing substrata) to ensure that the loads imposed by the concrete cannot displace the formwork during or immediately following the concrete pour.

2.32 The Site Foreman will then instruct our attending operatives to commence with the batching of the specified concrete, using a 5/3 110V Electric Mixer with consideration afforded to ensuring that mixing of the concrete is carried out in a careful manner so as to reduce the production and migration of respirable dusts by a competent operative, who will be provided with and instructed to wear suitable respiratory protection i.e. FFP2 face mask.

The Site Foreman will also afford consideration to the collection of mixed concrete and taking of cubes for any designed mix, ensuring that those responsible for the taking of cubes are trained and that the cubes are correctly stored and cured on site until such time as they can be collected and sent to an approved UKAS accredited facility for testing.

2.33 The batched concrete will be placed either by hand using buckets or a wheelbarrow and timber chute to place the mix directly into the shuttered area. Operatives shall ensure that they wear suitable and sufficient work clothing i.e. long sleeve jackets and personal protective equipment to include suitable eye protection and gloves during the concreting operation.

2.34 Once all concreting operations have been completed in accordance with the specification, up to within approximately 75mm of the u/s of the existing foundation, the concrete will be vibrated using 110 Volt hand held vibrating pokers to remove any air pockets and reduce the risk of void formation.

Operatives must allow at least 24 hours for the curing process. During which time operatives may then commence with the preliminary excavation work to the next sequence of underpinning as shown on the drawings.

2.35 Subsequent to the concrete reaching the required compressive strength, operatives will revisit the location to dry pack the void immediately above the concrete underpin. Operatives will commence with dry packing the void using sand and cement mix containing non-shrink additive. Dry packing will be compacted using a packer (section of timber) and hand tools to ensure solid compaction below the existing footing.

2.36 Once the pin has been completed, any protrusions or excrescences will be removed, flush to the face of the wall, using hand tools to prevent any damage to the existing foundation.

2.37 The process described above will then be repeated in strict sequence in accordance with the drawings provided; ensuring that any required continuity reinforcement has been correctly installed.

Reinforcement dowels will be drilled and fixed.

2.38 Operatives shall, on request, be instructed to take a sufficient number of cube samples from the deliveries and arrange for collection so as to ensure the consistency of the concrete batched on site. Operatives will be trained in the forming of cube samples and curing techniques.

2.39 Once the concrete has cured sufficiently, the timber formwork will be struck from the face of the vertical walls and de-nailed before stacking safely within a designated area for cleaning and re-use.

2.40 Once all underpinning works have been completed the remaining mass will be removed using the conveyor to transfer the material to the designated skip and allow for the base of the excavation to be prepared in readiness for a final pour to construct the reinforced slab.

2.41 Operatives shall once again access the excavation using a suitable ladder of sound construction, secured against displacement by use of a timber footing and secure anchorage to the previously cast vertical wall to facilitate the placement of reinforcement mesh and placement of concrete within the base of the excavation in accordance with the specification.

2.42 The basement slab will be constructed using ready mix concrete, delivered directly to site and placed using a static pump and suitable hoses to place the concrete within the prepared area.

Operatives will be reminded to wear suitable work clothing (no short sleeve tops or shorts) and protective equipment i.e. eye protection, gloves, safety boots or wellington boots.

2.43 Upon completion of the underpinning and ground bearing slab construction, the area will be cleared of any remaining waste and plant, equipment and any excess materials cleared from site and/or returned to the designated storage area.

2.44 The Site Foreman will then instruct our skilled and competent operatives to install the Delta waterproofing membrane in accordance with the manufacturers literature, ensuring that only the proprietary fixings are used i.e. plugs and sealant to provide the completed watertight basement in accordance with the Project specification and construction issue drawings provided.

3. Sequence of operations.

3.1 Delivery of materials and equipment

Arrangements will be made to ensure that adequate time allowance is available for the movement and set down of materials.

Materials will be brought to the work site by a suitable vehicle, i.e. rigid chassis 8 wheeler or drop-sided lorry with HIAB and will be parked in an area specifically dedicated to the delivery of materials.

Consideration has also been afforded to informing our suppliers of the nature of the site, proximity of residential properties and signing in procedure.

Suppliers will also be required to provide a minimum of 48 hours' notice prior to delivery so as to ensure that sufficient space is available within our designated laydown area for the placement and safe stacking of the materials and any additional equipment.

Materials will not be stacked in any access and egress routes but will be stored temporarily within a designated area provided by the Principal Contractor until the materials are required on site.

In accordance with the Manual Handling Operations Regulations 1992, loads will be reduced and loads split between operatives.

A restriction will be placed on the amount of materials placed in one area at any one time on site to ensure that there is no overloading of the ground and trip hazards are reduced with access / egress routes remaining clear.

All materials will be placed to as close to the work area as possible (given the space constraints), in the prevention of manual handling tasks.

3.2 Preparation.

Others within the work area will be advised of the works to be undertaken in the area and of any risks present e.g. slippery surfaces, uneven ground conditions or unstable ground conditions etc. Where excavation works are in progress, signage will be displayed upon barriers warning of dangers e.g. "Danger Construction Work in Progress", "No Unauthorised Admittance" etc.

Operatives will be involved in a pre-works talk to discuss this method statement and to ensure that they are familiar with the method of works specific to this particular document and site conditions. All personnel working for Knowles & Associates Ltd are familiar with the system of work to be used and use of tools and equipment required in their particular areas of work and have undertaken a history of tasks identical in all respects to the tasks required to be undertaken.

The Site Foreman for Knowles & Associates Ltd will however, highlight to operatives arriving on site additional hazards that may be present in their immediate environment.

In addition, daily activity briefings will be carried out by the Site Foreman to ensure that any previously unforeseen risks are brought to the attention of those persons at point of works.

3.3 Commencement of the works in accordance with Section 2.

3.4 Site Clearance

All debris and excess materials will be removed from the work area, by conveyor and deposited to a stockpile area, awaiting removal by a licensed waste removal contractor.

Should materials and/or debris become a hazard due to the volume, fire risk or due to trip and slip hazards of wet materials it will be removed from the work area/site immediately.

At all times Knowles & Associates Ltd will take particular care to ensure that trip hazards are reduced or removed and access / egress routes remain clear.

4. Arrangements

4.1 Access and Egress

Access to site will be via the security hoarding off of Victoria Road via the front entrance to the property, leading to the main site area, and Site Office.

All personnel will be required to sign in upon arrival and report directly to the site office for a site induction before commencing on site.

Pedestrian walkways will be used where provided and operatives will ensure that they use only recognised and authorised routes of entry into site.

4.2 Permits to work.

It is envisaged that these operations fall within the scope of a permit to work operated by Knowles & Associates Ltd and any necessary permit requirements will be strictly adhered to, prior to commencing with any excavation or underpinning likely to give rise to a risk of working within confined spaces.

4.3 Emergency procedures.

Emergency procedures will be arranged on site and will be communicated to the persons undertaking the works during the site induction. The Site Foreman has been provided with a mobile telephone to ensure that emergency services can be contacted in the event of an emergency.

Should an emergency occur on site, which may affect other trade contractors or neighbouring activities, they will be contacted and made aware at the first opportunity.

Although as previously stated, Knowles & Associates Ltd have implemented control measures to avoid and reduce the risks associated with confined space entry and working.

4.4 Environmental control.

Ensure all waste is correctly kept and disposed of in accordance with The Environmental Protection Act 1990. Prevent so far as is reasonably practicable, pollution of the atmosphere by the discharge of dusts, smoke or fumes and prevent the unauthorised discharge of substances harmful to the environment into adjacent sewers, run offs or nearby waterways.

A suitable area shall be designated on site to allow the washing down of the concrete mixer and associated equipment. This will take into account the position of any gullies or manholes so as to avoid any possible contamination of the existing drainage system and any necessary protection shall be afforded to watercourses and inspection chambers.

4.5 Equipment.

All materials shall be checked before first use, following its delivery to site, so as to ensure that all materials are present and in good condition

All materials and equipment, when reasonably practicable will be taken to the work area via mechanical means, as this will reduce the requirement for excessive manual handling.

Lifting equipment and accessories shall be checked before use and kept clean, any damage to plant, tools or equipment shall be reported immediately to the Supervisor who shall then ensure that it is replaced or repaired as necessary. Tests of Certificates of Thorough Examination will be retained on site for all items of lifting equipment used on site i.e. Chains, slings, strops etc.

All Lifting equipment must have been tested within the last 12 months and lifting equipment for lifting persons, together with all lifting accessories, must have been tested within the last 6 months.

Any electrical equipment for use on site must be 110 Volt centre-tapped to Earth and must have been subjected to a Portable Appliance Test within the last 3 months.

4.6 First-aid arrangements.

First Aid requirements including the identity of the First Aider/Appointed person will be arranged on site and the details communicated to all operatives. A First-Aid box will also be provided on site adequately stocked for risks highlighted by this Method Statement.

4.7 Housekeeping

Due to the type of works undertaken, waste material will be produced however all debris will be removed from the works area to a storage place of safety until such time as this material can be removed by a licensed "Waste Carrier".

At all times Knowles & Associates Ltd will take particular care to ensure that trip and slip hazards are reduced or removed and access / egress routes remain clear.

4.8 Manual Handling Operations.

Knowles & Associates Ltd are aware of their responsibilities with regards to the Manual Handling Operations Regulations 1992 and will use mechanical or alternative manual handling aids in situations where they are practicable or they will endeavour to reduce the weight of loads to be lifted.

Pallets of materials will be set down as close to the works area as is practicable.

A suitable pallet truck or turntable trolley will be used to transfer materials from the temporary laydown area to the working locations within the building.

When this is not practicable loads will be reduced in size and weight and sufficient rest areas provided.

In addition, personnel will receive instruction and training in relation to the use of kinetic or team handling techniques, particularly when installing structural steelwork/temporary propping.

4.9 Personal protective equipment.

In accordance with The Personal Protective Equipment at Work Regulations 1992 (As amended). Knowles & Associates Ltd will reduce the risks to employees as far as is reasonably practical by the implementation of control measures within systems of work. Should control measures not be available or they are deemed impractical, as a last resort, operatives will be provided with the necessary protective equipment.

The foreseeable safety equipment deemed necessary to control the hazards highlighted by this Method Statement include hard hats, gloves, boots, hearing protection, gloves, Hi-visibility clothing and masks in some circumstances. PPE will also be worn as per the requirements of Principal Contractor's site rules.

It is envisaged that noise will be produced during this task, therefore consideration will be afforded to hiring only equipment that has been regularly serviced and fitted with anti-vibration dampers/muffles or other means of attenuation.

Where this is not reasonably practicable then noise exposure will be controlled using personal protective equipment, ear protection will be used should noise levels exceed 84dB(A).

All protective equipment shall conform to the most current European Norm and/or British Standard.

4.10 Safety of third parties.

The protection of third parties will be considered before the commencement of all tasks. Access and egress will be kept clear at all times.

Should visitors be invited onto site by the Principal Contractor they will be required to wear all necessary Personal Protective Equipment.

4.11 Supervision.

Throughout the project Knowles & Associates Ltd shall ensure that a Site Foreman or other trained and competent person is available permanently to oversee the works being undertaken. Works will be supervised to ensure that risks identified by this method statement are controlled or are lowered so far as reasonably practicable and further controls are implemented as required.

The Appointed Project Manager for this project, Mr Alan Everett – 07785 567978 and the Site Manager Gediminas Paskalskis – 07517 523976 will provide the necessary level of supervision and management throughout the duration of this contract.

4.12 Vibration.

All operatives will be informed of the risks associated with exposure to high levels of vibration from plant and tools used on site. The Senior Site Supervisor shall ensure that all necessary control measures are taken to restrict exposure times in accordance with The Control of Vibration at Work Regulations 2005.

All exposure times will be recorded by the Site Foreman to ensure that operatives do not exceed the maximum personal daily allowance.

5.0 Non-standard operations.

This method statement will be amended as necessary if the works fall outside the scope of this document or the sequence of work changes.

6.0 Appendices.

6.1 Method Statement Register

6.1

Method Statement Register

Before any task is undertaken the Method Statement for that task MUST be read and understood.

To enable Knowles & Associates Ltd to comply with this, please ensure you print your name, date and sign this register.

Name	Method Statement Title	Date	Signature

6.0 Risk Assessment

Risk assessment for Reduced Level Excavation Basement Construction

P = Probability	1 = Remote	2 = Unlikely	3 = Possible	4 = Probable	5 = Likely
S = Severity	1 = Injury not requiring First-aid	2 = First-aid only required	3 = Over 7 day injury	4 = Serious Injury	5 = Fatality
R = Risk Rating (p x s)	1-3 = Negligible	4-6 = Low	7-12 = Medium	13-16 = High	17-25 = Very High
RR – Residual Risk	1-3 = Acceptable No further controls necessary.	4-6 = Acceptable. Regular close monitoring and review required.	7-12 = Unacceptable Further controls must be implemented to reduce the risk.	13-16 = Unacceptable Review the assessment process, activity and re-evaluate and apply additional controls.	17-25 = Activity or process should be abandoned; no works to continue unless a full review of the work has been undertaken.
Probability x Severity – Risk Rating	E = Employees	C = Contractors	T = Third Parties		

S
E
V
E
R
I
T
Y

5	10	15	20	25
4	8	12	16	20
3	6	9	12	15
2	4	6	8	10
1	2	3	4	5

PROBABILITY

1 – 3	NEGLIGIBLE	
4 – 6	LOW	
7 – 12	MEDIUM	
13>	HIGH	

Process	Hazard	Person at Risk			Risk			Control Measures Required	Residual Risk
		E	C	T	P	S	R		
Reduced level excavation and Underpinning	Ground Instability	✓	✓	✓	3	5	15	See Attached	**3**
	Working at Height/Falls into Excavations	✓	✓		3	5	15	See Attached	**2**
	Contaminated ground	✓	✓		1	4	4	See Attached	**2**
	Contact with Sewage/Biological hazard	✓	✓		1	5	5	See Attached	**1**
	Weils Disease	✓			3	4	12	See Attached	**2**
	Agents of anoxia e.g. CO2/Confined space working	✓			1	4	4	See Attached	**2**
	Head Injury	✓	✓		2	4	8	See Attached	**2**
	Dropped Loads e.g. trench supports/hydraulic frame sections	✓	✓		3	5	15	See Attached	**3**
	Third Parties / Pedestrians	✓		✓	3	4	12	See Attached	**1**
	Manual Handling	✓	✓		3	4	12	See Attached	**1**
	Foot and Hand Injuries	✓	✓		4	3	12	See Attached	**2**

	Underground Services	✓	✓	✓	3	5	15	See Attached	**2**
	Plant Contact	✓	✓	✓	4	4	16	See Attached	**2**
	Noise from working in confined space use of plant, i.e. quick cut saws, breakers.	✓	✓	✓	5	4	20	See Attached	**3**
	Concrete contact	✓	✓		4	3	12	See Attached	**2**
	Hand-arm Vibration	✓			3	2	6	See Attached	**1**
	Building instability/Falling Materials	✓	✓	✓	2	5	10	See Attached	**2**
	Harmful/Respirable Dusts	✓	✓	✓	3	3	9	See Attached	**1**

HAZARD	CONTROL MEASURES
Ground Stability	Existing ground conditions will be inspected to ensure their integrity at the start of each shift, with an assessment undertaken by a competent person of the stability of the ground to ensure that all temporary support required will be available on site as the excavation is made and placed as required. Any equipment (Conveyor, compressor Etc.) used during the excavation of the sub-strata material will be positioned/located a suitable distance away from the edge of any excavation, in the interest of reducing the potential for vibration or the weight of the equipment increasing the potential for over loading the adjacent ground. Spoil from the excavation will be placed directly onto the conveyor system and transported to the designated skip location situated adjacent to the main entrance to site and the scaffold gantry. Where the excavation may exceed a depth capable of being stabilised by way of benching or battering back, a temporary works engineer shall be consulted to determine the adequacy of the shoring arrangements and to offer advice and assistance in specifying any temporary support/shoring of the excavation.
Working At Height/Falls into Excavation	Where there is a foreseeable risk of persons falling into the excavation, suitable and sufficient trench sheets shall be installed, consideration shall be afforded to ensuring that sheet are oversized, where reasonably practicable in the interest of ensuring that the sheets protrude above the excavation a minimum of 950mm, thereby providing suitable and sufficient edge protection around the perimeter of the excavation. Where this may not be reasonably practicable i.e. where this restricts access into the excavation, particularly for the transfer of materials within the excavation, consideration shall be afforded to temporarily removing any support necessary and reinstate the edge protection immediately following the transfer of materials. Any such edge protection provided shall include a minimum uppermost guardrail of 950mm and shall afford such protection as will not offer any unprotected gap of greater than 470mm. This may be achieved by use of an intermediate handrail or close linked and secured fencing of such a robust nature as will prevent a person falling against it from falling from height likely to cause injury.

Equipment and materials falling into excavation	Consideration shall be afforded to ensuring that plant, tools and materials are stored away from the edge of any excavation in the interest of reducing the risk of those items from falling into the excavation and potentially injuring those working below. Wherever necessary, toe-boards shall be fixed along any excavation edge to prevent any materials from falling into the excavation.
Contaminated ground	At this time, the Geographical investigation offers no indication of the presence of any contamination, however should contaminated ground be suspected due to physical appearance or smell etc. work will stop until a survey has been undertaken or a competent person authorises a continuance of works. A separate method statement and risk assessment outlining the control measures necessary to prevent exposure to harmful contaminates will be produced for any task that may give rise to a risk of contact or exposure to contaminated ground.
Contact with sewage	Before works commence operatives will be reminded of the importance of hygiene standards and the quality of the welfare facilities will be checked on site. Operatives will be required to wear suitable rubber gloves and have a change of clothing available should contamination occur; heavily soiled clothing is to be disposed of and treated as hazardous waste.
Weils Disease	If there is a possibility that rats are present on the project, there will therefore be a risk of contracting Leptospirosis (Weils disease). As a control all operatives will be informed of the following in connection with Leptospirosis: what Leptospirosis is? What the symptoms are? How it may be contracted and prevention methods.

Agents of anoxia e.g. CO2	If at any time it is suspected that agents of anoxia may be present due to smell or ground type e.g. dark noxious spoil/arising, viscous semi-solid leachate etc. All works shall be stopped and an analysis of the sub-strata material carried out by a competent specialist sub-contractor. Where there is any foreseeable specific risk of asphyxiation, fire or flooding leading to a risk of drowning, or the presence of gas, fume, vapour or free flowing solid, a separate specific assessment of the risks present shall be undertaken and the procedures for ensuring a safe system of works shall be prepared i.e. those operations shall be treated as Confined Spaces in accordance with the Confined Spaces Regulations 1997. Should it be necessary to operate any mechanical plant within the area, consideration must be afforded to ensuring that particulate filters (scrubbers) are fitted to the exhaust system of any combustion engine fitted plant i.e. generator/compressors/mini diggers etc.
Head Injury	Toe boards will be placed where operatives are required to work within the excavation, adjacent to an area where it is necessary to store any materials likely to cause injury. Anti-whip check fittings shall be fitted to all compressor line connections as to reduce the potential for hoses to become detached/rupture due to corrosion/poor fitting. Head protection shall be worn in accordance with the Personal Protective Equipment Regulations 2002 (as amended)

Dropped Loads e.g. Pipes, trench support	All lifting operations (i.e. unloading using the vehicle mounted HIAB crane) will be undertaken with the use of a competent plant driver, banksman and slinger. SWL's will be checked and lifting devices inspected by a competent person in accordance with the Lifting Operations and Lifting Equipment Regulations 1998. Details of the operator's training and certificates of thorough examination of the HIAB and associated accessories shall be checked prior to carrying out any unloading of materials within the designated unloading/loading areas.
Third Parties / Pedestrians	Barriers and signage will be placed to ensure that operatives / visitors and public have suitable segregation to protect the pedestrians from operations that are being undertaken.
Manual Handling	Where mechanical means are available to perform a task, operatives will not be expected to undertake tasks by way of manual handling. Where no alternative exists loads will be broken down to reduce the risk, or team lifting used. All plant and equipment will be loaded/unloaded with the use of a machine with materials being dropped as close to the work area as is reasonably practicable. A separate specific assessment shall be carried out for all operations offering a significant risk of injury arising from manual handling operations, any such assessment shall consider the nature of the task, the individual(s) selected to carry out the task, the loads involved and the environment in which the task is to be undertaken.
Foot and Hand injuries	During the works general hand and foot injury may occur therefore steel toed boots will be worn by operatives at all times and gloves will be worn during periods when knocks, hand injuries or abrasion may occur. Should there be a new hazard on account of the use of gloves e.g. entanglement or the dexterity of the hand is needed gloves need not be worn. In particular, operatives must wear suitable hand protection during the connection of any lifting accessories i.e. during the slinging of loads or installation of any required temporary support/shoring.

Underground services	Plans of all underground services will be obtained from the utilities companies of the Client/Main Contractor. Digging operations will be undertaken in accordance with HS(G) 47 avoiding danger from underground services and cable avoidance measures used e.g. cable avoidance tool/signal generator and hand digging with a spade where cables are known to be. Operatives will be informed of the location of the services and a suitable indication used on site e.g. signage, warning tape etc.
Plant contact	Plant will have adequate space to work and there will be suitable communication between plant operators in the prevention of collisions and contact. General supervision will also be undertaken on site by supervisors to ensure that tasks are performed in separate areas of the site when practicable and safe systems of work used. In particular, access to the conveyor belt system will be strictly controlled. Emergency stop controls/isolation points will be clearly and prominently located with consideration afforded to ensuring that they are easily and readily accessible. Given that the belt can become easily blocked due to the nature of the material to be removed, the use of fixed guarding will be used so far as is practicable, however where the use of fixed guarding is not practicable or where this may increase the frequency of breakdowns/maintenance requirements (and therefore risks associated with such operations), the conveyor belt will be protected using linked barriers to ensure that no person intentionally or unintentionally enters any area giving rise to risk of injury associated with coming into contact with any part of the conveyor system.
Noise from working in confined space use of plant, jack hammer, piling machine, mini digger etc.	Operatives will be informed of the risk to their hearing by ways of a tool box talks before any noisy works are undertaken. All operatives shall be provided with Ear Protection and advised to wear it unless the noise level reaches 90db where the operatives will be instructed by management that they are to wear hearing protection at all times. Job rotation and regular breaks will be in place along with noise monitoring and records kept on site.

Concrete Contact	Operatives will be given the Risk Assessment and method statement for the works to be undertaken and ensured that they have read and understood the safe system of work. There will be made available onsite suitable and sufficient welfare facilities to enable operatives to wash/shower if necessary with an eye wash station and first aid kit kept on site all times. Operatives will also be given appropriate P.P.E i.e. gloves, goggles and hard hats which should be worn at all times. There will be supervision at all times during the works to be undertaken and a first aider available on site at all times. Only competent operatives shall be undertaking the works required.
Hand-arm Vibration	In light of the nature and scope of works, the use of anti-vibration damped hand held equipment has been considered. Consideration is currently being afforded to the use of a "drill and burst" method of removing the ground bearing slab. All personnel will be made aware of the risks associated with exposure to high levels of vibration and will receive a specific toolbox talk in relation to the health risks and the control measures necessary to reduce those risks to the lowest reasonably practicable level. In addition, The Site Supervisor will be required to record the exposure times of the operatives using any vibrating tools and/or equipment so as to ensure that they are not exposed to levels of vibration above the daily exposure limit.
Building instability/Falling Materials	All temporary works i.e. propping and shoring of the existing superstructure has been surveyed and will be subject to temporary works design. In addition, it has been agreed that the on-site Engineer will monitor the structure for any movement at pre-determined frequencies, throughout the execution of the excavation and underpinning works.

Harmful/Respirable Dusts	Consideration is currently being afforded to using a method of drilling and bursting the existing ground bearing slab, however there may still be times when concrete obstructions may need to be broken out/cut back. Therefore in light of the nature and limited extent of the breakout works, Operatives will be required to wear suitable tight fitting respiratory protection i.e. disposable FFP2 type masks (to EN149).
Electrical faults/Failure	All electrical equipment i.e. Conveyor system, Tools Etc will be 110 Volt centre taped to Earth and subject to Portable Appliance testing in accordance with HS(G) 107 i.e. every 3 months. The Site Supervisor will be responsible for pre-use inspection of ALL equipment and will remove any damaged and/or faulty equipment, securing any such equipment and preventing any person from using the damaged tools/plant.