

Imperial Wharf

RAMS No. 25119-MS-00
CFA Piling



Principal Contractor: FM Conway

Rev	Revision Details	Developed by	Date Developed	Approved by	Date Approved
00	First Issue	HSK	05/02/2025		
01	Revision 2	CM	19/02/2025		

RAMS Title: CFA Piling

Morrisroe Piling Key Personnel & Supervision

- Pre-Construction Director **Neil Abbott 07946 228950**
- Technical Manager **Neil Burrows 07932 744415**
- Section Supervisor for this activity **TBC**
- Visiting HSEQ Advisor **TBC**

Supervisor's responsibilities include:

- Workforce compliance with Safe systems of work
- Pre-start workplace safety inspection
- Conduct Daily Activity Briefing
- Hazard reporting
- Plant & material checking

Preliminary

All personnel being briefed on this method statement must undergo site induction and hold a valid CSCS/CPCS card.

Works Overview

This document details the general safety protocols surrounding CFA piling on the Imperial Wharf Project.

This document details the following items:

- Site preparation and permit systems to avoid damage to below ground infrastructure.
- Set up and operation of CFA system.
- Placement of concrete including agitator area and pipeline controls.
- General methodology and sequence.

A full set of CFA procedures will be maintained within the site file. A detailed lift plan and associated risk assessment shall be issued in a separate document.

Project Description

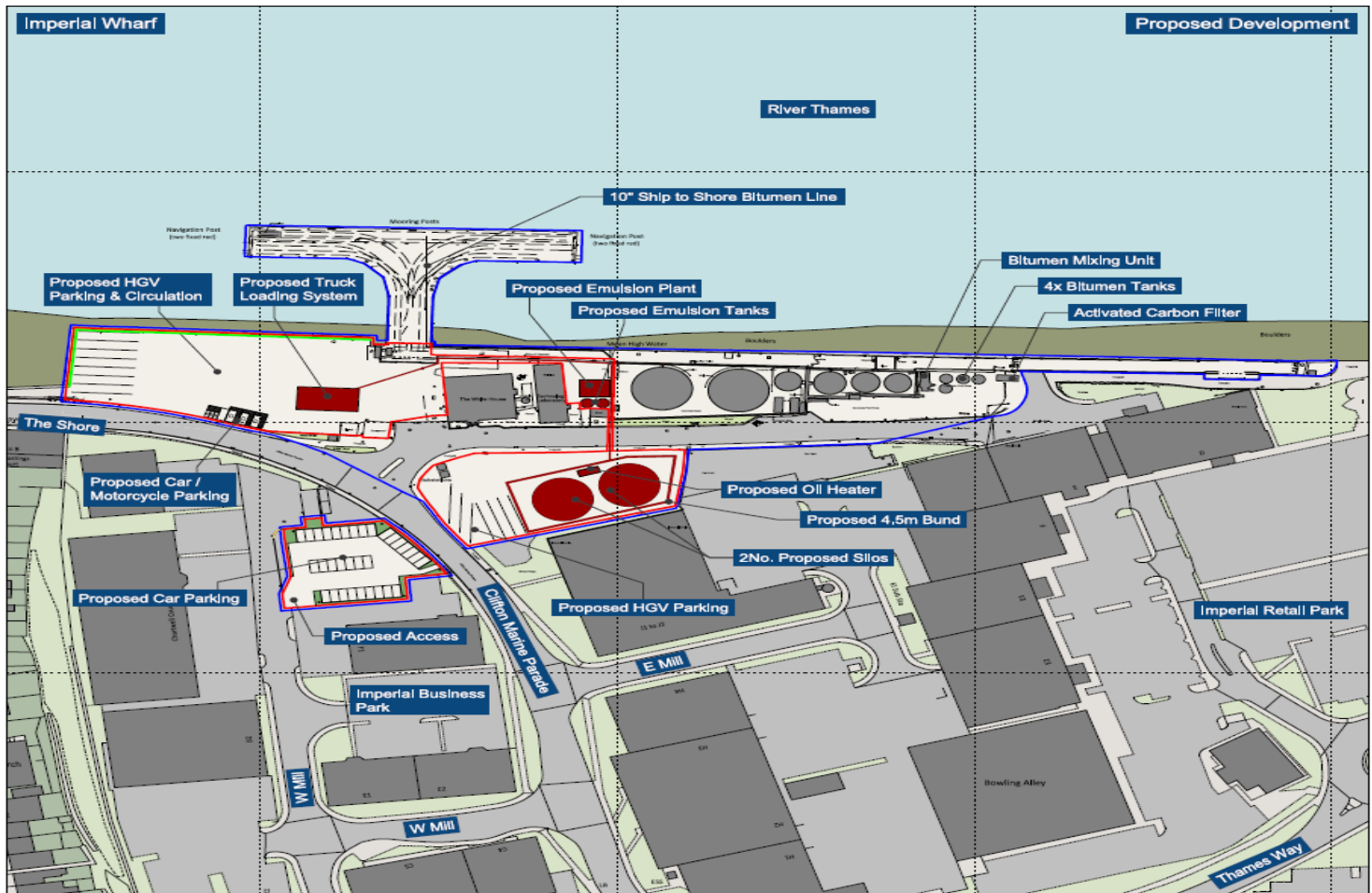
The current scope of this project will employ CFA piling techniques. The nature of CFA systems means that this will cause minimal vibration and no effect of any surrounding structure including a reduced noise profile.

The scope of work comprises the construction of approximately 126 no CFA Bearing piles to the tank slab area and 17 no CFA Bearing Piles to the loading gantry area

All piles are to be installed to the clients' design for diameter, length and reinforcement. Reinforcement drawings will be produced by the subcontractor and issued for approval prior to being manufactured and delivered to site. The most relevant Boreholes are BH3, BH4 and BH5. These all indicate that the soil profile consists of Made Ground over structureless Chalk over Chalk mottled with silt and occasional gravel. Consideration should be given to the risk of voids and solution features which can be present in these ground conditions and a remedial plan be in place prior to works commencing, should these features be present.

The ground investigation report prepared for the site (Ag2119-14U38. Applied Geology Limited 2015) recommends a piled foundation solution for the proposed scheme. The report includes a geoenvironmental assessment, covering risk to human health and controlled waters. The conclusion is that there is a low risk posed to both human health and controlled waters due to the lack of soil contamination encountered.

Recommendation for UXO Survey has been made within this documentation.



The general sequence for construction will be as follows:

- 1) Mobilise all Plant and equipment to Site and rig up.
- 2) Pile the Tank slab piles.
- 3) Partially de-rig and move all plant and track across to the loading gantry piling.
- 4) Complete all loading gantry piles and de rig.
- 5) Demobilise all plant and equipment from site

NB. The above-described sequence is subject to change during the duration of works to suit any unforeseen issues or changes in sequence required based on preceding or following works.

Risk Profile

The key risks associated with this operation are as detailed below. The control measures for these are detailed within this document and associated documents.

1. Segregation of plant and pedestrians including delivery and concrete supply vehicles.
2. Protection of auger whilst piling and control of muck rising up the auger.
3. Failure of concrete pipeline resulting in damage to property, plant or injury to people.
4. Control of lifting operations and management of accessories and equipment.
5. Failure of pile mat and controls supporting this.

PART 1 - Methodology (TEMPO)

This RAMS is set out following the TEMPO sequence as detailed below. This ensures that they are in line with other Morrisroe briefing systems such as daily activity briefing (DAB's) and operational common standards.

T = Task **E** =Environment **M**= Machinery/Plant & Materials **P**= People **O** = Zero Accidents

TASK:

Set up of piling mat and area Works By Others:

- All services will be removed prior to the piling operation commencing. An up-to-date service register will be held by the PC.
- The piling mat will be established to an approved temporary works design.
- The piling mat will be installed in layers as stipulated by the design employing layers of geotextile material (if required) and compacted as laid.
- Once installed a plate test will be completed on the mat to ensure the correct ground bearing pressure is achieved as set out in the pile mat TW design.
- On completion of this a piling platform certificate will be issued to GSS along with a permit to dig.
- The boundary of the piling area shall be fenced off to prevent unauthorized access to the piling area. Anyone wishing to access the piling area will need to make prior arrangements with the Piling Site Manager/Supervisor.
- Piling works are now authorized to commence.
- Access arrangements will change as the rig moves around the site in the sequence described above. The intent will be to maintain separate access and egress points for piling personnel and non-piling personnel undertaking works within the segregated works area. If Applicable.

Mobilisation of piling rigs:

1. All piling rig transport will be agreed with FM Conway prior to deployment to site.
2. GSS will ensure that all necessary road arrangements have been made (possibly escorts required due to abnormal loads) and that the route to site is as per agreed routes. It is not anticipated that any special measures, such as road closures, will be required. This will be confirmed by the transport company and the movement order.
3. A mobile crane will be deployed to site to allow for the rigging of the piling rig (see separate RAMS) and the unloading of the ancillary items (augers, agitator, and stores cabins).
4. Lifting operations will be carried out under an issued lifting operations plan taking into account:
 - a. Max point load and ground bearing pressures.
 - b. Surrounding environment and slew radius.
 - c. Schedule of common lifts.
 - d. SWL's

- e. Competencies and qualifications (CPCS Slinger/Signaler and Plant Operator).

CFA piling operations:

1. Before the commencement of the first pile on each day, the hoses and pipeline will be lubricated with a priming mix. This operation may be repeated during the day if the pump and concrete line have been washed out.
2. During the construction of the pile, a "No Entry Controlled Zone" will be established around the piling rig by the banksman/rig attendant. Only the Nominated Banksman will be normally allowed within the Controlled Zone and will be in charge of any other persons who need to be there. Barriers will be placed in front of the rig.
3. The auger gates will be kept closed at all times, unless the maximum depth of the rig is required. In these instances, the gates will be opened to allow the drill table to pass through them. If the gates have to be opened for any other reason, the rotation of the augers must cease.
4. On reaching the required design depth the Rig Operator will signal to the Pump Operator to commence pumping of the concrete.
5. The auger will not be raised until either the specified pre charge volume of concrete has been pumped through the auger or until a positive pressure register on the instrumentation. As soon as one of the above criteria has been met, the auger tip will be raised approximately 100mm to allow the bung or cap to blow.
6. Provided there is an oversupply of concrete, there is no minimum concrete pressure requirement. When passing through loose or soft soils, and as the tip of the auger is approaching the surface, it will not usually be possible to register a concrete pressure. It is expected that evidence of concrete at the surface will occur when the tip of the auger is still up to 2metres below ground.
7. At all times during pile construction the auger will be rotated in the forward direction.
8. In the event of a concrete blockage, or if the auger has to be extracted for any other reason, the auger will be reversed out, leaving all excavated material in the bore. On clearance of the blockage, the pile will then be re-bored a minimum of 0.5m into the concreted bore.
9. The spoil will be cleared from the augers during the concreting operation by a full-time attendant excavator and the rig mounted auger cleaner positioned above the gates. Spoil will be cleared beneath the gates, whenever possible.
10. No spoil that could cause injury must ride up the auger beyond the auger cleaner*.
11. The piling rig will then be reversed off the pile position under the supervision of the Nominated Banksman.
12. The reinforcement cage will be lifted by either the attendant excavator or the piling rig (using the auxiliary line).
13. Care will be taken to ensure that no contamination is pushed into the concrete by the reinforcement. The reinforcement will generally be pushed in manually, but the assistance of the excavator may be used provided that no deformation of the reinforcement occurs.

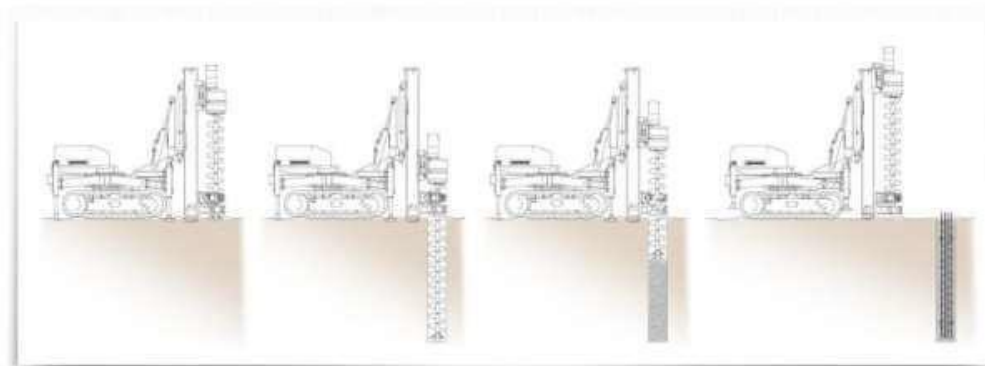


Plate 1 – Shows the CFA machine during the construction stages

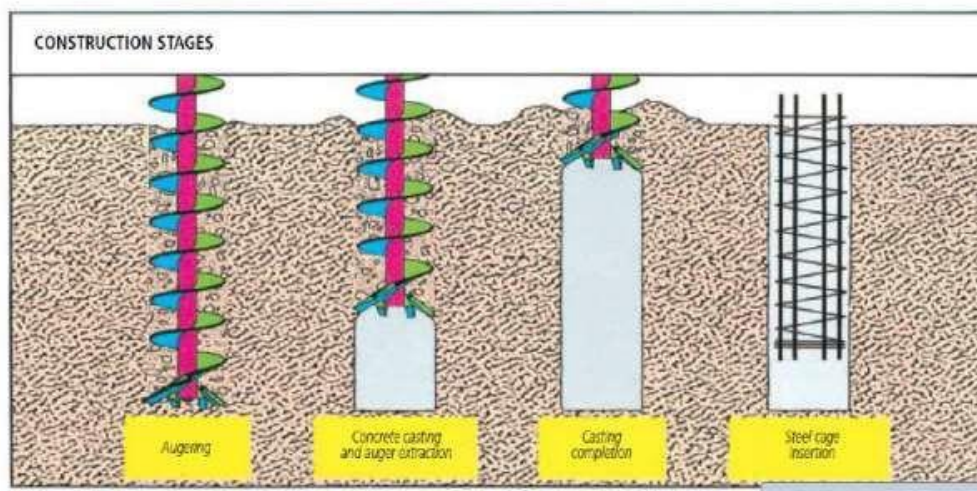


Plate 2 – Shows the Construction stages in details

*With reference to item 13 above, this risk is mitigated by the use of a specially modified auger cleaner on the rig. As detailed in the risk assessment in this document.

Reinforcement:

1. The reinforcement cages will be provided with wheel or skid spacers placed every 3m. These spacers will typically extend to 75mm to ensure adequate cover is provided.
2. The cages will have designated lifting points, which will be used for the vertical lifting of cages into position.
3. The cage will be lifted as detailed in the lift plan. The vertical cage will be lowered into the concrete until the top of the main vertical reinforcement is within tolerance limits. This will be at or just below piling mat level.
4. The top of steel level will be noted on the piling log. All exposed rebar will be covered by caps.
5. Note: If any reinforcement needs to be cut this will be done using a disc cutter and a hot works permit obtained from Main Contractor.

Concrete:

Concrete is placed in the bore as follows:

- a. CFA system will employ a static concrete pump and pipeline.
- b. The pump will be established in a bunded location ensuring no potential for contaminant from concrete spillage or wash out waters.
- c. Concrete is pumped through the line and down the hollow stem of the auger.
- d. All concrete hoses will have been tested within 6 months. Certificates will be issued to FM Conway for acceptance at our site induction.

Welding:

1. A task briefing will be carried out each morning prior to commencement of works. This will include the laydown area for welding tools and equipment, and the type of work to be carried out.
2. A hot works permit shall be issued by JCC before starting hot works on site.
3. The welding area detailed in the morning briefing will be prepared before works. This will include:
 - a. Cordoning off the area with fire retardant screens in all areas not adjacent to any open terraces on nearby buildings.
 - b. Carrying out welding inside a fire-retardant welding shelter on areas adjacent to open terraces on nearby buildings.
 - c. Two fire extinguishers suitable for the type of welding will be on hand.
 - d. Weather must be checked to ensure screens and tents cannot be blown over if too windy.
4. Visually inspect welding equipment to ensure it is free from defects and in good working order.
5. All electrical plant used in connection with the welding operation shall be correctly earthed. The welding return lead shall be of the appropriate cross section and shall be correctly connected and earthed.
6. All consumables shall be stored and handled with care and in accordance with the manufacturer's recommendations.
7. Electrodes or MIG wire that show signs of damage or deterioration shall be discarded and disposed of in the correct waste skip.
8. Electrodes and MIG wire shall be stored in their original containers in a dry, preferably heated place, adequately protected from the effects of the weather and in accordance with the manufacturer's recommendations.
9. When special protection or other treatment during storage or immediately prior to use is recommended by the electrode or MIG wire manufacturer, they shall be treated in accordance with the conditions detailed by the manufacturer.
10. If welding is a structural repair, then adhere to the temporary works design before carrying out the operation.
11. After ensuring that all the requirements referred to above have been complied with work may commence. The damaged equipment will be welded on the ground away from combustible materials.
12. The welding shall be visually inspected by the welder at regular intervals.
13. If a semi-skilled welder carried out the welding, then the welders chargehand will visually inspect weld for quality and cracks and if satisfied pass work.
14. Once the welded repair is finished, remove repaired equipment and store in an appropriate area by the banksman/slinger. All lifting operations will be under the control of the competent banksman/slinger in accordance with the approved lift plan. The leads are then disconnected and wrap up loose cables. Clear away hand tools and equipment used.

15. Clear away any waste and dispose of it in appropriate waste skip. Remove welding screens and ensure area is safe. The fire watch will start at the end of the welding for 1 hour before the site closes, unless additional time is specified in the hot works permit. 2 x fire extinguishers is being carried in the pick-up as part of the welder's equipment. Additional fire point will be located at various locations around the site.

Permits:

There are a number of permits required prior to works progressing. These are summarised in the table below.

Permit required	Operation.	Issued by	Details
Permit to dig	Excavation, trial holes, breaking ground, piling	FMC	Permit to dig to be completed prior to work starting. Ensure no buried services using services drawings and CAT Scan as required.
Hot works permit	Cutting steel, hot works	FMC	Hot works permit to be completed prior to starting hot works. Hot works to stop 1 hour before end of shift and permit closed off.
Permit to load piling mat	Commencement of piling and lifting operations	FMC	Permit to load/piling platform certificate to be issued prior to deploying any plant into the area for the purpose of piling/lifting operations.

ENVIRONMENT:

- All operatives will attend a site Induction and provide proof of competency.
- Setting out of pile locations will only commence when the correct cage reinforcement is available on site and has been checked against reinforcement drawings.
- The piles will be drilled from a platform prepared and maintained by FM Conway. All pile locations should be cleared of obstructions and suitably backfilled in advance of the piling works as set out above.
- All piling operations will take place within the site boundary.
- All routes to and from site will be agreed with FM Conway. Any abnormal load will follow the logistics protocols with agreed dates, times, routes and if required vehicle escort.
- Piling operations will only take place within agreed working hours (08:00 till 18:00).
- A park up and run silent policy will be enforced with engines switched off when not in use.
- No vehicles will be staged or parked outside of the site boundary.

MACHINERY AND MATERIALS (STORAGE AND TRANSPORTATION):

- Excavators and dumpers will be used for piling attendance operations, provided by FM Conway. The operators are to hold CPCS card in the correct category of excavator and undergo familiarisation with the machine and quick hitch prior to operating for work. The operators shall be inducted by GSS and attend the GSS daily pre-start briefings.
- Dumpers and other wheeled plant are not to drive onto stockpiles ramps, berms etc. Only tracked plant (excavators) are permitted to drive onto these temp structures until they are suitable for access (in the case of ramps).

- Dumpers will be used to transport muck, as required, to a central stockpile. Drivers will stand clear of the dumper and excavator whilst the dumper is being loaded. The handbrake to be on and keys to be removed. The driver is to stand in a safe location from muck being loaded.
- A traffic marshal will control movement of reversing and turning vehicles on site.
- The attendant 20t excavator will be employed for lifting operations. These will be operated by trained and competent personnel as per the excavator use common standard.
- All slings and strops will be in good order and slinging will be as per the GSS/FMC lift plans carried out for each load. Lifting accessories will be certificated, inspected prior to each use and a weekly inspection recorded on the GSS LOLER form.
- The drivers of all lorries will hold current certification of competence for the vehicle concerned and will wear full PPE if leaving their cab on site.
- Vehicles will enter through the Main site access gate and be directed to the necessary area where they will wait to be loaded or offloaded.

Mandatory PPE	BSEN No.	Where	Training required	Notes
Hard hat	BS EN 397	All site	No	To prevent head injury
Safety Glasses	BS EN 166	All site	No	To prevent eye injury
Nitrile palmed gloves	BS EN 388	All site	No	To prevent hand injury. Cut type 1 suitable.
Steel toe cap boots with midsole	BS EN 345	All site	No	To prevent foot injury
Hi viz vest	BS EN 471	All site	No	To remain visible to others. Designated colours for different tradesmen as per induction.

PEOPLE:

Trades involved in operation that require briefing on these RAMS.							
Section Supervisors	Y	Rig Operators	Y	Slinger Signallers	Y	Visiting Drivers:	Y
Rig Attendants	Y	Pump Operators	Y	Engineers	Y	Other:	Y

- Attendant excavator operators and dumper operators, provided by FMC, shall be inducted by GSS and will attend GSS daily pre-start briefings. They shall also be provided with GSS vests and hard hat stickers to signify that they are working with us.
- Drivers of visiting vehicles are to remain in the cab or welfare facility. Drivers are not to leave cab unless escorted and in full mandatory PPE.

Specialist Training Required specific to task in this MS			
Abrasive Wheels	Yes	Dumper	Yes
Excavator Operator	Yes	Piling Rig Operator	Yes
Slinger Signaller	Yes	Concrete Pump Operator	Yes

Manual Handling	Yes	First Aider	Yes
-----------------	-----	-------------	-----

O = ZERO ACCIDENTS

- To achieve our goal of zero accident we need to take time to stop and assess the situation and put in place measures to eliminate any risks before starting work.

PART 2 - Risk, CoSHH and lifting assessments, SOP's and Common Standards.

2.0 Table of documents forming safe system of works

Related Documents		Comments / Title & Document N°
Drawings and designs		
1	Site Logistics Plans	Indicative site layout drawings.
2		
3		
Common Standards		
1	GSS CFA procedures	Available in site file for inspection/review.
2		
3		
4		
Manufactures Literature		
1	Plant manuals	Manufacturers' manuals for the safe use and maintenance of plant shall be held by the Site Supervisor.
Other information		
1	Coshh	Contact HSEQ manager for assistance.
2		

Task Hazard / Risk Assessment

Category Of Persons At Risk And Means Of Briefing	RA	MS	Other
Occupations involved in Activity (Specify):			
Others Persons at Work (Specify):			
Public or Other Parties (Specify):			

S = Severity Rating

1. Negligible
2. Minor Injury
3. Major Injury (RIDDOR)
4. Fatality
5. Multiple Fatality

L = Likelihood of Occurrence

1. Improbable
2. Remote 1 – 10%
3. Possible 10 – 50%
4. Probable 50 – 90%
5. Almost certain 90%+

RR = Risk Rating

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



- R** Unacceptable risk, plan out or add further controls
- O** Acceptable with additional controls (i.e permit)
- G** Acceptable, no further action required

Item	Activity / Hazard	Risks Identified	Risk Rating			Control Measures	Residual Risk			Responsibility	Monitoring Responsibility & Additional controls [if applicable]
			S	L	RR		S	L	RR		
1.	Vehicle / pedestrian movements	Being struck by mobile plant or vehicles	4	4	16	Segregate vehicles & plant from pedestrians using dedicated haul routes & walkways. Mobile plant to be accompanied by look out when traversing site All ops to wear High visibility clothing Competent plant operators to CPCS standard Competent traffic marshal in place	4	1	4	Vehicle driver & banksmen	Section Foreman, Construction Manager and Site Management Team
2.	Vehicle movements	Small, Congested site Vehicle overturning	3	4	12	Piling area to be segregated using Herras fencing or barriers with hazard warning signs. Dumpers are NOT to drive onto stock piles.	3	1	3	Plant operators	Section Foreman, Construction Manager and Site Management Team
3.	Pedestrian movements	Unauthorised access to piling area Slips and trips	3	4	12	Piling area to be segregated using Herras fencing or barriers with hazard warning signs. Site access/egress points to be separate for GSS/FMC operatives.	3	1	3	All operatives	Section Foreman, Construction Manager and Site Management Team

4.	Use of excavator	Bucket falling from machine	4	3	12	Quick hitches to be checked & ops briefed on use for each model Operatives not to stand under bucket Only fully auto or fully manual quick hitches to be employed. Inspection and function test to be carried out after each ancillary change.	4	1	4	Excavator driver And all operatives in vicinity of machine	Section Foreman, Construction Manager and Site Management Team
5.	Vehicle use	Noise , Vibration and emission	2	4	8	Vehicles are to be regularly inspected and maintained. Vehicles to be switched off when not in use.	2	2	4	Plant & Vehicle driver	Section Foreman, Construction Manager and Site Management Team
11.	General works	Disruption to local traffic	1	3	3	Vehicles to be booked in advance and moved on if more vehicles arrive at the same time	1	1	1	Project team	Section Foreman, Construction Manager and Site Management Team
12.	Delivery of materials	Restricted site access	2	3	6	Establish vehicle and Pedestrian route onto and off site.	2	1	2	Banksman	Section Foreman, Construction Manager and Site Management Team
13.	Vehicles unloaded next to site gate	Injury to the public	3	3	9	All vehicles will be loaded and unloaded within site boundary Wheel wash to be established and Mobile sweeper to be on call.	3	1	3	Gateman	Section Foreman, Construction Manager and Site Management Team
14.	Manual Handling	Physical injury during handling of loads	3	3	9	Avoid manual handling where possible. All equipment to be in good condition Where possible use mechanical lifting. No operative to lift more than their individual capabilities and follow manual handling practice. Where required use team lifting. Ensure suitable hand hold positions and good grip to avoid trapping fingers and dropping loads.	3	1	3	All operatives	Section Foreman, Construction Manager and Site Management Team

15	Use of excavator	Injury from excavator use	4	5	20	Excavator operator to be CPCS carded in correct category of excavator Excavator operator to be familiarised with machine and Quick Hitch prior to use Excavator operator to operate excavator to manufacturer instruction Excavator operation to be excluded from others to prevent injury – watchman to be present	4	1	4	Excavator Operator	Section Foreman, Construction Manager and Site Management Team
17	Use of Hand and Power Tools	Injury from use of hand tools and power tools	3	4	12	All operatives to be competent and familiar with the tools used Tools to be used from a firm level surface. Visually inspect tools before use to ensure they are safe to use and have valid PAT test where required. Use designated grips and handles on the tool Follow trigger time guidance. Do not exceed trigger time. Ensure HAVS log is completed where required	3	1	3	All operatives	Section Foreman, Construction Manager and Site Management Team
18	Piling adjacent to the site boundary on Farm Street and Berkeley Square elevations	Spoil rising up the augers and falling over the site boundary	4	3	12	Use of specially designed dual star auger cleaning for most effective cleaning.	4	1	4	All operatives and members of the public	Section Foreman, Construction Manager and Site Management Team Residual risk to be managed by the Principle Contractor

19	Electric & gas welding	Fire & metal burns	4	4	16	Only competent welders are to be used. Ensure exclusion zones are erected and welding screens are used. Ensure a Hot Works permit is obtained from the Morrisroe contractor and followed. Keep a copy of the permit in the vicinity of the welding area. Area is outdoors and well ventilated due to nature of the work (Groundworks). Correct PPE to be worn by Welder (Fire retardant overalls, Gauntlets, Welding Mask). Flammable materials to be removed from the work area. Other personnel not involved with the works to be kept clear. 2Nr fire extinguishers must be close	4	1	4	All operatives	Section Foreman, Construction Manager and Site Management Team
20	Arc Welding	Electric shocks and burns due to faulty electrical equipment or faulty installation	5	3	15	Annual servicing and maintenance checks of all equipment. Records maintained. All equipment is CE marked. PAT carried out annually.	5	2	10	All operatives	Section Foreman, Construction Manager and Site Management Team
21	Arc Welding	Potential for the welder to receive a shock by simultaneously touching the electrode and work piece poses an electrical hazard	5	2	10	Operator to wear appropriate clothing and PPE while welding. Ensure welder is be set to an appropriate voltage. Where possible provide rubber insulating matting.	5	1	5	All operatives	Section Foreman, Construction Manager and Site Management Team
22	Arc Welding	Sparks and flying particles of hot slag	5	4	20	General protective eyewear is worn by all persons working close to the welding activities. Areas near welding activities are kept clear of flammable materials including areas below.	5	1	5	All operatives	Section Foreman, Construction Manager and Site Management Team

23	Arc Welding	Fumes/hazardous environment Gases notably ozone and nitrogen dioxide	4	3	12	Possibly phosgene gas if chlorinated hydrocarbon solvents used/stored near welding area (ensure they are not) Adequate ventilation as works are outdoors. Mobile extraction unit with sufficiently long flexible trunking used if in enclosed spaces (serviced annually by supplier and records kept). Solvents used and stored as far away from the welding area as practicable Powered RPE.	4	2	8	All operatives	Section Foreman, Construction Manager and Site Management Team
24	Arc Welding	Radiation exposure to: • Infra-red radiation. • Ultraviolet light. • Microwaves. • Light generated by the welding process can cause inflammation of the cornea. Otherwise known as 'arc eye'.	3	4	12	Ensure operator / observers are wearing appropriate eye wear (e.g., welders mask). Ensure appropriate screening is in place to protect the surrounding work areas.	3	2	6	All operatives	Section Foreman, Construction Manager and Site Management Team
25	Arc Welding	EMF Interference	5	2	10	Certain welding machines which use a high frequency AC current component have been found to affect cardiac pacemaker operation when within 2m of the power unit and 1m of the weld site. Include within task briefing and do not work within 2m of public areas.	5	1	5	All operatives	Section Foreman, Construction Manager and Site Management Team

