

RISK ASSESSMENT

CFA PILING

Client / Main Contractor (MC):	Assured CMS	Contract No.:	C5286
Contract Address:	325 Deansgate	Issue No.:	3
	Manchester	Date:	15/08/23
	M3 4LQ	Author:	AK

REF	ACTIVITY	RISKS	DEGREE OF RISK			CONTROL PROCEDURES	RESIDUAL RISK*		
			L	S	R		L	S	R
A	SITE ESTABLISHMENT								
A1	Site access / egress	Collision with vehicles / persons	4	4	16	Main Contractor (ASSURED CMS) to erect suitable pedestrian barriers to reduce the interaction between plant / vehicles and any site operatives / general public. ASSURED CMS to provide Vehicle Marshalls as required. Operatives to supervise and direct plant and vehicles across public footpaths and access routes as required.	1	4	4
		Damage to third party property / underground services during access.	2	5	10	ASSURED CMS to survey site entrances and provide protective mats / covers or other measures where necessary.	1	5	5
A2	Members of the public, visits and others	Collision	5	4	20	ASSURED CMS to provide and erect suitable signage to warn members of the public about the risk of vehicles entering and exiting the site. All reversing vehicles are to be guided by a competent Vehicle Marshall / Slinger-Signaller to prevent any crush hazards / zones.	2	4	8
		Falling Materials	5	4	20	To prevent members of the public / site operatives being hit by falling material:- Operatives are to ensure that there is no spoil / concrete / debris taken up on the flight. ASSURED CMS to control work area with segregation of other trades and pedestrian areas. ASSURED CMS to erect & maintain polythene sheeting / debris netting to perimeter walls / fencing to prevent mud / concrete / slurry splashing members of the public and third party property. When working adjacent to site boundaries ASSURED CMS to provide watchperson and stop the works if any passing members of the public are at risk.	1	4	4

Risk (R) = Likelihood (L) x Severity (S)					
	5	4	3	2	1
Likelihood	Certain	Probable	Likely to Occur	May Occur	Unlikely to Occur
Severity	Fatality	Major Injury	Specified Injury	7 Day Injury	Non Reportable
*Residual Risk not to be greater than 6					
High	Medium		Low		
15 -25	8-12		1-6		

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		Tripping	4	4	16	ASSURED CMS to maintain all adjacent public areas, pedestrian areas and all piling platforms as level surface free from trip hazards. Operatives are to ensure that water & concrete hoses do not cross pedestrian access routes. Should this not be possible the hoses are to be buried or the ASSURED CMS is to build a suitable pedestrian crossover point. Should this still not be possible then the ASSURED CMS is to provide a full time watchperson to escort pedestrians across the hoses or across the road to the other footpath. Hose joints to be sprayed to enhance visibility.	1	4	4
A3	Existing underground services	Contact with services, damage to service, electrocution	5	4	16	ASSURED CMS to scan for, locate, expose, divert and / or protect as necessary all existing underground services prior to mobilisation. ASSURED CMS to issue a "Permit to Dig" (or to break ground) prior to any excavation and prior to setting out of pile positions. ASSURED CMS to be notified of any anomalies observed while drilling or concreting piles. All works to are to be suspended in the event of a service strike. In the event of an electrical cable strike, Rig Operator is to stay in cab or jump well clear, not step down. If any fire is observed, follow site fire procedures and contract emergency services as required.	1	4	4
A4	Unexploded ordnance (UXO)	Contact with UXO	2	5	10	ASSURED CMS have had EOD Contracts Ltd carry out a UXO survey and have deemed the site medium/low risk. Any residual risks to be identified alongside "Permit to Dig" process.	1	5	5

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						Operatives to cease work and seek further advice upon encountering any objects suspected to be UXO.			
A5	Existing overhead cables	Contact with piling rig	5	5	25	ASSURED CMS to provide survey of any overhead cables, demarcate and enforce height restrictions and exclusion zones at ground level (in accordance with GS6 or other applicable guidelines), taking into consideration the mast height of the rig.	1	5	5
A6	Substances hazardous to health	Contact with hazardous substances.	5	4	20	Work in accordance with COSHH assessments, including use of PPE, provision of first aid, washing before and after use, provision of eyewash stations.	2	3	6
		Respiratory distress – inhalation	5	4	20	ASSURED CMS to control general dust levels on the site by damping down haul roads / platforms / spoil and reducing site traffic speeds. Observe any substance specific control measures and / or PPE in accordance with COSHH assessments.	2	3	6
		Skin irritation	4	3	12	Wear suitable PPE (eg full length clothing, protective gloves, impervious gloves for handling liquids) in accordance with COSHH assessment for the substance being handled. Wash thoroughly after any contact with COSHH substances.	2	3	6
		Skin irritation – working with concrete	4	3	12	Operatives working with wet concrete to wear suitable impervious gloves. Should any operative come into contact with wet concrete they should thoroughly wash the affected area to remove any traces. Any clothing made wet by the concrete should be removed as soon as possible and the affected areas of the skin again thoroughly washed / dried. The clothing is to be washed before re- use or properly disposed of.	2	3	6

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		Eye injury	4	4	16	Wear suitable PPE (eg light eye protection, impact resistant eye protection) in accordance with COSHH assessment. Should there be any eye contact with dust / concrete – the eye should be thoroughly irrigated with cold clean water or a proprietary eyewash solution. ASSURED CMS to provide eyewash stations.	2	4	8
A7	Emergency procedures - fire	Hot works / fire breakout	4	5	20	ASSURED CMS to maintain tidy site free or segregated from flammable materials. ASSURED CMS to control hot works via permit system. Hot works only to be undertaken upon receipt of, and in accordance with, hot works permit.	1	5	5
		Burns	4	4	16	ASSURED CMS to provide fire procedures and advise of emergency escape routes and assembly points at site induction. Operatives to raise the alarm, evacuate area and notify ASSURED CMS immediately if smoke or fire is seen anywhere on the site. ASSURED CMS to provide first aid facilities.	1	4	4
		Smoke inhalation	4	4	16	ASSURED CMS to provide fire procedures and advise of emergency escape routes and assembly points at site induction. Operatives to raise the alarm, evacuate area and notify ASSURED CMS immediately if smoke or fire is seen anywhere on the site. ASSURED CMS to provide first aid facilities.	1	4	4
A8	Emergency procedures – injury / ill health	Injury / ill health	3	5	15	ASSURED CMS to identify nearest hospital and quickest routes, to be advised at site induction and via noticeboards. ASSURED CMS to maintain access to emergency services. ASSURED CMS to provide qualified first aider(s) and first aid facilities.	2	4	8

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A9	Contaminated ground / asbestos	Damage to health through ingestion / skin contact	4	4	16	ASSURED CMS to provide complete report of known contamination, including the analysis of chemical concentrations, hazards to health, necessary control measures and any remedial works already undertaken. ASSURED CMS to advise of any recommendations not undertaken in accordance with Ground Investigation Report (GIR) or GeoEnvironmental Assessment (GEA). Operatives to wear PPE provided and adopt a high standard of Health & Hygiene. ASSURED CMS to prevent all pile arisings flowing into rivers / streams (via a bund or other preventative measure) and remove contaminated spoil from site. ASSURED CMS to segregate, test and dispose of all spoil in accordance with legal waste acceptance criteria. ASSURED CMS to advise if any substance specific training is required.	1	4	4
A10	Waste management	Environmental damage	4	4	16	ASSURED CMS to provide skips. Supervisor & operatives to ensure that all general rubbish is placed in the skips provided by ASSURED CMS.	1	4	4
		Damage to health through contact	4	4	16	ASSURED CMS to set up, supervise and control all site waste management including movement on site and disposal off site.	1	4	4
		Concrete washout	4	4	16	ASSURED CMS to provide concrete washout facilities. No concrete washout allowed near water courses. Temporary bunds or some other measure to be provided (by ASSURED CMS) to divert washout water into site where this is unavoidable.	1	4	4
A11	Fuel storage	Leakage / pollution / contamination	5		20	All gas oil to be stored in lockable bunded containers. Spill kits to be provided with all fuel stores. All surface	1	4	4

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						spillages / leakages are to be cleared up and disposed of properly – not just left on the site.			
		Fire & / or explosion	4	4	16	No smoking or naked flames when working with or near any flammable liquids.	1	4	4
A12	Levels of illumination	Trips and falls	4	3	12	Background / safety lighting to be provided (by ASSURED CMS) when working day extends beyond daylight hours. Lighting to be sufficient to allow operatives to safely walk between site entrance, welfare and throughout the work area with full visibility.	1	3	3
		Collision with plant / people	5	4	20	ASSURED CMS to provide, erect and maintain background / safety lighting to allow plant / vehicles to access the site and operatives to access the welfare facilities.	2	4	8
A13	Plant and machinery	Collisions with plant, persons	4	4	16	ASSURED CMS to segregate the piling area from pedestrian routes and other trades, using suitable signage and barriers to prevent any unauthorised site operatives gaining access. Supervisor and Slinger-Signaller to enforce exclusion zones around piling works in accordance with method statement. All piling operations to cease if any unauthorised persons enter the piling area. Machinery (including attendant plant provided by ASSURED CMS) to be fitted with mirrors and / or cameras to provide 360° visibility and work under direction of Slinger-Signaller. Delivery vehicle movements to be controlled by ASSURED CMS.	1	4	4
		Contact with moving parts	5	4	20	Supervisor to check machinery / equipment to ensure that guards are secured in place to prevent any physical contact with moving parts and machinery.	2	4	8

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			L	S	R		L	S	R
						Supervisor / Slinger-Signaller to maintain exclusion zones around all plant in operation.			
		Overtuning	4	4	16	Plant only to be operated in accordance with manufacturer's guidelines and by competent & familiarised operator. ASSURED CMS to design, install & maintain piling platforms to safely support the bearing pressures of piling rig and all ancillary equipment in all relevant working modes. Working Platform Certificate is to be signed by the ASSURED CMS and / or the Planning Supervisor and returned prior to commencing any piling operations. All excavations including to remove underground obstructions and / or buried services should be backfilled and compacted in accordance with platform design.	2	4	8
A14	Lifting operations	Falling plant and materials			20	Lifts to be undertaken in accordance with lift plan by competent Appointed Person. Competent Slinger-Signallers (or Crane Supervisors) to control lifting operations on site and ensure that the loads are properly slung prior to any lift commencing. Lifts to be carried out using designated equipment, accessories and lifting points. Avoid slewing over any public areas or adjacent personnel. Slinger-Signallers (or Crane Supervisors) to establish & maintain exclusion zones. Avoid holding lifts for longer than is necessary.	2	4	8
		Collisions with plant, persons and overhead services	5	4	20	Slinger-Signaller to inspect & ensure that the lift path / route is clear of other site operatives and overhead services, rig or crane mast, HV cables, overhead pipe racks or other structure.	2	4	8

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		Plant failure	5	4	20	Supervisor to ensure that all lifting equipment is inspected before use and that daily inspections have been completed. Slinger-Signallers (or Crane Supervisors) to ensure that all lifting equipment and accessories have current thorough examination every 6 months. Slinger-Signaller to assess all loads before they are lifted to ensure that the SWL of all lifting equipment is not exceeded at any point during the lift.	2	4	8
A15	Storage & security	Falling / collapsing materials	4	3	12	Operatives to stack piling equipment & materials in such a way as to not become unstable when moved / used. Use timber supports / chocks (resting on long dimension) or purpose built storage trestles.	2	3	6
		Unauthorised access	4	3	12	ASSURED CMS to provide & maintain suitable site security as required to prevent unauthorised access, during & outside work hours.	2	3	6
		Loss / theft	4	3	12	ASSURED CMS to provide & maintain suitable site security as required to prevent unauthorised access, during & outside work hours.	2	3	6
A16	Site electrics	Electrocution	5	4	2	All electrical equipment to be a maximum voltage of 110V DC. All portable electrical equipment to be checked before each use and provided with 12 monthly PAT testing. Damaged or faulty equipment to be marked up as not for use and returned to Head Office or supplier for repair.	2	4	8
		Fire	4	3	16	Suitable Fire Extinguishers are to be available for dealing with electrical fires (powder or CO2). Extension leads to be fully uncoiled during use. All electrical equipment to be separated from any heat source and ventilated.	2	3	6

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		Tripping hazards (cables)	4	3	16	Operatives to plan the route of cables so as not to present a trip hazard to any other site personnel (along walls, above head height, through troughing or under low profile protectors.	2	3	6
A17	Smoking	Fire & / or explosion	4	4	16	Smoking to be confined to designated smoking areas only. All cigarettes / cigars / pipes to be properly extinguished and disposed of properly No smoking near flammable liquids / gases or by any other sources of fuel (eg paper / wood / cloth / plastics etc).	1	4	4
B MOBILISATION / DEMOBILISATION / MAINTENANCE									
B1	Deliveries & offloading	Slips, trips, and falls / falls from height	4	5	20	Lorries only to be loaded / unloaded on firm, level ground. Loads to be pre slung and accessible from ground level where practical. Tracked plant to be off loaded using remote where available. Operatives only to climb on or off bed of lorry if suitable edge protection is in place (guard rails / straps / "load angel" / soft landing system / other), if load is secure, and using designated access / egress routes (not via wheel or tow bar). Operatives not to stand on bed of lorry while load is being moved or if there is a risk of being knocked or trapped by the load. Suitable footwear to be worn when climbing in and out of cab / on and off bed.	1	5	5
		Unstable load / securing loads / falling materials (on site)	4	5	20	Lorries only to be loaded / unloaded on firm, level ground. Loads to be checked before driver removes / releases straps. If required, extra chocks to be placed releasing straps. If the load has moved during transport consult supervisor before releasing.	1	5	5

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		Securing loads / falling materials (off site)	4	5	20	Loads to be strapped / chained securely using designated fixing points. All brakes / latches / locks / doors to be engaged (closed) before or immediately after loading. All loads to be checked by lorry driver before leaving site.	1	5	5
		Vehicle movement	4	5	20	Keep the area around the vehicle clear of obstructions (people & vehicles) during loading / unloading. Avoid trailer changes and coupling / uncoupling trailers on site where possible. Drivers to use a competent vehicle marshall / slinger signaller (banksman) to assist with coupling / uncoupling. Banksman to stand within vision of driver and to ensure that they / others do not enter the area between tractor and trailer.	1	5	5
		Manual handling	4	2	8	Use correct manual handling techniques. Operatives to be trained in manual handling. Manual Handling to be reduced to a minimum by using mechanical methods (crane / excavator / hiab). Should the above not be possible, heavy loads are to be split into smaller items within the individual's own comfortable lifting capability (not to exceed 25kg). If this is still not possible, loads are to be lifted by multiple operatives, ensuring that the lift does not exceed the individual's own comfortable lifting capability and does not exceed 25kg.	1	2	2
B2	Rigging / derigging	Incorrect procedure followed leading to plant failure	3	5	15	Rigging / derigging operations to be undertaken in accordance with manufacturers' guidelines and by competent & familiarised Rig Operators / plant fitters under instruction of Slinger-Signaller.	1	5	5
B3	Working at height	Falling	5	4	20	Edge protection to provided when working at height (eg	2	4	8

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						guard rails on upper carriage of piling rig, hand rail on agitator crow's nest). When working without edge protection, or within any travelling platform (eg MEWP), operatives to wear harness & fall restraint lanyard connected to suitable fixed point.			
		Falling / objects, tools / materials	5	5	20	Operatives on the ground are to be aware of operatives working at height. Slinger-Signaller to manage the area and maintain exclusion zone. Toe guards to be provided when working from MEWP or scaffold. Tools / equipment used at height to be tethered where practical.	2	4	8
		Unauthorised access (public / children)	5	4	20	ASSURED CMS to provide site security as required and erect & maintain boundary fencing to prevent unauthorised access at all times, during & outside working hours.	1	4	4
B4	Working from MEWP	Falling	4	5	20	Operatives to wear full harness and fall restraint lanyard when working at height or in a MEWP. Harness to be connected by restraint lanyard to designated anchor point.	2	4	8
		Operator error	4	5	20	Only competent & familiarised operators to operate MEWP.			
		Overturning	4	5	20	MEWP only to be operated in accordance with manufacturer's guidelines and by competent & familiarised operator. ASSURED CMS to design, install & maintain piling platforms to safely support the bearing pressures of MEWP. Working Platform Certificate is to be signed by the ASSURED CMS and / or the Planning Supervisor and returned prior to works commencing. All excavations including to remove underground obstructions and / or buried services should be backfilled	2	4	8

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						and compacted in accordance with platform design.			
		Upper control failure Immobilisation of operator	4	4	16	Operative at ground level to be familiarised with the MEWP, it's ground controls and the emergency lowering procedure. Refer to MEWP rescue plan.	1	4	4
		Malfunction at height	4	4	16	Daily checks to be completed before use. Operative at ground level to be familiarised with the MEWP, it's ground controls and the emergency lowering procedure. Refer to MEWP rescue plan.	1	4	4
		Falling / objects, tools / materials	4	4	16	Operatives on the ground are to be aware of operatives working at height. Slinger-Signaller to manage the area and maintain exclusion zone. Toe guards to be provided on MEWP. Tools / equipment used at height to be tethered where practical.	1	4	4
		Slips, trips and falls on platform	4	4	16	MEWP operator to ensure the platform is clean and clear of debris at all times.	1	4	4
C	PILE CONSTRUCTION								
C1	Drilling pile	Contact with services, damage to service, electrocution	5	4	16	ASSURED CMS to scan for, locate, expose, divert and / or protect as necessary all existing underground services prior to mobilisation. ASSURED CMS to issue a "Permit to Dig" (or to break ground) prior to any excavation and prior to setting out of pile positions. ASSURED CMS to be notified of any anomalies observed while drilling or concreting piles. All works to are to be suspended in the event of a service strike. In the event of an electrical cable strike, rig operator is to stay in cab or jump well clear, not step down. If any fire is observed, follow site fire procedures and	1	4	4

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						contract emergency services as required.			
		Contact with UXO	2	5	10	ASSURED CMS to arrange UXO survey and carry out any necessary control measures to achieved "ALARP" risk level. Any residual risks to be identified alongside "Permit to Dig" process. Operatives to cease work and seek further advice upon encountering any objects suspected to be UXO.	1	5	5
		Contact with moving parts	5	4	20	Supervisor to check machinery / equipment to ensure that guards are secured in place to prevent any physical contact with moving parts and machinery. Supervisor / Slinger-Signaller to maintain exclusion zones around all plant in operation.	2	4	8
		Plant failure	5	4	20	Supervisor to ensure that all mechanical equipment is inspected before use, have current records of thorough examination inspections, and that daily inspections have been completed. Plant is only to be used in accordance with manufacturer's guidelines.	2	4	8
		Overturning	4	4	16	Plant only to be operated in accordance with manufacturer's guidelines and by competent & familiarised operator. ASSURED CMS to design, install & maintain piling platforms to safely support the bearing pressures of piling rig and all ancillary equipment in all relevant working modes. Working Platform Certificate is to be signed by the ASSURED CMS and / or the Planning Supervisor and returned prior to commencing any piling operations. All excavations including to remove underground obstructions and / or buried services should be backfilled	2	4	8

Risk (R) = Likelihood (L) x Severity (S)					
	5	4	3	2	1
Likelihood	Certain	Probable	Likely to Occur	May Occur	Unlikely to Occur
Severity	Fatality	Major Injury	Specified Injury	7 Day Injury	Non Reportable
*Residual Risk not to be greater than 6					
High	Medium			Low	
15 -25	8-12			1-6	

RISK ASSESSMENT

CFA PILING

Client / Main Contractor (MC):	Assured CMS	Contract No.:	C5286
Contract Address:	325 Deansgate	Issue No.:	3
	Manchester	Date:	15/08/23
	M3 4LQ	Author:	AK

REF	ACTIVITY	RISKS	DEGREE OF RISK			CONTROL PROCEDURES	RESIDUAL RISK*		
			L	S	R		L	S	R
						and compacted in accordance with platform design.			
		Material falling from height	4	4	16	Slinger–Signaller is to inspect the flights of the auger for spoil at height before entering exclusion zone around the auger. Any remaining spoil to be rattled free (after re-establishment of exclusion zone) by rotating augers back and forth / by blade of excavator.	1	4	4
		Flighting of soils during pile installation undermining working platform / surrounding area	3	5	15	Consider the susceptibility of soils to flighting. ASSURED CMS to make allowance within platform design to avoid brittle failure in event of overflighting. Rig Operator to monitor rate of auger penetration and spoil extraction using rig telemetry.	1	5	5
		Drilling using compressed air – instability of bore / platform and surrounding area	2	4	8	Use only in self supporting soils.	1	4	4
		Voids, mine workings, solution features.	2	4	8	ASSURED CMS to probe for, treat and / or backfill any voids encountered. ASSURED CMS to advise of any known voids not already treated and / or backfilled prior to piling works.	1	4	4
		Piling Next to Metrolink	2	5	10	Track position to be perpendicular/parallel when piling boundary piles to Metrolink Auger cleaner in full use and dampened down with pressure washer during extraction. Pile positions probed by ASSURED CMS prior to piling works. Piling Design RA has ensured pile centres minimum 900mm from nearest arch foundation.	1	5	5
C2	Concrete pumping	Contact between concrete and eyes / skin	4	3	12	Pump Operator and any others working directly with wet concrete to wear appropriate PPE (full length clothing, impervious gloves, light eye protection). Should there be any eye contact with dust / concrete –	1	3	3

Risk (R) = Likelihood (L) x Severity (S)					
	5	4	3	2	1
Likelihood	Certain	Probable	Likely to Occur	May Occur	Unlikely to Occur
Severity	Fatality	Major Injury	Specified Injury	7 Day Injury	Non Reportable
*Residual Risk not to be greater than 6					
High		Medium		Low	
15 -25		8-12		1-6	

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			L	S	R		L	S	R
						the eye should be thoroughly irrigated with cold clean water or a proprietary eyewash solution. ASSURED CMS to provide eyewash stations. Should any operative come into skin contact with wet concrete they should thoroughly wash the affected area to remove any traces. Any clothing made wet by the concrete should be removed as soon as possible and the affected areas of the skin again thoroughly washed / dried. The clothing is to be washed before re-use or properly disposed of.			
		Bursting of hoses / clearing of blockages / end of shift blowout - sudden ejection of concrete under pressure	4	4	16	Concrete ground-line and rig hoses to be regularly inspected by a competent person (piling Supervisor) for broken & exposed braiding. Damaged lines to be clearly identified and taken out of service. Bolted pipe connectors to be checked for tightness regularly. Whip-checks to be secured and quick- release couplers to have R-clips fitted. Avoid traffic crossing hoses. ASSURED CMS to provide, enforce and maintain designated crossing points. Minimise concrete hose lengths through positioning of concrete pump wherever practical. Concrete Pump Operator to have control of any blockage clearance or blowout process. Depressurise system prior to any planned splitting of concrete hoses. In the event of blockages, do not use compressed air. Follow procedures in method statement to clear blockage.	1	4	4
		Clearing of blockages / end of	5	4	20	When blowing-out always use a blow-out chamber / ball	2	4	8

Risk (R) = Likelihood (L) x Severity (S)					
	5	4	3	2	1
Likelihood	Certain	Probable	Likely to Occur	May Occur	Unlikely to Occur
Severity	Fatality	Major Injury	Specified Injury	7 Day Injury	Non Reportable
*Residual Risk not to be greater than 6					
High	Medium			Low	
15 -25	8-12			1-6	

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			L	S	R		L	S	R
		shift blowout - grout / sone chippings splashing				catcher and / or boards held in place by an excavator bucket to contain the wash-out and loose aggregate. Refer to procedure in Method Statement.			
		Clearing of blockages / end of shift blowout - persons being struck by pump hose	5	4	20	Always restrain the end of a land-line either by leaving it connected to rig, connected to blow-out chamber or restraining with a digger bucket.	2	4	8
		Contact with moving parts	5	4	20	Pump Operator to check machinery / equipment to ensure that guards are secured in place to prevent any physical contact with moving parts and machinery (eg agitator drum, changeover valves, pump arm, hopper paddles, tracks). Supervisor / Pump Operator to establish & maintain exclusion zones.	2	4	8
		Noise	5	4	20	Hearing protection is mandatory for Pump Operator and any others working in close proximity to the concrete pump for any extended period of time ASSURED CMS to provide pump location away from other trades and / or public areas.	1	4	4
C3	Concreting of pile / auger extraction	Falling materials from flights of auger	5	4	20	Maintain exclusion zone within fall zone beneath auger flights. Mechanical auger cleaning device to be activated during withdrawal phase to prevent loose spoil rising above head height.	1	4	4
		Auger cleaner failing to clear spoil (eg stiff clay)	5	4	20	Where the mechanical auger cleaner is unable to sufficiently clear spoil from the auger flights, the attendant excavator may assist by resting blade of bucket on auger flight. All excavator & rig movements to be controlled and co-ordinated by Slinger-Signaller. Where neither auger cleaner or excavator is unable to displace spoil, it may be manually cleared only if the rig	1	4	4

Risk (R) = Likelihood (L) x Severity (S)					
	5	4	3	2	1
Likelihood	Certain	Probable	Likely to Occur	May Occur	Unlikely to Occur
Severity	Fatality	Major Injury	Specified Injury	7 Day Injury	Non Reportable
*Residual Risk not to be greater than 6					
High	Medium		Low		
15 -25	8-12		1-6		

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REF	ACTIVITY	RISKS	DEGREE OF RISK			CONTROL PROCEDURES	RESIDUAL RISK*		
			L	S	R		L	S	R
						is in a safe condition (dead man engaged).			
		Drop hose on rig snagging - falling objects / materials, damage to property	4	4	16	Slinger-Signaller on the ground to be aware of pumping operations and to watch concrete hose relative to rig, excavator and any adjacent structure. Rig Operator to observe Slinger-Signaller's directions.	1	4	4
C4	Operations involving an excavator in conjunction with the piling works.	Crushing	5	5	25	Attendant excavator operator is to be competent & familiarised, including lifting duties and quick hitch operation, to be briefed on piling RAMS & lift plan by ASSURED CMS, including after any change in personnel. Ensure all lifting accessories are removed before bucket or other attachment is engaged. When an attachment is connected or re-connected to the boom, excavator operator is to demonstrate attachment is fully engaged via a shake / bump test. Buckets and other attachments to be removed wherever it is necessary to raise excavator arm over operatives to assist in plunging reinforcement cages. All operatives to be aware of excavator boom length and slew radius. Operatives not to walk or operate under the arm, attachment, or any load. Operative to ensure the operator is aware of their presence (eg "thumbs up").	1	5	5
C5	Operations involving a dumper in conjunction with the piling works.	Collisions / crushing.	3	5	15	Dumper driver only to enter designated area when directed by Slinger-Signaller.	1	5	5
		Material falling from height	4	5	20	Do not remain on dumper whilst loading. Stand clear from area and only return to machine when excavator has completed loading.	1	5	5
		Injury whilst driving	4	5	20	Ensure machine is equipped with ROPS.	1	5	5

Risk (R) = Likelihood (L) x Severity (S)					
	5	4	3	2	1
Likelihood	Certain	Probable	Likely to Occur	May Occur	Unlikely to Occur
Severity	Fatality	Major Injury	Specified Injury	7 Day Injury	Non Reportable
*Residual Risk not to be greater than 6					
High	Medium			Low	
15 -25	8-12			1-6	

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REF	ACTIVITY	RISKS	DEGREE OF RISK			CONTROL PROCEDURES	RESIDUAL RISK*		
			L	S	R		L	S	R
						Always wear seat belt.			
		Operating on unstable ground.	3	5	15	ASSURED CMS to provide a stable operating platform.	1	5	5
		Crossing concrete pump hoses.	3	5	15	Do not cross pump hoses when concrete is being pumped as they are under pressure. Avoid crossing pump hoses at all other times as they could be damaged. ASSURED CMS to provide, enforce and maintain designated crossing points. Minimise concrete hose lengths through positioning of concrete pump wherever practical.	1	5	5
C6	Lifting and placing reinforcement cage	Material falling from height	4	5	20	Lifts to be undertaken in accordance with lift plan by competent Appointed Person. Competent Slinger-Signallers (or Crane Supervisors) to control lifting operations on site and ensure that the loads are properly slung prior to any lift commencing. Lifts to be carried out using designated equipment, accessories and lifting points. Avoid slewing over any public areas or adjacent personnel. Slinger-Signallers (or Crane Supervisors) to establish & maintain exclusion zones. Avoid holding lifts for longer than is necessary. If using excavator, lifting accessories to be attached to excavator only after removal of bucket. Reinforcement to be lifted from designated lifting point only.	2	4	8
		Toe end of cage swinging out of control	4	4	16	Lift steadily (or use secondary lifting device to support toe of cage) so that toe of cage is constantly restrained until cage is suspended and not suddenly released. Follow method of placement as described in the Method Statement and associated Lift Plan.	1	4	4

Risk (R) = Likelihood (L) x Severity (S)					
	5	4	3	2	1
Likelihood	Certain	Probable	Likely to Occur	May Occur	Unlikely to Occur
Severity	Fatality	Major Injury	Specified Injury	7 Day Injury	Non Reportable
*Residual Risk not to be greater than 6					
High	Medium			Low	
15 -25	8-12			1-6	

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			L	S	R		L	S	R
						Tag line to be attached if deemed necessary.			
		Failure of lifting point	4	5	20	Reinforcement to be lifted from designated lifting point only. Slinger-Signaller (or Crane Supervisor) to inspect lifting point prior to lifting.	1	5	5
C7	Noise	Industrial Deafness	5	4	20	Work in accordance with Noise Assessments (carried out on FPL piling rigs & equipment in standard set ups). Operatives are provided with hearing protection and instructed when / where it is to be used.	1	4	4
		Noise pollution	5	4	20	Piling rig & ancillary equipment is to be kept in good working order. ASSURED CMS to provide segregation and any noise attenuation if required between piling works and any other trades and / or public areas.	1	4	4
		Tinnitus / temporary hearing loss	5	3	15	Working hours and PPE for each individual and task are to be adhered to in accordance with Noise Assessment. Should operatives experience temporary hearing loss they should stop work and report it to their Supervisor immediately. Prior to returning to work Noise Assessment and compliance will be reviewed and operative may undertake hearing test if required. Operative to avoid further work at higher noise levels to prevent permanent hearing loss.	2	3	6
C8	Completed piles / empty bores	Slips / trips / falls / persons falling into bore	4	5	20	Empty bores up to 450mm diameter and any completed piles to be protected with temporary covers, barriers or auger left over bore (until concrete cures or bore is backfilled). Empty bores exceeding 450mm diameter to be protected with cover of minimum weight 100kg, auger left over bore or protruding temporary casing..	1	4	4

Risk (R) = Likelihood (L) x Severity (S)					
	5	4	3	2	1
Likelihood	Certain	Probable	Likely to Occur	May Occur	Unlikely to Occur
Severity	Fatality	Major Injury	Specified Injury	7 Day Injury	Non Reportable
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15 -25		8-12		1-6	

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REF	ACTIVITY	RISKS	DEGREE OF RISK			CONTROL PROCEDURES	RESIDUAL RISK*		
			L	S	R		L	S	R
C9	Use of cage vibrator	Lifting operations – falling from height	3	5	15	Fit secondary safety sling from hook (rig / crane / excavator) to vibrator Use slings (not chains) and safety pins / wire tied shackles. Inspect each lifting accessory before & after every use. Keep clean of concrete for ease of inspection.	1	5	5
C10	Change of tooling / “dummied in” augers	Augers / casings / tooling left projecting from ground becoming instable	2	5	10	Tools to be drilled into ground and / or broken down so that a minimum of 1/3 of the tool string's length is within the ground and the string is at a maximum gradient of 1:75 off vertical. Tools to be drilled in at location of minimum risk of collision.	1	5	5
		Ground instability following extraction of tool	2	5	10	Tools to be drilled in at agreed location to minimise risk to subsequent plant movements. Tools may be drilled in either at an uncompleted pile position, some other sacrificial location and subsequently filled with concrete or at another location where it is not necessary to fill with concrete (eg, perimeter of working area or within footprint of later excavation). No tooling to be drilled in within a zone of influence of the viaduct foundations. These zones will be located on site by the Assured CMS engineer.	1	5	5
D	PERIPHERAL ACTIVITIES								
D1	Cage fabrication	Tripping on cages / steel mesh	4	4	16	All steelfixers to be competent for tasks undertaken. Reinforcement to be laid out prior to fixing so bars may be selected and removed. Adequate walkways to be provided for access around the cages after fixing. All waste items of banding wire, tie wire and steel are to be tidied up by the steelfixers as work progresses.	1	4	4

Risk (R) = Likelihood (L) x Severity (S)					
	5	4	3	2	1
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REF	ACTIVITY	RISKS	DEGREE OF RISK			CONTROL PROCEDURES	RESIDUAL RISK*		
			L	S	R		L	S	R
		Falling materials of cages / steel mesh during lifting operations	3	5	15	All lifts to be carried out under instruction of competent Slinger-Signaller. Use specified lifting points. Steelfixers & Slinger-Signaller (or Crane Supervisor) to ensure cages including lifting points are fixed as specified. Appropriate slings / chains to be used for lifting. All lifting equipment to have valid certificates of thorough examination. Laydown area to be cleared prior to lifting cages.	1	5	5
		Cuts due to reinforcement and tying wire	4	2	8	Provide PPE (toe protected footwear and eye protection) when cutting steel or wire. Ties to be bent under the cage to protect stab points with protruding wire.	1	2	2
		Musculoskeletal injuries	3	3	9	Use correct manual handling techniques. Operatives to be trained in manual handling.	1	3	3
		Trapping hands inside reinforcement as cage is lowered into pile	3	4	12	Operatives to keep hands outside cage at all times when lowering cage and when fitting spacers. Quick / safe splicing methods to be used for any multi-part cages.	1	4	4
D2	Manual handling	Musculoskeletal injuries	5	4	20	Use correct manual handling techniques. Operatives to be trained in manual handling. Manual Handling to be reduced to a minimum by using mechanical methods (crane / excavator / hiab). Should the above not be possible, heavy loads are to be split into smaller items within the individual's own comfortable lifting capability (and not to exceed a maximum of 25kg). If this is still not possible, loads are to be lifted by multiple operatives, ensuring that the lift does not exceed the individual's own comfortable lifting capability and does not exceed 25kg.	1	4	4
		Falling / tripping	4	4	16	Operatives to "walk the route" before they carry any loads to ensure that there are no	1	4	4

Risk (R) = Likelihood (L) x Severity (S)					
	5	4	3	2	1
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			L	S	R		L	S	R
						obstacles that could impede the Manual Handling Operations.			
		Trapping toes / fingers	4	4	16	Operatives to wear protective equipment provided, this includes steel toe boots and gloves. When lowering the loads, operatives to communicate and take care to ensure that toes / fingers are not trapped.	1	4	4
		Cuts / abrasions / irritation	3	3	9	Operatives to wear suitable PPE for the item being lifted, including protective gloves, and full length clothing.	1	3	3
D3	Working in inclement weather	Plant failure (high winds)	2	5	10	Operate all plant in accordance with manufacturer's guidelines (use Beaufort scale or anemometer to monitor wind speed). Plant operators to stop work if they consider working conditions to be unsafe.	1	5	5
		Cold / wet weather - hypothermia / skin irritation / operative discomfort	2	3	6	Operatives to be provided with suitable PPE (eg warm clothing, wet weather clothing).	1	3	3
		Hot weather - dehydration / sunstroke / sunburn	2	3	6	Operatives to take regular rest breaks as necessary and take care to stay hydrated at all times. Operatives to wear full length clothing and sunscreen to exposed skin as required. When extreme heat is anticipated, works may have to stop. Works may be scheduled to undertake as much as possible early in the day before peak temperatures.	1	3	3
D4	Use of pressure washer	Contact with water jet causing laceration / abrasion of skin or eye injury	2	4	8	Avoid directing water jet towards self or others. Use medium duty pressure washer (<=3000psi). Wear suitable PPE (full length clothing, gloves, eye protection).	1	3	3
D5	Integrity testing & load testing	Subject to specialist's RA							
E	MAINTENANCE								
E1	Work at height	Entrapment by loose / falling objects	2	4	8	MEWP not to be used underneath suspended or supported load. All works to be	1	4	4

Risk (R) = Likelihood (L) x Severity (S)					
	5	4	3	2	1
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			L	S	R		L	S	R
						undertaken in accordance with manufacturer's guidelines.			
E2	Hot works (generally)	Hot works / fire breakout	4	5	20	Remove any flammable items (fuel, oil, greases, solvents) from work area before undertaking hot works. ASSURED CMS to control hot works via permit system. Hot works only to be undertaken upon receipt of, and in accordance with, hot works permit. Suitable fire extinguishers are to be available for dealing with likely fuel source (powder for liquid, solid, chemical and electrical fires).	1	5	5
E3	Use of abrasive wheels	Contact with wheel (on or off machine)	4	3	12	Competent operatives only to fit and use wheel. Operative to clear work area of other personnel. Wear PPE (gloves).	1	3	3
		Contact with ejected particles	4	3	12	Operative to clear work area of other personnel. Operative to position shield and guide rest to direct particles away from self and others. Wear PPE (gloves, impact resistant eye protection).	2	2	4
		Shattering of wheel / disc	4	3	12	Competent operatives only to fit and use wheel. Operative to clear work area of other personnel. Operative to position shield and guide rest to direct particles away from self and others. Wear PPE (gloves, impact resistant eye protection).	1	3	3
		Dust	4	3	12	Where dust is emitted, use water to suppress and / or wear PPE (dust mask).	1	3	3
E4	Welding	Electrocution	5	4	20	Welders competent and trained in use of equipment. All equipment checked and in good working order.	1	4	4
		Arc eye to public and other site operatives	4	4	16	Correct PPE worn by welder. Welding screen erected to prevent risk to members of public or other site operatives.	1	4	4

Risk (R) = Likelihood (L) x Severity (S)					
	5	4	3	2	1
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			L	S	R		L	S	R
		Inhaling weld fumes	5	4	20	Weld only in well ventilated areas. Use air fed welding masks.	1	4	4
E5	Oxy-fuel cutting	Gas cylinders – fire / explosion	2	4	8	Store cylinders within cage. Use check valves on burning equipment.	1	4	4
		Inhalation of cutting gases	2	3	6	Maintain ventilation.	1	3	3
E6	Routine heavy plant maintenance	Hydraulic injection injury	2	5	10	Only competent & familiarised plant fitters to undertake maintenance work on hydraulic systems. Suitable PPE to be worn (overalls, nitrile gloves). Works to be undertaken in accordance with manufacturer's guidelines.	1	5	5
		Plant failure	2	5	10	Only competent & familiarised plant fitters to undertake maintenance work. Works to be undertaken in accordance with manufacturer's guidelines.	1	5	5
E7	Use of hand tools	HAVs	2	4	8	Vibratory hand tools not to be used for prolonged periods (<15 mins per day). Increased usage to be assessed using HSE HAV calculator tool prior to commencing.	1	1	1
F	SITE SPECIFIC HAZARDS								
	None identified.								

Risk (R) = Likelihood (L) x Severity (S)					
	5	4	3	2	1
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Likelihood (L)	Severity (S)				
	5	4	3	2	1
5	25	20	15	10	5
4	20	16	12	8	4
3	15	12	9	6	3
2	10	8	6	4	2
1	5	4	3	2	1
Risk (R)					

AREAS HIGHLIGHTED IN RED ARE AN UNACCEPTABLE RISK LEVEL
AREAS HIGHLIGHTED IN ORANGE ARE ACCEPTABLE RISK LEVELS HOWEVER, HEIRACHY OF CONTROL MAY DEPICT FURTHER CONTROL MEASURES
AREAS HIGHLIGHTED IN GREEN ARE ACCEPTABLE RISK LEVELS

Example – Before Control Measures					
Likelihood (L)	Severity (S)	Risk (R) $R = L \times S$	High (15 -25)	Medium (8-12)	Low (1-6)
4	5	$4 \times 5 = 20$	High		
Example – After Control Measures					
Likelihood (L)	Severity (S)	Risk (R) $R = L \times S$	High (15 -25)	Medium (8-12)	Low (1-6)
2	3	$2 \times 3 = 6$			Low

Risk (R) = Likelihood (L) x Severity (S)					
	5	4	3	2	1
Likelihood	Certain	Probable	Likely to Occur	May Occur	Unlikely to Occur
Severity	Fatality	Major Injury	Specified Injury	7 Day Injury	Non Reportable
*Residual Risk not to be greater than 6					
High	Medium		Low		
15 -25	8-12		1-6		