

Houlihan & Co. (Excavations) Limited

OHSEQ Management System

HOULIHAN & CO. (EXCAVATIONS) LTD

Civil Engineering Contractors
Specialists in Roads Sewers & Groundworks



<u>Project</u>	Thorpe Lea Manor, Egham.		
<u>Activity</u>	The works comprise carrying out 278 works: Installation of two upgraded bus stops (northbound and southbound) with shelters, raised kerbs Tactile paving, Electrical Ducting		
<u>No.</u>	<u>Doc. Ref</u>	MS – TLR - 2401- Groundworks	Client: Cala Homes

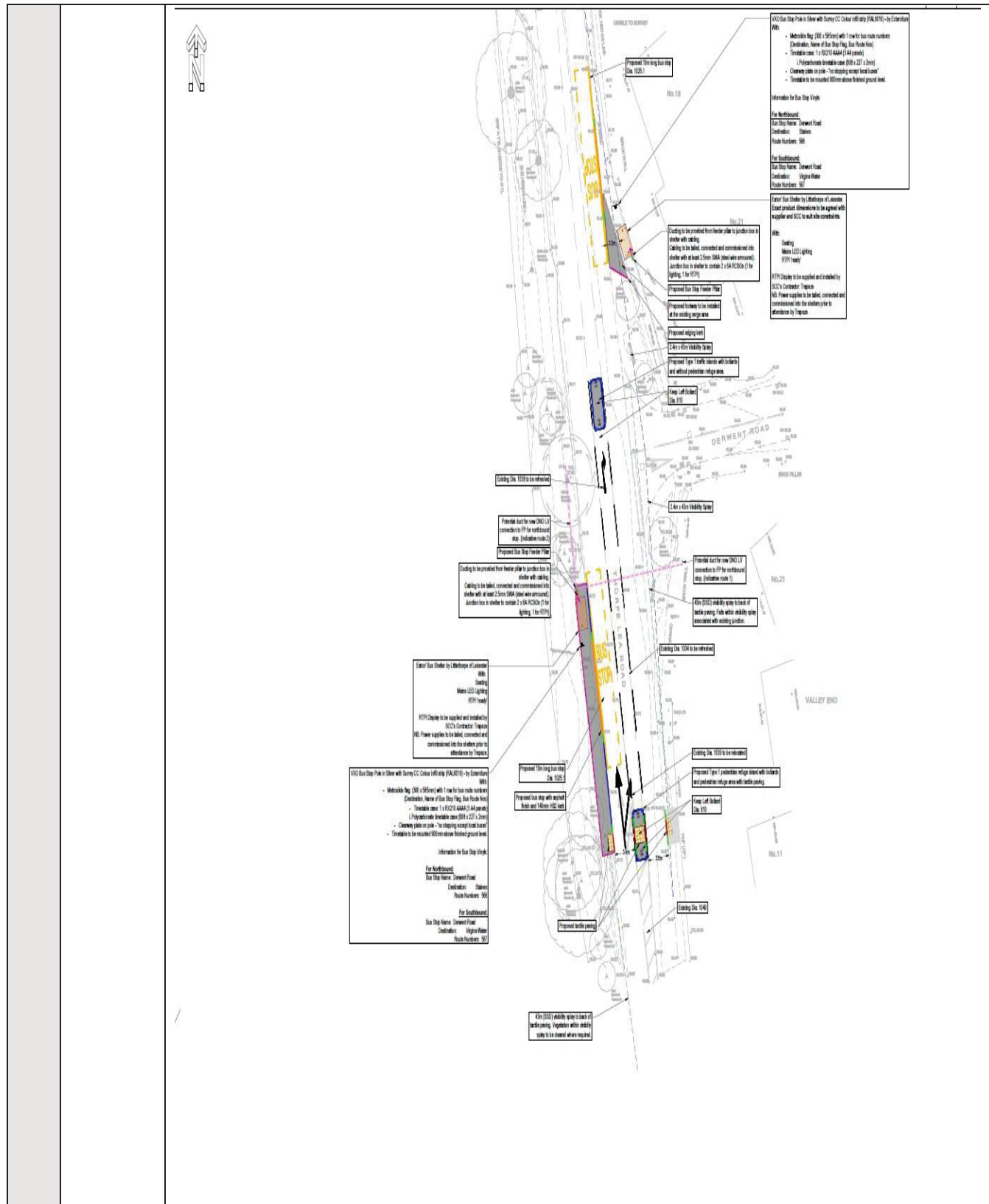
1.0	Project submission information	Document Prepared by:	Agron Selita	Signature:		Issue Date:	21.06.2026
		Document reviewed by:	Tom Keyes	Signature:		Date of review:	21.06.2026
		Document issued to (Client): Cala Homes		Signature:		Date of submission:	20.06.2026

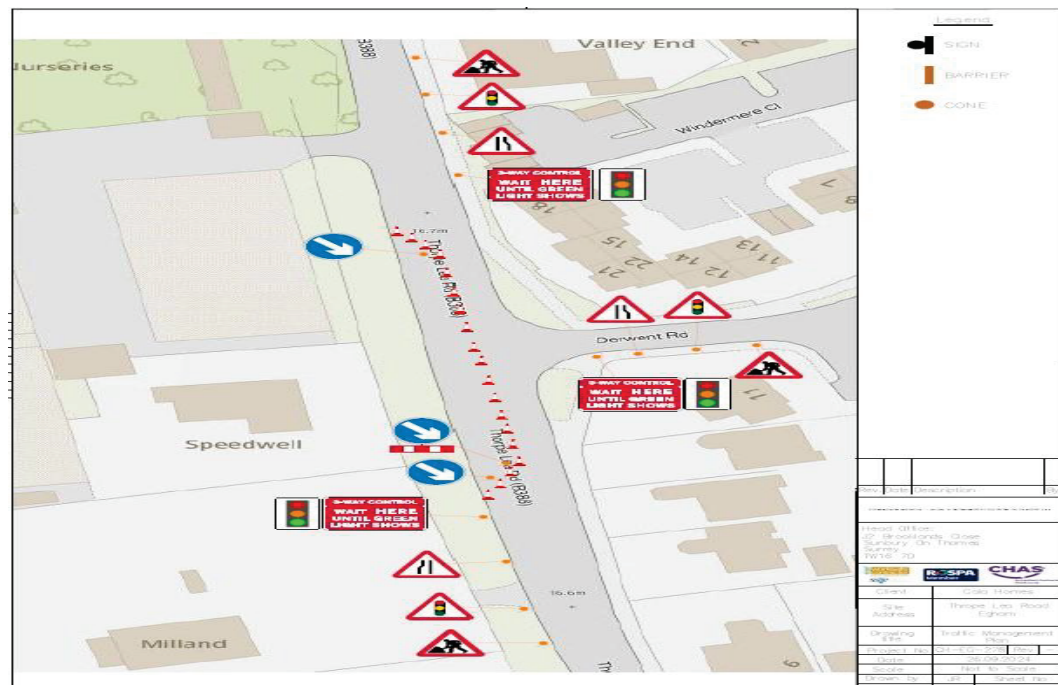
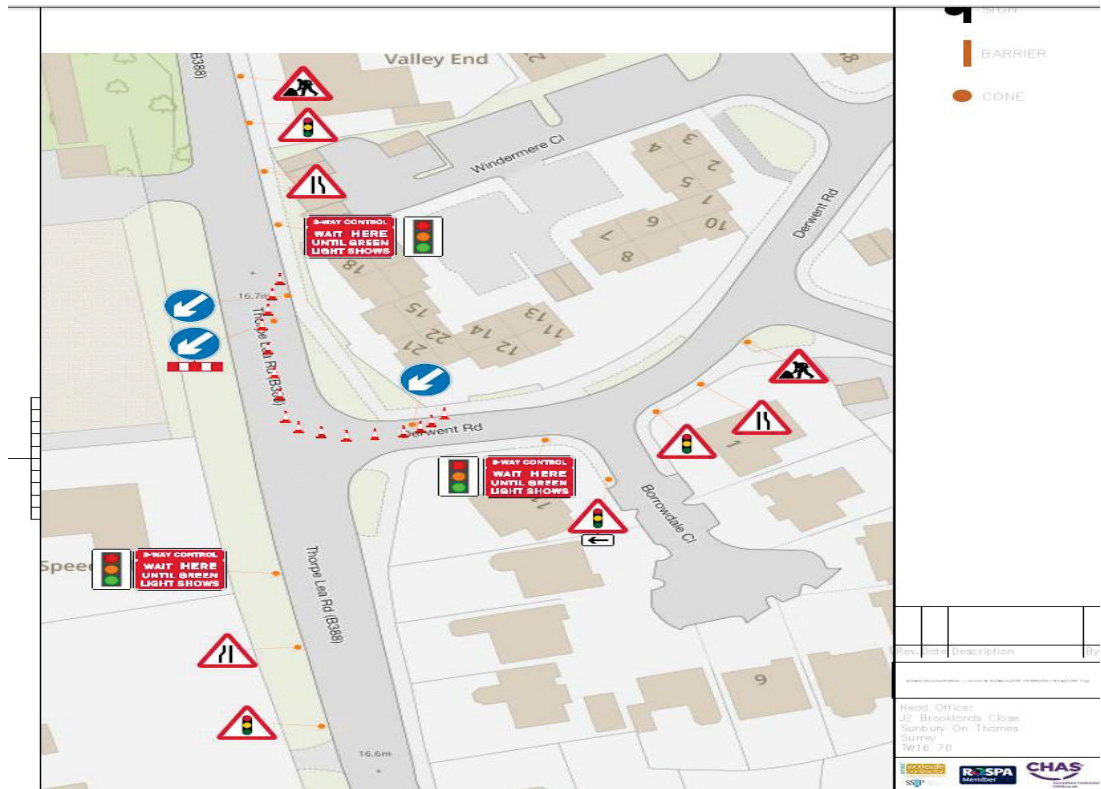
2.0	Document Control	Issue Date:	Amendment Number:	Date Amended:	Person Amending:	Remarks
		21/06/2026	0			

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4.0	Site Description	The site is located on the corner of Thorpe Lea Road (B3376), which provides access to it, and Vicarage Road (B388). The northern and eastern boundaries of the site are well-screened by vegetation and trees. The M25 sits west (130m) of the site. There are residential properties directly south-east. Glenville Farm (directly east) forms part of the wider allocation for housing but is under different ownership. Green Belt surrounds the site on the northern and western boundaries. North of the site is Egham Cricket Club. Access to the site will be through Thorpe Lea Road.
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		Restrictions and risks of developing this phase are: The construction vehicle route to the site is via M25, A30 and B388. Heavy goods vehicles and delivery routes to the site are as follows: Head south-west on M25. At junction 13, construction traffic will use the 2nd from the left lane to take the A30 exit to London (W)/Hounslow/Staines. After 0.2 miles, at the roundabout, vehicles will take the 2nd exit onto A30 heading to A308/Bagshot/Egham/Windsor. Traffic will then continue for a further 0.3 miles and take a slight left to stay on A30. Construction vehicles will travel for 0.8 miles and continue straight onto The Glanty/A308. After 223 ft, traffic will turn left onto The Avenue/B388 and Continue to follow B388. After 0.3 miles, at the roundabout, take the 1st exit onto Vicarage Rd/B388. The destination will be on the left. The site entrance will be identified using signage reading works access. This will be communicated for all deliveries. The construction plant will only be allowed to operate between the following hours: • 8 am to 6 pm, Monday to Friday. • 8 am to 1 pm Saturday (only if required as per the construction programme); and • No work will be permitted on Sundays and Bank Holidays unless a requirement is identified under a statutory, i.e. Energy provider & Highways team. Without prior agreement with site management, no deliveries are permitted outside working hours. Vehicles arriving outside normal hours will be turned away, and Houlihan & Co. will not be responsible for any costs incurred. The site is surrounded by residential properties, and vehicles entering/leaving the site must drive with extreme caution and at a reduced speed at all times. The PC Site Traffic Management Plan also indicates the location of entrance/exit gates, laydown areas, and material storage areas. Vehicles will not be allowed to reverse out of the site access. The contractor will be notified of these times and will not permit any HGVs associated with the development at the site to be laid up or waiting to adjoin the site during these times. This will be managed by the site supervisor.
5.0	Scope of Works	A Hold point has been introduced to our safe system of works company-wide. “Any remedial works required due to non-conformity or not to quality assurance and require remedial works that are not part of this approved safe system of works shall be risk assessed and remedial documentation produced were required”. <u>278 works</u> <u>5.1</u> Three way traffic lights <u>5.2</u> Construction/Installation of two upgraded bus stops (northbound and southbound) with shelters <u>5.3</u> Raised kerbs <u>5.4</u> Tactile paving, <u>5.5</u> Electrical supplies, <u>5.6</u> Feeder pillars, traffic islands, road markings, signage, and associated footway works.
6.0	Preparation	Pre-Start Each Day: • Permits in place from Highways prior to works starting • NRSWA Trained operatives to carry out such works • Three way traffic lights • Chapter 8 barriers will be used during works • Every morning before each shift, no operative / sub-contractor must commence work without attending a daily briefing held by the site work supervisor at the site compound no later than 0730hrs, where the day's task/s and associated risk/s will be addressed, planned and possibly challenged if operatives have any concern. • Toolbox talks & task briefings must be undertaken after the daily briefing with the operatives who are about to engage in high-risk work, such as excavating on/near live services, deep excavation activities, work in the public highway, confined space work, etc. • Check if there are any changes to the traffic management on site. • Carry out CAT scan surveys of proposed excavation areas routinely & review existing utility plans. • Ensure there are no other trades or public working along the lines of the proposed works. • Check that all Drawings are up to date and are the latest issue. • Cordon off the area of work from other personnel and traffic not involved in the work.
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		- Ensure that the area of work is closed and that there is no access permitted by the public. - Carry out Topographical Survey: Agree levels with client. - The team or teams involved will carry out a task-specific briefing and sign off on it. If the work is on or near live services, the prestart procedure will be followed in addition.
7.0	Access & Egress	- The construction vehicles would access the construction site via the eastern gate of Thorpe Lea Road. The western gate will be blocked by a fence wall matching the existing one. - All Lorries and Traffic Movement will be banked through the gates and around the site to the area of discharge /loading via banksman, who will also be responsible for maintaining a mud-free access road. A cattle grid and jetwash will be installed at the site entrance. - Every delivery driver will report to the gateman before entering the site and when leaving the site. (Gateman will be provided by Cala Homes)
8.0	Supervision, Responsibilities and Site Organisation	- Hasan Koldashi – Site supervisor (L3 Occupational Work Supervision; CSCS Gold Card, SMSTS, TW supervisor). Contact no.:07768274508 - Callan Conway/David Lowe – Site Engineer Contact no.: 07969 274317 - Tom Keyes– Contracts Manager: Contact no.: 07799897835 - Richard Carrol- Construction Director Contact no.: 07884 490755 - Richard Knight – Managing Director Contact no.: 07775 625421 - Agron Selita – H&S advisor Contact no.: 07507430655 - Richard Carroll - Temporary Works Co-ordinator Contact no.: 07884490755 - Hasan Koldashi - Temporary Works Supervisor Contact no.: 07768274508
9.0	Labour, management resources & training	- Sufficient time and resources will be available to undertake the work. The works described will be undertaken by 1 gang of 10-15 operatives under the supervision of a competent Supervisor and Site Engineer. Contracts Manager Josh Mandair will visit the site as often as required. - The Contracts Manager, Josh Mandair, will report to our Construction Director, Richard Carroll, who will visit the site on a regular basis. The Health and Safety Advisor, Agron Selita, will visit twice monthly to monitor compliance with the Method Statement and Risk Assessments and produce safety reports sent to Cala Homes. He will also carry out investigations of all site accidents and near misses. - The site supervisor will ensure the perimeter is secure after every shift. They will inspect open excavations before work starts and record results. There is no site security. The site supervisor will carry out a weekly site inspection, environmental, Loler for lifting equipment and weekly plant checks, and arrange to check the site's security at the end of each shift. - All our operatives have undertaken safety training within the last 2 years. Our Managers and Directors have also attended Safety Courses. All personnel have a health and safety training schedule to undertake over the next 2 years to maintain our high standards. <u>Machine operators are all certificated to CITB standards, and copies of certification are readily available from the Head Office.</u> - Our entire workforce has presently achieved or is undergoing on-site assessment via the CITB experienced worker route. This leads to National Vocational Qualifications in General Construction and Plant Operations for all relevant categories of plant. Our whole workforce will then be accredited under the Construction Skills Certification Scheme. - All plant operators will be either CPCS or NPORS accredited and hold an NVQ in the relevant Plant Operations category with lifting operations endorsement/ NVQ in lifting with an excavator. Please note that the NVQ is the senior qualification and is regarded as such by the HSE. The card schemes are regarded as little more than passport schemes, though the underpinning knowledge content is increasing annually. - If machines are hired with drivers, the incoming drivers will be required to have these qualifications. - All banksmen will be either NPORS trained on N403 – Vehicle Marshall, or L2 NVQ certified in Plant Operations (Construction) – Movement Guide Marshall A/506/4668 - Note- Regardless of qualification, all plant operators must be formally authorised as competent by the Houlihan site supervisor on the H&Co plant operator authorisation register. - All personnel on site will have CSCS/ CPCS/ NPORS accreditation as relevant. - A site induction will be carried out to include every operative new to the site. - Our site induction will include a brief questionnaire about health problems, and the data will be held off-site securely—NI number and address. This will be separate from new starter employment details and is a first scan for signs of modern slavery.
10.0	Major Plant & Minor Plant/ Equipment	<u>Major Plant (Typically):</u> JCB JS 135/140/160/220 6t/9t/10t forward tipping dumper 80/120/135 Ride on roller JCB 535 -125 Telehandler <u>(Refer to H&Co's site safety OHSEQ notice board for current records & registers)</u> Note: All Weekly Check Sheets for 360s are carried out by the machine operator and will always be available within the cab for inspection, including the most recent through examination certificate. Copies are also kept in H&Co's site office (OHSEQ board). Excavators will have to monitor cameras fixed in the rear of the machine for all-around vision. Any machine that is not fixed with a camera and is not carrying out bulk earthworks will be accompanied by a Banksman. Major Plant that does not have cameras fitted will achieve all around vision using mirrors. We will continue to promote the "thumbs up" campaign. Green flashing beacons are fitted across the Company. The new plant will come equipped.



Banksman

- The banksman must be situated in a safe position and preferably outside of the operational area of the machine's fully extended boom, dipper and attachment.
- The banksman must face the operator when signalling and be clearly visible to them.
- The banksman must always maintain a clear line of sight with the excavator operator.
- The banksman must have direct sight of the load and lifting equipment at all times during the lifting operation and have adequate visibility of the load path.
- The communication between the operator and banksman must be continuous throughout the duration of the lifting operation

Plant Operator/ 360° Machine Driver

- The operator must not respond to any hand signals (or other communication) that are not clearly understood and should seek additional clarification.
- Hand signals and any additional voice instructions should only be given by the identified banksman – except for an emergency stop, which can be given by any person at any time if a perilous circumstance is spotted.
- If other instructions are required (other than the agreed hand signals), then the operation should be stopped. Where there is any concern about the safety of, or the need to halt, the operation, all movement (and therefore, the lifting and any operation) should be stopped until the issue has been resolved to the mutual satisfaction of both the operator and the banksman. Comprehensive

Minor Plant & Equipment (Typically):

- Block Grab
- Concrete Skip/Bucket
- Excavation Support Equipment
- Setting out Instruments
- Compressor & associated pneumatic tools
- Heras Fence Panels / Avalon barrier
- Shovels Inc. insulated
- Hand Tools
- Small electrical tools
- Kerb lifter/ laying dolly
- Block barrow
- Pipe Lifter
- Rammax

Minor plants will be visually checked prior to use. Any defect or failure noted during pre-use checks will be reported immediately to the site supervisor. The site supervisor will remove the equipment from use as "out of Order/service" and report it to the Plant Department for repair or replacement.



11.0	Plant/ Materials and vehicle preparation and delivery	Unless it is reasonably practicable to do so, the following safe systems of work must be followed at all times. - The Low Loader Driver will sign in at the site entrance or Site Office prior to delivering the plant. - Plant Deliveries are not to be made outside site working hrs unless previously agreed with the Site Manager. - Lone Working is not permitted, and deliveries are not to be made unless a member of staff is present on site. - Plant deliveries are not to be made in areas where adequate lighting is not present. - The vehicle collecting the plant shall be designed for the collection, transportation, and delivery of mobile plant, be it wheeled or tracked. It shall be a low-loader. - The vehicle must have a suitable means of getting the plant onto the trailer and will include designed loading ramps. - The Low Loader driver must be a competent person trained in loading/unloading all plant categories from the lorry and for its security during transport. - All loading/unloading operations shall be supervised by a competent person. The Low Loader driver shall act as the competent person. - All plant shall be loaded/unloaded onto the low loader by a competent plant operator and directed by the lorry driver. No other person shall undertake these instructions. The low-loader driver can unload the plant, provided he is qualified to do so. - During the plant loading/loading operations, all persons other than the plant operator and lorry driver shall stand away from the loading area. - During access to the lorry platform, if there is a risk of personal injury from a fall, a means of preventing a person from falling off must be installed, or a safety harness must be implemented. All such persons shall be trained in the risk of falling off the lorry platform and how to control those risks. Where clients provide access platforms/podiums, these must be used. - Prior to moving all loaded plant, it shall be adequately secured by the appropriate means, such as chains, etc., by the low-loaded driver only or assisted by others working under his instructions - The driver shall determine the route and final resting place of all plant to be loaded/off loaded before the activity commences. - The driver shall also ensure the plant/materials loading/unloading route is clear of all hazards, obstructions, restrictions, etc. if the operations commence. - All suppliers have been asked to adhere to industry guidance regarding work at height on their vehicles. A solution for each load will have been determined before it is dispatched. Loads that cannot be safely unloaded will be turned away. - Depending on banding or shrink wrapping, loads must be strapped to include each row and twice perpendicular to the straps on each row. Note: no individual must enter the bed of a lorry without edge protection.
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12.0	<u>Method of work</u> Construction of Bus stops with shelters, raised kerbs, tactile paving, traffic islands, footpath works	- Preparation: - The foreman will consult with the client and agree on the areas for the works to commence. - Works will be undertaken under a 3-way temporary traffic signal arrangement at the Thorpe Lea Road / Derwent Road junction. The working area will be protected using cones, barriers, warning signs in accordance with Chapter 8 of the Traffic Signs Manual and Safety at Street Works and Road Works Code of Practice. Pedestrian routes will be maintained at all times or suitably diverted. Access for residents, emergency services and public transport will be maintained throughout the works. The foreman will consult with the client and agree the areas for the works to commence. Refer to the drawings provided. - Signage and barriers (chapter 8)will be erected to segregate the works area from members of the public (if applicable). - H & Co to commence the work starting with a detailed survey of the area for live cables and services using a Cable Avoidance Tool and hand excavation methods to ascertain actual line and level of underground apparatus that could be encountered, mark and plot all live services encountered on a relevant drawing. - A task briefing must be carried out and recorded on the Houlihan's task briefing sheet - Permit to dig must be completed - Refer to working on or around live service RAMS Only Vacex, Air pick and insulated tools to be used on or near live services. Cala policy: no mechanical digging within 500mm of any known services NRSWA trained operatives to carry out such works Construction works of bus stop A level survey will be carried out prior to commencement Saw cut the tarmac on the carriage way along the new kerb line Break the tarmac as marked on the drawings by using a breaker mounted on an excavator Dig the required – refer to drawings Formation levels shall be excavated to design depth. Excavation shall proceed under continuous supervision Formation shall be inspected and approved. Type 1 granular sub-base shall be installed.
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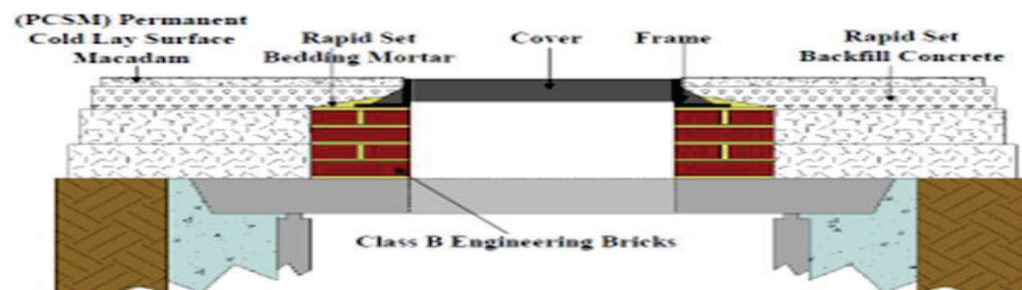
Sub-base shall be placed in layers.
Each layer shall be compacted using suitable compaction equipment.
Finished levels shall be checked against design requirements.
The hardstanding area shall be constructed to provide a stable foundation suitable for subsequent shelter installation.

Kerb line installation

- Saw cut the tarmac on the carriage way along the new kerb line
- Break the tarmac on the new kerb line and all the section of the footpath marked on the drawings by using a breaker mounted on an excavator
- Using a dumper store tarmac/material within site boundaries
- Dig the required kerb level -For all works refer to drawing provided.
- All precast kerbs and edgings – refer to drawings for details
- The minimum cut length of any kerb shall be 450 mm
- Kerbs are to be butt jointed
- Kerbs are shown with 20mm mortar bed
- The subbase layers shall extend a minimum of 150mm beyond the back of concrete backing
- New kerb and edging lines will be set out using non-penetrating cantilevered 'pin-safe' with "top of kerb/ edging" levels marked.
- The excavator will then conduct the minor excavations to provide suitable depth for kerb /edging and concrete bedding.
- Full height kerbs to retain the edge of the roads.
- Kerbs will be loaded out by the tracked excavator using lifting strops or alternatively forklift attachment and will deposit each stack at a suitable position along the kerb line.
- Kerbs will then be installed or deposited from the pallet using the Probst kerb laying dolly, as close to the proposed kerb line as possible.
- The concrete will be distributed, by the excavator bucket, to the line.
- Concrete will be manually levelled under the string lines and will be left approx. 20mm low to allow for bedding of the kerb on mortar that mixed 1:3 cement sand.
- Kerbs that aren't able to be finally placed by the Probst kerb dolly two skilled groundworkers will use the 'bicycle handle type' kerb lifter, and finally lift into its proposed position
- Install the kerbs and edging on the new kerb line to the level required - as per drawings
- Note: under no circumstance should anybody use the 'bicycle type' handle lifter as their primary laying process, it should only be used where the Probst kerb dolly is limited in-use. Once kerbs have been placed on the concrete bed and aligned / levelled they will be levelled using a pick.
- Any cutting will be done only by operatives that have been trained on Abrasive Wheels and FFT with certificates held at site office
- Water suppression will be used at all times when cutting stone or concrete-based materials
- Where a task requires RPE to be worn the operative will be face-fit tested every 12 months
- Cutting area to be set up with Heras panels and signage designating "cutting area"

Raise Iron works (Gullies).

- Enclose the work area with half height barriers. Ch 8 signage will be used to direct other on-site trades away from the area of works and the access and egress routes to the area of work.
- Using a PDCOS with water suppression the retaining material will be scored, broken, transported to a stockpile for reuse or removal.
- The engineer will give the finished road level and camber, operatives will lay the ironworks to these levels.
- Engineering brick will be laid on a bed of mortar, minimum of 2 courses and not more than 4 courses.
- The cover will be laid to line and level and surrounded by concrete, to the underside of tarmac level. The concrete will be allowed to cure and tarmac will be called to site, laid levelled and compacted.





	<u>Tarmac Works on Carriageway – Refer to drawings for details</u> Tarmac works will be carried out by a subcontractor <u>Binder Course & Final Wearing Course Road Surfacing</u> • (specialist work such as wearing course tarmac will be sub-contracted out to specialists). • Existing road to be reconstructed to full depth to suit new road levels • Existing carriageway to be resurfaced (40mm plane out) • Carriageway tie in key, 300mm overlaps to road base and binder layer <u>Tactile paving installation</u> • Set out tactile paving locations in accordance with approved drawings. • Undertake CAT & Genny survey and verify any existing services prior to excavation. • Excavate existing footway construction to required depth. • Prepare and compact formation. • Install and compact Type 1 sub-base to specified thickness. • Lay concrete bedding layer to correct line and level. • Install tactile paving units to the correct orientation . • Check levels, falls and alignment throughout installation. • Ensure tactile paving ties seamlessly into adjacent footway surfaces with no trip hazards. • Replace any damaged units immediately. • Protect completed works from plant and pedestrian traffic until bedding has cured. • Carry out final quality inspection to ensure compliance with drawings and specification.
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13.0	<u>Method of work</u> Installing Services <u>Preparation</u> Before any work is carried out, the following items must have been completed, and copies of relevant documents are available at the site of the works: • Accurate plans showing all existing services in the vicinity of the work site. • Plan of proposed new services trench. • Correct signing & guarding implemented as per TMP. The actual width of the trench depends on the following factors: - Type and size of services being laid. - Number of services being laid in the same trench. - If low—and high-voltage cables are laid in the same trench, the effect on the cable ratings must be considered. - Whether ducts are being used. - If mechanical means are being used to excavate the trench to install a single cable, then the width can be as narrow as 150mm. - The trench width must also allow for mechanical compaction. Trenches should: - - Be as straight as possible. Where bends are unavoidable, the trench should allow the service to be installed at not less than its minimum bending radius. - It should be to the approved dimensions and normally have vertical sides, which should have a side support system (e.g. timbering) if the ground is soft or loose. - Have a firm and smooth contoured base. - The trench shall be cleared of water by pumping to prevent the risk of collapsing and hazard to the general public, especially trespassing children. In locations where flooding can occur, measures shall be taken to divert rainwater away from the trench (e.g., use of sandbags). - Have provisions made during their excavation to cater for access of persons and vehicles to property of places alongside the route. - In concrete surfaces, be cut through the concrete as per the HAUC <i>Specification for the Reinstatement of Openings in Highways.</i> <i>When machines are being used for excavation, and the location of the other plant is known, the plant should be uncovered by hand excavation to reduce the possibility of damage. If the excavation is likely to reduce the stability of any part of any structure, work shall not be commenced unless adequate precautions are taken to prevent the structure from collapse or deterioration. Flooding or vibration from heavy traffic can cause a collapse of trench sides and the subsidence of adjacent structures. A trench-side support system or shoring shall be used to avoid this.</i> Where service trenches are to be left open at any time, MGF Walksafe or a similar device will be installed and maintained to provide safe access to plots.
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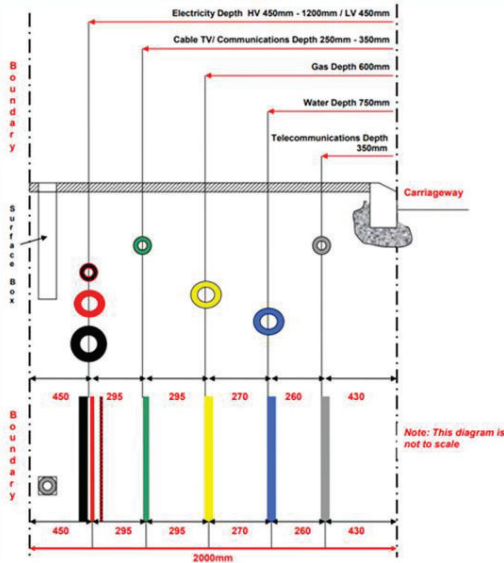
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Excavating service trench

Excavation

All excavation works will be carried out in accordance with the Construction (Design and Management) Regulations 2015, the Guidance contained in Health and Safety in Excavations HS(G) 185 "Be Safe and Shore," and the CIRIA Guide to Trenching Practice. Before excavation, a Permit to Dig must be raised, an existing utility drawing must be on site, and the excavation area must be scanned using Cat & Genny.

- Each drainage run opened at any one time will not exceed 50m. Where practicable, we will backfill excavations overnight. In the event that excavations are left open, they will be physically barriered off. The foreman will check the face of the excavation before the start of the shift. Any excavation will be checked after events such as heavy rain that might affect its stability. The checks will follow Houlihan & Co.'s checklist. All inspections will be recorded in the Houlihan Record book.



- Apparatus must be installed below the carriageway construction layers unless special arrangements have been made with the relevant authorities. Where the plant can only be laid in the road, adequate protection should be provided. Ducts will be laid to specifications, sanded, and warning tape placed over them.
- Pre-tender information and the Construction Phase Plan will be used and considered in light of additional information from utilities' plan drawings, section drawings from utility companies recording the depth of services, and commissioned ground probing radar surveys as necessary.
- The assumption that live working can be avoided as the default position is set out above, and a full justification of any live working must be set out before this is considered. A method statement for live working will be required as live working is not considered to be properly controlled by any permit-to-work system. HSG47 states, "Where new services such as electrical or gas supplies are being installed, it may be possible to



	reduce risks by not installing or commissioning them until other groundworks and work on the installation have been completed. This should be considered early in the design process to allow the works to be sequenced accordingly." - A cable avoidance tool in conjunction with a transmitter will be used by a competent person prior to the commencement and during any work to identify all services capable of being identified. The intention will be to bring up to date records of existing services and to supplement these records where they are deficient. Services found will be clearly identified to avoid the risk of damage, and where necessary, we will hand dig around them to expose the services prior to full excavation. Hand digging will require the use of air picks to expose services, starting immediately under the hardcover. Record drawings will be red-lined to show the most up-to-date information, held available on site for consultation and details communicated at inductions, toolbox talks and in careful briefing on site prior to excavation. - If any service is exposed, it will be photographed and sketched with offset notes to inform future re-visits. - The backfill will be with self-compacting granular material to a level where compaction is acceptable and then in a suitable material, including selected as dug, which must be possible to excavate with the air pick in the future: i.e., dense, cohesive material like clay must NOT be used. If suitable backfill material is unavailable, the excavation should not proceed. - Warning tape will always be placed, and if the utility has not provided it, we will have rolls to use. In addition to using marker tape provided for each service, another physical barrier will be placed on top of the sand. As agreed by management, half a width of the red debris net will be placed first before the backfill. If the physical protection specified is not in place, then the backfill will not be completed until the protection is in place. - Great care will be taken to establish what is meant by "terminations" or "diversions", and any assertion that there are "no" services will be treated with caution. - Techniques using ground penetrating radar will be considered where information is clearly deficient and services are congested. - We will comply with the Permit to Dig system. - Traffic management will set up traffic control in stages throughout the entire route to keep disruption to a minimum. - The operatives will barrier the work area at all times to keep the general public safe. - The trench to be excavated will be cat and genny to mark up all existing services, and all appropriate drawings will be read. If in any doubt, a trial hole will be hand excavated to confirm any existing services. - The trench will be marked out in the footpath or verge so the tarmac or turf can be removed so the service trench can be excavated to allow the installation of the service main. All arising is to be removed from the site by use of a forward tipping dumper for reuse or removal from the site at a later date, as per the SWMP. - Water mains, gas mains and LV electricity cables will be laid by others, into the trench at the correct depth and surrounded with sand or a similar bedding material. Warning tape will be installed and pegged. We will then fill the remainder of the trench with 6F2 or similar and compact it layers to the underside of the new tarmac reinstatement. - The trench will be reinstated to the HAUC spec. Once the services are laid, installation records will be taken, and the GPS positions of the services will be noted on the site drawing for the as-installed records. - On completion of the works, the traffic management and site equipment will be removed, and the area will have any surplus materials and rubbish removed. Install services crossovers (Proposed) - Services positions are per combined services drawing and need to be considered when placing the carriageway. All ducting under the carriageway must be to UKPN standards of 125mm.  125ømm and 150ømm Ridgiduct Power HV class 1 ducts fully comply with the electrical supply industry specification for cable protection, ENATS 12-24. <u>Excavating Round Live Services.</u> - Accidents may occur if care and attention are not exercised when excavating to locate underground cables. Hand-held power tools and mechanical excavators are the main causes of accidents, so they shall not be used in close proximity to underground cables, specifically 500mm. The first option to excavate around live services will be the VacEx. When unable to use the VacEx for reasons, restricted access or ground conditions, an air-pick will be the next choice.
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		Before Starting work. • Complete the appropriate Houlihan Site Procedure, "When Requested To Work On Near Live Services", paperwork. • Make sure the operatives have received Houlihan's "Digging on/or round live services" and they have signed to the Designated RAMS for this procedure. • The site supervisor must appoint a competent "Dig Supervisor" to supervise the dig team. The dig supervisor must never leave the dig area. If he is not present, the operation must stop. • The site and dig team supervisors must have received the Cala Homes "Breaking Ground" training. • The team must receive the briefing for the task before the start of the work. • Complete an appropriate Risk Assessment safety check. • Wear the appropriate Arc Flash Protective Suit that has been issued, as well as the protective face shield and gauntlets. Specifications of the protective clothing are available in the Houlihans site office. • Check the service drawings to determine the number of cables, voltage rating, and physical dimensions of the cable(s). When Houlihan arrived on site, CAT and Genny sweeps of the perimeter boundary must have been carried out. Any services identified, tracked, traced, and marked with service indicators must have been recorded in the existing services drawing. • Use a cable avoidance tool (C.A.T. & Transmitter) to trace the cables' line and mark their route on the ground. The supervisor or Engineer must carry out this task only. The EZICAT i750, with depth locator, memory, GPS, and Bluetooth, will be used at minimum. • Complete the appropriate CALA permit to dig, ensuring the service drawings are issued. Take a copy of the permit and armband issued by Cala Homes with you to the dig area. On commencement of work: • Set up a mechanical excavation exclusion zone (e.g., using yellow barriers and signage) where vac-ex or hand dig activities are taking place around service/plot connections. • Do not use a hand-held power tool or mechanical excavator within 500mm of a known cable or other utility. • Use a mechanical excavator or a power tool only to break the top surface of the footpath or carriageway. • First, using the air pick, dig a trial hole, normally covering the full width and depth of the trench that will be dug, to physically locate the services. • An air pick is to be used with care to displace porous and semi-porous soils. Hand dig using certified insulated spades that have been issued to the site. Under no circumstances shall uninsulated equipment be used. Forks handheld picks, or other pointed instruments shall never be used. • During excavation make repeat checks with the CAT to determine more precisely the position of any cable(s). • Treat all cables found as live until proven otherwise. • Any duct exposed during excavations must not be cut under any circumstances. Once a duct is installed it can only be exposed using safe practices at the request of the PC but must be treated as live and never be cut by Houlihan's operatives. • Secure the excavation that will be left overnight by tying up the fencing with zip ties or clips. Excavation must be checked every day and record must be kept for excavation that exceeds 7 days. Backfilling: Once the service connections have been made and the utility company indicates that the trench can be backfilled, • Photo(s) of installed services must be taken by the site manager before the trench is backfilled. • Backfill around cables with a fine material/ building sand, and do not use hardcore as this is likely to cause damage to protective sheath or pipework. • Replace any warning tiles or tape that may have been disturbed. • In the first stages of backfill, selected material should be placed uniformly on both sides of the service by hand in layers not exceeding 100mm in thickness, each layer being compacted by hand tamping until the pipe has a minimum of 150mm compacted cover. • Further backfill with sand must be done to reach 250-300mm over top service then use the marker tape provided by utilities. • Cover the width of the trench using orange debris netting following Houlihan backfilling procedures. • The other backfilling material should be placed in layers not exceeding 300mm, each layer being well compacted. Once the backfill is completed, the Permit to Dig must be closed.
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14.0	Method of work Works on/near Underground Services	• Pre-tender information and Construction Phase Plan will be used and considered considering additional information from utilities' plan drawings, section drawings from utility companies recording depth of services and commissioned ground probing radar surveys as necessary. • Any on-site service disconnections should be confirmed by the Client prior to the commencement of construction. • The assumption that live working can be avoided as the default position is set out above, and a full justification of any live working must be set out before this is considered. A method statement for live working will be required as live working is not considered to be properly controlled by any permit-to-work system. HSG47, rev. Feb.2014, states, "Where new services such as electrical or gas supplies are being installed, it may be possible to reduce risks by not installing or commissioning them until other groundworks and work on the installation have been completed. This should be considered early in the design process to allow the works to be sequenced accordingly." • A permit to Dig will be completed prior to excavating on/near underground services, and this will be accompanied by existing and as-built service drawings.
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		- The team working on / near underground services will be trained on "Digging on/ near Underground Services" Houlihan's Procedures, briefed on the task, provided with existing or/and as-built drawings, and will sign the Permit to Dig prior to starting any works. - A cable avoidance tool in conjunction with a transmitter will be used by a competent person prior to the commencement and during any work to identify all services and ducts. The intention will be to bring up to date records of existing services and to supplement these records where they are deficient. Services found will be clearly identified to avoid the risk of damage, and where necessary, we will hand dig around them to expose the services prior to full excavation. Hand digging will require the use of air picks to expose services, starting immediately under the hardcover. Record drawings will be red-lined to show the most up-to-date information, held available on site for consultation and details communicated at inductions, toolbox talks and in a careful briefing on site prior to excavation. - As each service is exposed, it will be photographed and sketched with offset notes to inform future re-visits. - The backfill will be with self-compacting granular material to a level where compaction is acceptable and then in a suitable material, including selected as dug, which must be possible to excavate with the air pick in the future: i.e., dense, cohesive material like clay must NOT be used. If suitable backfill material as described is not available, the excavation should not proceed. - Warning tape will always be placed on top of the sand backfill, and if the utility has not provided it, we will have rolls to use. If physical protection is specified, the backfill will not be completed until the protection is in place. A 1-tonne bag of sand will be placed at each planned service connection. Red debris netting will be placed over the sand backfill as an additional warning. - Great care will be taken to establish what is meant by "terminations" or "diversions" and any assertion that there are "no" services will be treated with caution. - Techniques using ground penetrating radar will be considered where information is clearly deficient and services are congested. - We will comply with the Principal Contractor's Permit to Dig the system. We will additionally follow HSE advice that a permit-to-work system cannot adequately control works on or near live services. We will provide a full method statement for the work and brief our competent team on it.
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15.0

Method of work

Lifting with
excavators

All lifting operations on site should be planned to ensure that they can be carried out safely and that all foreseeable risks have been taken into account.

Poor planning is one of the major causes of accidents arising from the use of excavators for lifting operations.

LOLER requires that the siting, setting up, and use of an excavator for lifting operations are carefully planned so that these activities can be carried out safely and efficiently. The responsibility for planning lifting operations lies with the employer who is undertaking the task. The employer should ensure that they identify one person with sufficient training, practical and theoretical knowledge and experience should be appointed to be responsible for planning and supervising the tasks. This person is known as the "Appointed Person" to BS 7121. – Alban Shehu 07584809221.

To enable lifts to be planned, supervised and carried out effectively, three categories of lifts are detailed below. The category into which a particular lift will fall depends on the assessment of the hazards associated with both the environment in which the lift is to be carried out and those associated with the load and lifting equipment. As can be seen from the table below, increases in either or both environmental or load complexity (the "Complexity Index") will lead to the lift being allocated a higher category. Having identified the hazards associated with a particular lift, a hierarchy of control measures should be applied to eliminate or control those hazards.

Lift categories (Basic / Intermediate / Complex).

Environmental complexity (E)	Lift category			
	3	Complex	Complex	Complex
	2	Intermediate	Intermediate	Complex
	1	Basic	Intermediate	Complex
		1	2	3
Load complexity (L)	Complexity variables and constants	Basic	Intermediate	Complex
	Increasing environmental complexity	The excavator operator has clear sight of the load path and the load is to be placed on the ground.	The load is to be placed over an obstruction such that the excavator operator might not have clear sight of the landing area from the control position.	The load is to be placed in a trench behind a bund, without line of sight, and with proximity hazards, such as scaffolding or overhead power lines.
	Constant low load complexity	A load of known weight with designated top lifting points and central centre of gravity. The load does not contain fluids, is not fragile and is inherently stable when landed.	A load of known weight with designated top lifting points and central centre of gravity. The load does not contain fluids, is not fragile and is inherently stable when landed.	A load of known weight with designated top lifting points and central centre of gravity. The load does not contain fluids, is not fragile and is inherently stable when landed.
		Complexity Index E1:L1	Complexity Index E2:L1	Complexity Index E3:L1
	Increasing load complexity	A load of known weight with designated top lifting points and central centre of gravity. The load does not contain fluids, is not fragile and is inherently stable when landed.	A load of estimated weight with an estimated centre of gravity and without designated lifting points. The load does not contain fluids, is not fragile and is inherently stable when landed.	A load of estimated weight and centre of gravity and without designated lifting points. The load contains fluids, is fragile and is not stable when landed.
	Constant low environmental capacity	The excavator operator has clear sight of the load path and the load is lifted to and from the ground.	The excavator operator has clear sight of the load path and the load is lifted to and from the ground.	The excavator operator has clear sight of the load path and the load is lifted to and from the ground.
		Complexity Index E1:L1	Complexity Index E1:L2	Complexity Index E1:L3

** Only basic lifts can be undertaken in the absence of a formal lift plan produced by the Company's appointed person, providing the criteria below are met.*

Planning, Supervisory and Operating Personnel

The Lifting Team

All lifting operations should be carried out by the lifting team. The team will consist of persons carrying out the following roles:

- Appointed Person
- Lift Supervisor
- Excavator operator
- Slinger/Signaller



	The exact team structure will depend on the complexity and size of the job, but all roles must be allocated and duties discharged. Roles and Responsibilities <u>Appointed Person</u> • Planning the lifting operation for Intermediate & complex tasks; selection of the lifting equipment and lifting accessories. Instruction supervision and consultation with other responsible bodies to ensure effective collaboration as is necessary for the work to be undertaken safely. • Ensuring that the outcomes of the planning process are recorded in a lift plan. • Ensuring that adequate pre-operational checks, intermediate inspections, maintenance and thorough examination of the equipment have been carried out. • Ensuring that there is an effective procedure for reporting defects and incidents and for taking any necessary corrective action. • Taking responsibility for the organisation and control of the lifting operation. • Ensuring that the Lift Supervisor and other lifting team members are competent to carry out their roles and are fully briefed on the lift plan's contents, scope and limits. • Being familiar with the relevant parts of the project health and safety plan where the lifting operation is being carried out on a site where the Construction (Design and Management) Regulations 2015 apply. • Liaising effectively with the site temporary works coordinator regarding relevant issues such as ground stability. NOTE: The Appointed Person should have the required understanding and experience in planning lifting operations with excavators. <u>Lift Supervisor</u> • All lifting operations should be supervised by a Lift Supervisor. This role may be combined with that of a slinger signaller for basic lifts, while a separate person will be required for more complex lifts. NOTE: The degree of supervision required will depend on the category of lift and the outcomes of the risk assessment • The Lift Supervisor should direct and supervise the lifting operation, ensuring that it is carried out in accordance with the lift plan. The Lift Supervisor should be competent and suitably trained and should have sufficient experience to carry out all relevant duties. NOTE: Competence requirements for self-supervision might differ from those for supervising others. • The Lift Supervisor should also have sufficient authority to stop the lifting operation if they consider it dangerous to proceed. NOTE: The Appointed Person may decide to undertake the duties of the Lift Supervisor or to delegate these to another person with appropriate expertise for the lifting operation. <u>Excavator Operator</u> • The excavator operator should be responsible for the correct operation of the excavator in accordance with the manufacturer's instructions and within the safe system of work, as detailed in the lift plan. • The excavator operator should respond only to the signals from the slinger/ signaller, who should be clearly identified. • The excavator operator should: • Have the necessary competence (skills, knowledge and experience) to carry out lifting operations. • Be familiar with the excavator to be operated. Check that it is in good condition and that it has sufficient capacity to carry out the lift safely. • Ensure that they do not wear loose clothing, which could snag on the controls and lead to unintended movement. • Ensure that the bucket is removed from the machine before the lifting operation starts if the lifting attachment (hook) is fitted to the quick hitch or dipper end. • Ensure that lifting operations are only carried out with the excavator in lifting mode and the overload warning device or rated capacity indicator/limiter selected. • Ensure that they have been briefed on and understand the lift plan (for Intermediate and complex lifts). • Identify the other members of the lifting team and ensure that they are clear of the excavator's arc before operating the machine. • Check that the area where the excavator is to be positioned for the lifting operation is suitable for the task, the landing area is suitable to take the load, the area is segregated from the rest of the site and that only those personnel directly involved in the lift are within the segregated area. • Ensure that the pre-use checks of the lifting accessories to be used have been carried out and that the lifting accessories have been correctly attached to the excavator's lifting attachment. • Ensure that the excavator's control isolator (the dead man lever) is selected when the lifting accessories and load are being attached to avoid unintended movement. • Only follow signals from the designated slinger-signaller during the lifting operation, using the pre-arranged system of signals. NOTE: It is essential that the excavator operator responds immediately to an emergency stop signal from any person. <u>Slinger-signaller</u> The slinger-signaller should be properly trained in all aspects of slinging loads and signalling and be authorised by the Appointed Person – for intermediate and complex tasks. The slinger-signaller should be responsible for: • Carrying out pre-use and post-use checks of lifting accessories. • Attaching and detaching the load to and from the excavator load-lifting attachment. • Using the correct lifting accessories and other equipment in accordance with the lift plan (for intermediate & complex tasks); • Initiating and directing the safe movement of the excavator using a pre-arranged system of signals. If there is more than one slinger-signaller, only one of them should have this responsibility at any one time, depending on their position relative to the excavator. • Guiding movements of the excavator during pick and carry lifting operations. • Ensuring that they are readily identifiable as the designated Slinger/Signaller by the excavator operator. • Movement of the excavator includes pick and carry duties. All pick and carry duties will be continuously controlled by a banksman.
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		NOTE: Where continuity of signalling is required, and this slinger-signaller is not visible to the excavator operator, another slinger-signaller or signaller will be necessary to relay signals to the excavator operator. Alternatively, other audio or visual methods may be used. A typical example of audio methods used is where a Slinger/Signaller using a radio continuously instructs the operator to lower a load, e.g. by saying "Lower...lower...lower...", and failure of this continuous instruction from the slinger-signaller indicates that the operator needs to halt all excavator movements. Lift plans will be in the excavator cabs.
16.0	Method of work Work in Confined Spaces	We will avoid creating confined spaces where possible. For example, benching will be done when the first manhole ring is placed. - A confined space is defined by the presence or absence of prescribed risks. It is possible but unusual for these risks to be present at excavations for foundations or drainage or for these risks to be reasonably foreseeable. The most common confined space encountered is a manhole connected to a live sewer. All such manholes encountered on this site will be treated as confined spaces. - Prior to entering any existing manhole, gas monitoring equipment (which will be kept on-site at all times) will be used to determine whether it is safe to do so. - The gas monitor will be in use all the time operatives are inside any existing manholes or excavations where it is reasonably foreseeable that the confined space procedures may be necessary. This can be determined by site investigation reports, olfactory smell or visual contaminants or recommended as a precautionary measure by geotechnical consultants. NOTE: This will be a specific requirement to address a foreseen risk, for example the presence of PAHs. In that case, a gas monitor would have to be specifically calibrated to detect a marker for PAHs, benzo-A-pyrene. The gas monitors used on site will be calibrated to methane/ carbon monoxide and hydrogen sulphide (dual toxic)/ oxygen 19%-23%/ /hydrogen sulphide and carbon dioxide. TPHs/ PAHs can be discovered by sight and smell. - If there is a hostile environment in the confined space, no entry will be attempted. If it is essential to enter, entry will be made by a specialist contractor using a self-contained breathing apparatus or airline. The contractor we use for specialist entry and accompaniment is ESS SafeForce - Safety harnesses and a tripod will be on-site and used by surface rescue-trained operatives when a confined space is to be entered vertically. If the confined space involves working away from a vertical access point, a harness is not acceptable, and the operative would have to be accompanied by a specialist team, or a rescue entry to bring a rescue stretcher into use would be required. - Escape B.A., good for 10 minutes, will be held at the workplace, and operatives will be harnessed while in the confined space. Extraction will be done by the topman operating the overhead winch attached to the harness. Should entry to the confined space be necessary, only the trained topman will enter using a 30-minute rescue B.A. - The tripod is suitable for manhole entry. The gantry will span excavations up to 5.0m. in width. Davit arms are suitable for fixing on shoring apparatus. When working away from vertically under the rescue apparatus, rescue will be by rescue stretcher, which requires entry by trained rescue operatives. - If a problem should arise, the emergency services are to be summoned immediately on a 999 call. If anyone has been trapped for more than 5 minutes, they will not be released until paramedics are present to deal with possible toxic shock. - Under no circumstances is anyone else to enter a manhole where an incident has occurred other than the competent person/s who has been trained to use the rescue equipment and has completed his training to work in confined spaces. - Any operative who engages in work within deep excavations or confined space entry must be trained and certificated for work in Confined Spaces, including rescue. - A 'Confined space entry permit' will be issued confirming control measures are in place for each day maximum or for each configuration of work. Any changes in support or rescue arrangements will require a new permit. The foreman will control this by issuing, discharging, revising, and ensuring the procedure applies. - There will be some confined space entry required, though most is avoidable.
17.0	Health & Safety	- All operators and personnel shall be trained and certified in functions and roles suitable to their responsibilities on the site. - Approved method statements are to be used together with site rules and restrictions to inform and advise the workforce of the manner in which the operations will be conducted. - PPE appropriate to the scheme will be issued on commencement, and the operatives and site management are to ensure the correct and continued use of it while on site. Note: Cala Homes sites have as standard requirement Boots, Hi Vis, Hard Hat and Gloves for anyone attending site. - All plant, access, and lifting equipment must be inspected prior to delivery and accompanied by the required documentation. Site checks will be performed according to the manufacturer's / supplier's recommendations. - Where appropriate, Operatives will be trained for Confined Space Work. - Works contained in or about live sewers are to be tested for the presence of gas and are to employ additional PPE of gauntlets, enclosure suits/overalls, breathing equipment and tripod/harness/winch. Gas monitoring equipment is to be used throughout such operations. - If it is not possible to Step or batter the Excavations Earthwork support is to be used in all excavations over 1.2m deep and at any other time as is deemed necessary. - Manual handling to be kept to a minimum, with nothing larger than 25 Kg without a suitable risk assessment. - Banksmen are to attend all machine excavations and lifting operations, especially all pick and carry duties, and direct site traffic as required. - Eye and ear protection is required when using powered tools. - All users of abrasive wheels must be abrasive wheel awareness trained & face-fit tested. - Site dump trucks, etc., are to be fitted with ROPS, seat belts & reversing warning indicators. - Existing site services are to be identified, located [using scanners], and protected throughout the works. They shall only be exposed by hand excavations to determine depths, etc. - Main traffic routes are to be established for bulk removal or transportation of materials. - Small tools will be kept in the storage container when not in use. The plant is to be left in-situ on site but will be secured and immobilised. All small
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	drum oils will be kept in the COSHH store. <u>Welfare Arrangements</u> The Contracts Manager and Site Foreman will check and make arrangements for all operatives to use adequate welfare facilities as laid down in the Construction (Design and Management) Regulations 2015. The Contract Manager will make sure there is sufficient provision in place for the canteen, drying/changing room, offices, and toilets. <u>Personal Protective Equipment</u> - Basic PPE for our groundworkers has been assessed to be boots, hi-vis jackets, helmets and gloves at all times. Helmet mounted ear defenders, wellington boots and eye protection are available on site depending on the task in hand. - Safety helmets EN 397 - High visibility vest/jacket EN 471 Class 2 - Safety Gloves EN 388 and see full glove selection policy - Hearing protection EN 352-1/EN 352-2 is mandatory when using breakers or working in areas where noise levels rise above 85 dB(A). - Safety glasses to EN 166-F when placing concrete. - Safety goggles to EN 166 B when cutting concrete products or steel products. - Safety boots to EN 345: S1-P - Suitable footwear when standing in concrete wellingtons to EN 345 S4 - Face shield when using air pick • Vibration procedure attached, which includes assessment nomograms for all handheld vibration emitting plant • Noise assessments are attached for all noise-emitting plant. • More specialised equipment for confined spaces, asbestos, and contaminated land will be issued as required by risk assessments from time to time and signed for in a Construction Confederation register compliant with the Construction (Design and Management) Regulations 2015. • PPE must still be worn in hot weather: Breaks from work and drinking water are essential, but where risk assessments show the need for PPE, it must be worn, or work must be halted. • Sunblock is available on all sites. • Sunglasses will be issued on sites where glare is a problem and, on all sites, where there is chalk. • Personal protective equipment is provided free of charge to our employees and will be replaced when required. <u>Bucket changing areas</u> • Suitable fencing and signage will be erected in close proximity to excavator working areas where buckets will require changing. The designated areas will move to minimise transit but will remain of the same standard even for short-duration work. • The smallest changing area must consist of 3 heras fencing panels and a half-height barrier along the face so all 4 sides are enclosed; the requirement for the half-height barrier is to prevent 10t & below excavators from damaging any hydraulic hoses on the underside of the boom or the fencing panel. • NOTE: all our quick hitches are fully automatic. <u>Noise Monitoring</u> The following working practices will be employed to reduce noise throughout construction activity on site: • Where practicable, position the plant away from site boundaries, particularly on sites with neighbours within close vicinity. • Make use of stockpiles as noise shields • Arrange delivery times on site to suit the area. • Use all silencing equipment available and keep panels closed on all generators and compressors. • Switch off noisy equipment when not needed. • Arrange traffic routes for the mobile plant so the amount of reversing required is minimised, reducing the use of reverse warning beepers. • If there is doubt as to noise levels or complaints, we will deploy a Class 1 noise level meter for operations. Environmental noise measurement has been done by a specialist. There is no Sec.60/61 in place. • Observe restrictions on working hours: No plant operating before 8:00 am <u>Dust Monitoring</u> • Routine visual monitoring will be undertaken for dust at all operational areas at the site. In the event that significant visual dust is observed at the boundaries of the operational areas, action will be taken to suppress the dust. We won't wait for the dust but will also respond if it is seen in between regular preventive road cleaning and dust suppression by water from a bowser. The most useful stipulation, if we have bulk shifting of waste on haul roads, is that the exhausts vent upwards and not down at the road. If haul roads were tarmacked, this would massively reduce the problem. This action would comprise applying water to waste stockpiles, roads, and waste treatment activities as appropriate. Site operatives and the Site Manager will inspect the site daily. <u>Refuelling Area</u> • The fuel tank will be double skinned banded (110% of capacity) and placed in the designated refuelling area. The refuelling area will be Heras Fenced, marked out with visible signage, and the fuel tank will be positioned upon 150mm/ type 1 sitting on a sheet of Tarpaulin. During the fuelling process, a drip tray will be positioned under the connection point to ensure that any drips of diesel are caught in the tray. The same process applies to filling petrol tools/cans, etc. If the hose has been contained within the secondary bund and submersed in diesel, the hose itself must be located within the drip tray; take the lid off if necessary. A spill kit and nappy sacks will be there for any emergency. • A fire point with 2no. CO2 extinguishers will be placed close to the refuelling area and appropriately signed. <u>Storage of tools & materials</u> • Small tools will be kept in the storage container when not in use. Plant is to be left in-situ on site but will be secured and immobilised. All small drum oils are to be kept in the CoSHH store.
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- Materials that are on pallets will not be stacked more than two pallets high.
- Lightweight materials such as cellcore, cordek, and polystyrene panels used for floors will be weighted down.
- **Interface with other trades**
- Coordinating work with other trades.
- From the arrival of other trades on site, work will be coordinated by our Site foreman.
- Our work will be segregated from other trades.
- Excavations will be guarded to prevent unauthorised access. We will not undermine scaffolding at later stages of the job and will not work underneath scaffolding. Our machinery has flashing hazard lights, and all reversing will be kept to a minimum.
- Note that flashing lights interfere with laser levels. Manufacturers have found no way around this problem. So, lights should be switched off when the laser level is in use, but only in the area our site engineer defines as where interference could occur. This is not a blanket excuse for the whole site.

Housekeeping

- Materials will only be stored in designated areas. Work areas will be cleared of waste as soon as practical, including materials surplus to a task. If this does not happen in a timely fashion, the working area will become constricted, and separation will become difficult. If we leave behind waste or surplus materials, this makes distancing difficult for others. We should require this of other trades before we enter a new work area.
- Any waste materials to be disposed of in the appropriate skip.
- Waste from disposal bins around the site, including in offices, must be removed on a regular basis during the day.
- Clear access at all times must be maintained should the emergency services be required.

Reporting of Accidents

- Any accidents whatsoever arising out of or in connection with the site works on or off the Site which cause personal injury or property damage shall be reported to the OHSEQ department immediately, in writing, giving full details and statements of witnesses. In the event of a reportable accident the Health & Safety Executive shall be informed and an F2508 submitted.
- All accidents are to be recorded in the Accident Book and reported to the Client.
- All near misses will be reported to the Client.
- If CPR is required, then the following guidelines have been extracted from the latest Resuscitation Council UK Statement on COVID-19 in relation to CPR and resuscitation:
- Because of the heightened awareness of the possibility that the victim may have COVID-19, Resuscitation Council UK offers this advice:
- Recognise cardiac arrest by looking for the absence of signs of life and the absence of normal breathing. Do not listen or feel for breathing by placing your ear and cheek close to the patient's mouth. If you are in any doubt about confirming cardiac arrest, the default position is to start chest compressions until help arrives.
- Make sure an ambulance is on its way.
- If there is a perceived risk of infection, rescuers should place a cloth/towel over the victim's mouth and nose and attempt compression-only CPR and early defibrillation until the ambulance (or advanced care team) arrives. Put hands together in the middle of the chest and push hard and fast.
- Early use of a defibrillator significantly increases the person's chances of survival and does not increase the risk of infection.
- If the rescuer has access to personal protective equipment (PPE) (e.g. face mask, disposable gloves, eye protection), these should be worn.

How to do CPR on an adult

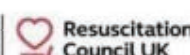
COVID-19 update

1. If someone is unconscious and not breathing normally, do not put your face near to theirs
2. Call for an ambulance
3. Use a towel or piece of clothing and lay it over the mouth and nose
4. Do not do mouth to mouth
5. Start chest compressions to the tempo of "Staying Alive"
6. Use a Public Access Defibrillator if available.



Source: Resuscitation Council UK

Find out how St John are supporting the NHS with the COVID-19 outbreak at sja.org.uk/COVID-19





		- Any accidents whatsoever arising out of or in connection with the site works on or off the Site which cause personal injury or property damage shall be reported to the OHSEQ department immediately, in writing, giving full details and statements of witnesses. In the event of a reportable accident the Health & Safety Executive shall be informed and an F2508 submitted. - All accidents are to be recorded in the Accident Book and reported to the Client. - All near misses will be reported to the Client /Principal Contractor. - Trained First Aider Mihai Mereuta will be responsible for all treatment to operatives on site. - First Aid equipment and facilities shall be available in the Houlihan & Co site office H&Co First Aider will make entries in the Accident Book if the IP does not want to and agrees to the entry.
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18.0	Discovery Strategy <u>Contamination</u>	Unexpected soil conditions may still be encountered during construction. Every ground worker will receive TBT/asbestos Awareness training before starting work on-site. Examples may include oily pockets within the soil, pockets of cement boarding or fibrous materials within the soil, black ashy materials, soils exhibiting strong odours, brightly coloured materials and former structures or brickwork. Should previously undiscovered contamination be encountered during construction, this should be reported to the Site Manager immediately in order that any necessary inspection may be made. A watching brief approach is to be adopted during the various phases of the site's development such that in the event of suspicious conditions or materials being encountered, the Environmental Consultant can attend the site to inspect the 'discovery'. Records should be kept, and samples submitted for analysis where conditions encountered are not as anticipated. The results of any such testing should be sent to the Local Authority for consultation. Depending on the type, nature and extent of any such 'discovery', it may be necessary to halt works in that location until such time as the assessment has been completed. This should be reviewed on a 'discovery' specific basis and in conjunction with regulatory consultation. As a general guide, where such unexpected conditions are encountered, the following approach is recommended: - All discoveries are to be reported to the Site Manager immediately, and works at that location are to halt until further notice. - The area should be cordoned off using an appropriate barrier system. - The Site Manager is to report any such discoveries to the Client and the Environmental Consultant: - RSK - Following notification from the Site Manager, the Environmental Consultant shall discuss the discovery with the Local Authority and, if necessary, arrange to meet an Officer on site to view it. - The Environmental Consultant shall attend the site to record the location, extent and nature of the discovery and implement an appropriate sampling and analysis regime, taking due account of the type and nature of the discovery, known and probable land uses in that area of the site. - Where remedial action is required, regulatory consultation and approval will be sought. - The environmental consultant will produce a record and hold it on site (with copies held by the Environmental Consultant, Client, and Local Authority) detailing the discovery, assessment works undertaken, findings, confirmation either of no action required or detailing the remedial action taken and validation thereof. The process is shown below. <pre> graph TD Discovery[Discovery] --> Reported[Reported to Site Manager] Reported --> ECNotified[Environmental Consultant notified] ECNotified --> Regulators[Regulators notified] ECNotified --> ECAttends[Environmental Consultant attends site to assess and investigate] Regulators --> ECAttends ECAttends --> SafeContinue{Safe to continue?} SafeContinue -- Y --> ContinueWorks[Continue works] SafeContinue -- N --> DetermineAction[Determine remedial action] DetermineAction --> RegulatoryApproved[Regulatory approved] RegulatoryApproved --> Remediate[Remediate] Remediate --> ContinueWorks </pre>
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	<u>Waste Disposal</u>	Duty of Care As the persons undertaking construction work and specifying a particular waste disposal carrier and receiver, Houlihan & Co. have a duty of care under the Environmental Protection Act 1990. We must and will take all reasonable measures: - To prevent any contravention by another person of the legal requirements associated with depositing, treating or keeping controlled waste or its transport. - To prevent the escape of waste from our control or that of any other person. On the transfer of waste, ensure that the transfer is only to an authorised person and that there is a written description of the controlled waste, which will enable other persons to understand clearly the nature of the waste and comply with the duty to prevent its escape. (An authorised person is a waste collection authority or the holder of a waste management licence.) Keeping Waste Safely To comply with our duty of care, we must ensure that the waste is not affected by: - Corrosion or wear of waste containers. - Accidental spillage or leakage. - Accidents or weather breaking contained waste open and allowing its escape. - Waste blowing away or falling whilst stored or transported. - Scavenging of waste by vandals, thieves, children, trespassers or animals. The site perimeter will be secured and signed. Stockpile areas will be clearly delineated and set on an impervious membrane. Dust will be controlled by damping down or covering. Transferring Waste Waste can only be transferred to an authorised person. The Waste (England and Wales) Regulations 2011 detail the transfer note arrangements. The note must be completed by a responsible person from the company producing the waste, not by the carrier. The responsible person will consider whether the waste will require a special container to prevent its escape (e.g. a closed skip for asbestos) or if the waste can be mixed safely with other waste. Part of the duty of care obligation is that checks are carried out before waste is transferred. Tip licences in particular must be carefully checked to ensure that the tip can receive the type of material being sent. Carriers' original registration certificates, not photocopies, must be carefully inspected. A Waste Transfer Note (WTN) must be completed and signed by both the person handing over the waste and the person receiving it. It must contain enough information about the waste for it to be handled safely and either recovered or disposed of legally. The WTN must include: - a description of the waste - any processes the waste has been through - how the waste is contained or packaged - the quantity of the waste - the place, date and time of transfer - the name and address of both parties - details of the permit, licence or exemption of the person receiving the waste - the appropriate European Waste Catalogue (EWC) code for the waste - a declaration that you have applied the waste management hierarchy has been applied - the 2007 Standard Industrial Classification (SIC) code of the person transferring the waste - the producer is most able to describe their waste accurately. Using non-specific terms such as 'general waste' is unacceptable. - separate paperwork must be completed for hazardous waste.
19.0	<u>Silt Management & Dewatering</u>	- There are no existing streams or ditches entering the site. Surface water management has been provided by the Client, Cala Homes. Measures on Enabling Phase and Preparatory Earthworks. - Stripping topsoil must be done in stages to maintain as much vegetation cover across the site as possible. - Retention of vegetation as far as reasonably practicable along south-western boundaries to promote infiltration of any surface water and silt run-off. - Haul road will be topped with a tarmac running course, easy to clean with a road sweeper. - A jet wash and cattle grid will be installed at the site's exit to clean the wheels of vehicles leaving the site. - The designated car park will be topped with stone and be maintained mud-free. Additional Measures During Construction Phase - Temporary infiltration ditches will be installed at three different locations, as shown in Drawing "SA00409-3551-C-SW-GA Surface Water Management Plan." The good infiltration rate will prevent any flooding outside the ditches, both inside and outside of the site. - The ditches will be installed before the start of the construction works, after the demolition and site clearance. They will be approximately 500mm deep, 1m wide and with 1 in 4 side slopes. - Haybale and silt matting are going to be installed inside the ditches at approximately 25m spacing for water cleaning purposes. - Haybale and matting will be changed monthly. - The placement of gulley protection (specially designed gulley guards or standard protection - straw and terram) in all gullies during construction, which are to be inspected and replaced/cleaned when necessary. - Minimising the movement of the plant on and off roads to prevent the tracking of excess soil onto roads and highways. - The installation of hardstanding areas to the front of all plots to enable 'clean' forklift access.



		- The placement of hardstanding or topsoil at the earliest opportunity to control surface runoff from completed areas. - Avoid tracking on permeable paving areas once installed and otherwise maintaining paving areas. Monitoring Procedures and Records - Inspection of infiltration ditches, silt traps and manholes to monitor the discharge entering the drainage system and the sensitive receptors around all site boundaries. - Maintenance, cleaning and replacement of haybales, silt matting, and Terram as required. - Completing the Environment Checklist (Site Audit form) weekly will help document any changes on site and identify any changes needed to the protection systems as the development progresses. - The Site-Specific Environmental Action Plan (SSEAP) will be reviewed using the Environmental Checklist and updated when necessary to reflect site conditions and operations changes. - All records will be reviewed monthly. In the event of heavy rainfall breaching protective measures, Cala Homes Environmental Department must be contacted separately from the Health and Safety Department of Houlihan & Co. Dewatering - When excavations need dewatering, pumping from a sump pit will be prioritised over pumping to a vegetated area away from sensitive receptors to allow infiltration to the ground. - All pumping operations will be agreed upon with local site management, who will gain approval from the Contracts Manager. The SHE Advisor will be notified of pumping intentions. - All dewatering should utilise a 2" pump and be through a Dirtbag onto an area of gravel or straw bales at an approved designated vegetated sacrificial area located away from sensitive receptors. If pumping near any drainage ditch or surface water receptor, silt fencing will be placed down a topographic gradient. - If over-pumping into the surface water system (including use of a completed attenuation basin as collection areas) is proposed, ensure any necessary permits and adequate protection measures (potentially comprising, but not limited to, use of filter bags or a settlement tank) are in place to prevent discharge of silt into the surface water drainage system. The implemented measures should be frequently monitored and maintained to prevent the discharge of silt into the drainage system. The placement of silt matting at the discharge point within the attenuation basin may limit erosion of the banks.
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20.0	COSHH	COSHH Register: refer to the OHSEQ notice board in the site office: - AdBlue - Asphalt Materials - Bituthene Primer - Bituthene Adhesive Primer - Butane - Calor - Cement – packaged - Cement colouring – Sealotone - Diesel - JCB Grease - JCB Hydraulic Fluid - Engine Oil - Marking Paint – Powerline - Mortar Plasticiser – Sealocrete - Petrol - Pipe Joint Lubricant – Hepworth/ Osma - Sika block paving seal - Silica - Weedkiller Doff - Wet Concrete - White spirit
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21.0	Immediate Emergency Procedures	- In case of an accident, Phone 999 and ask for the Emergency Services. - Shut Down all the Plant and Cordon off the Area. - Inform the Main Contractor Site Manager. - Contact Alban Shehu at 07584 809221 - In case of Fire, follow Signage and meet at the Assembly point near the front gate:
	Author:	Alban Shehu

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Contract: Cala Homes, Thorpe Lea Road, Egham.			OPERATION: (Site Specific) Groundworks.			RE-ASSESS: At least every 3mths or following an incident or change in working equipment or processes					
ORIGINATED BY: A.Selita			DATE: 21/03/2026			APPROVED BY: Tom Keyes					
Risk Rating: Severity (S) & Likelihood (L) as 1 (low), 2, or 3 (high), multiplied to give Overall Rating (R) 1 (low) to 9 (high) for priority actions											
A=Operative; B=Others on Site including client's staff; C=Public											
Hazard	People at Risk			Risk Rating			Control Measures		Residual Risk Rating		
	A	B	C	S	L	R	STANDARD PPE TO BE WORN ON SITE (HI-VIZ, SAFETY FOOTWEAR, HEAD PROTECTION). ADDITIONAL/ALTERNATIVE PPE TO BE WORN WHEN REQUIRED BY RISK ASSESSMENT	S	L	R	
Oil, fuel spills.	Y	Y	Y	3	2	6	Spillage of oil, fuels. - Steel double-skinned bunded (110% of tank's capacity) tank set up in the refuelling area. The refuelling area will be Heras fenced, and the fuel tank will be positioned upon 150mm/ Type 1 sitting on a sheet of Tarpaulin. The refuelling area will be allocated to a secure location on site away from the Network Rail zone of influence. - Environmental procedure for spills and hydraulic hose bursts. - Preventive maintenance of machines. - Daily pre-operation inspection checks are carried out & recorded weekly as a minimum. - Check lifting eye prior to lifting. - Lifting eye to have compatible shackle. - Plant "happy" under compressor. - Newest compressors are internally bunded.	3	1	3	
All works Leptospirosis	Y	Y	N	2	3	6	- The likelihood of rats and, hence, leptospirosis has been made clear to all operatives at their company induction. - The main defence against the disease is personal hygiene, including not smoking on site. - The HSE information leaflet has been used in toolbox talks and is issued to operatives - Prevent/discourage rats from coming onto the site. - Ensure adequate pest control provisions are in place around site and welfare facilities. - Do not leave scraps of food lying around to attract them. - Ensure a waterproof plaster covers cuts, grazes, and open wounds. - Wear waterproof gloves and clothing when working in wet conditions. - Wash your hands and arms thoroughly before eating, drinking and smoking. - Report any ill health to your Supervisor or Manager. - If you start to suffer from what seems like flu but have reason to believe that it may be leptospirosis see your doctor as a matter of urgency. Inform your GP of your occupation. - The internal/external refuse storage area is regularly cleaned and monitored. - All waste bins were kept in a clean condition and emptied on a frequent basis. - Non-toxic monitoring bait devices are used for pest control within the food preparation and food storage areas. - Visual checks carried out by employees and detailed records are maintained when evidence of pest activity has been found initiating any follow-up action.	2	1	2	

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Delivering, unloading, and reloading vehicles on-site Mechanical failure; road traffic incident; contact with pedestrians' others.	Y	Y	N	3	3	6	- Only trained and competent site staff to complete tasks. Staff to follow prescribed safe systems of work detailed under the sub-heading "Plant and vehicle preparation and delivery" of this document. - If at any point, the safe systems of work detailed in this document are deemed insufficient, work is to stop, a risk assessment shall be completed and new safe systems of work developed and implemented. - All deliveries are to be undertaken on-site within a controlled offloading pre-planned area, not in the public domain.	3	1	3
Vehicle movements Vehicles, including mobile plants, may come into contact with workers, other plants/vehicles, or property, resulting in potentially serious injury to persons and/or damage to plants/property.	Y	Y	N	3	3	9	- All site personnel will be made aware of the requirements of the Principal Contractor's traffic management arrangements at the site induction and updated whenever necessary. - Vehicle banksman are to be suitably trained. - Suitable safety signs will be displayed on site instructing drivers not to use mobile phones, not to reverse without a banksman and to stop if they cannot see the banksman. - The use of mobile phones is not permitted within the processing area. - All persons on site, including lorry drivers outside of their cabs, are to wear the PPE required by site rules, including a high-visibility vest or coat. - All vehicles must travel at a safe speed for the conditions below the site speed limit, which is displayed on site – within the processing area, the speed limit is 5mph. - Access routes on site will be formed with a safe incline, and bunds or barriers will be provided to prevent vehicles from falling into excavations or off-ramps.	3	1	3
Operating Plant and Equipment Contact between plant and operatives resulting in possible serious injury. Plant overturning resulting in injury to the operator or other persons Failure of lifting equipment resulting in persons being struck by falling loads/equipment	Y	Y	N	3	3	9	- Establish a clear work area and cordon off if necessary to prevent pedestrian / unauthorised access. Site management to determine the need for fencing/barriers to ensure operatives not involved in the task do not enter the works area. - Operatives must never stand under an excavator bucket or a suspended load. - Only authorised competent people to operate the plant. - All plant operators to hold valid qualifications for the category of plant they operate. - All machinery to be inspected before use and, where required, to have valid thorough examination certificates. - Operators are required to complete and record daily pre-use inspections. The operator must ensure that any defects/damage are reported to H&Co's Site Manager before operating the plant. - All mobile plant to have flashing beacons and 360-degree vision ability. Loading shovels to have a reversing audible warning system. - Plant to travel at a safe speed for the conditions and always within the site speed limit. - Keys are to be removed from the plant not in use and safely secured at the end of the shift. - Plant is only to be used for the purpose that it is intended and in conditions it is intended for. - Plant must be banked in areas where pedestrians are present. - Access routes on site will be formed with a safe incline, and bunds or barriers will be provided to prevent any mobile plant from falling into excavations or off ramps.	3	1	3
Lifting with site excavators Falling Loads, Trapping fingers, Load swing causing injury, Falls from height, Crushing	Y	Y	N	3	3	9	Staff to follow prescribed safe systems of work detailed under the sub-heading "Lifting with excavators" of this document. - Loads to be slung by competent operatives. - Banksman: Ensure that no lifts are taken over the adjacent work area and that all loads are correctly slung. - Basic task lifts only to be undertaken without the approval of the company's appointed person. - Intermediate & complex tasks require a specific lift plan. - No lifting above-populated areas. - No lifting with a bucket attached.	3	1	3

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							- Prior to the instruction to lift the slinger signaller to stand clear of the load - Keep the load as low as possible and use guide ropes on 2 corners where necessary - All delivery vehicles to have edge protection fitted. If delivery vehicles have no edge protection - TURN THE LORRY AWAY. - All excavator drivers are to hold current CPCS cards, being operated - Excavators to be thoroughly examined at 12 monthly intervals. - All excavators are to have a daily inspection (F91) to be carried out and recorded by the machine operator - All accessories are to be checked prior to use by the slinger signaller. All accessories are to have 6 monthly thorough inspections. Slinger signaller to ensure lifting accessories have sufficient SWL - IF IN DOUBT CONSULT H&Cos APPOINTED PERSON – Alban Shehu: 07584809221	3	1	3
Quick Hitch devices Operatives being crushed by falling buckets, possibly fatal or very serious injury.	Y	Y	N	3	2	6	- Identify the type of quick hitch on each excavator and ensure you know if it requires pins to be fitted. Test that the bucket is correctly attached. (IE Shake, rattle and roll) - The machine will be checked regularly. Faults must be reported to the site manager immediately, and the machine will be stood down until repaired. - Where required pins must be fitted after changing the buckets; this is the driver's responsibility, not the nearest operative. Operatives are <u>not</u> to stand underneath buckets at any time.	3	1	3
Work potentially generating dust- vehicle movements on site Inhalation of silica, asbestos, and other respirable airborne contaminants, environmental nuisance	Y	Y	Y	3	2	6	- Speed restricted to 5mph. - Lorries to be specified on hire as having upward-directed exhausts. - PC to control forklift movements. - Hard top to roads, haul roads where practicable. - Road cleaning. - Drop distances from bucket into lorry or dumper skip to be minimised. - Traffic marshal to explain routes on site. - Any concrete and tarmac cutting will be carried out using a water-suppression pressurised bottle. - Water bowser will be used when it is required (especially in the summertime)	3	1	3
Work potentially generating dust- the bulk movement of materials Inhalation of silica, environmental nuisance	Y	Y	Y	3	2	6	- Scrape by a blade instead of digging and dumper transfer. - Avoid double handling whenever possible. - Cover loads in motion & static spoils on site. - Limit drop distances to a minimum. - Continuous micro spray as new surfaces are exposed to spoil heaps in dry weather. - Use a larger plant to minimise the number of movements. - Retain vegetation until removed just in time. - Road cleaning on and off-site.	3	1	3
Machine operations Maintenance work on plant- greasing, hydraulic oil leaks, pressurising tracks Oil, and fuel spills.	Y	Y	N	3	2	6	- Re-fuelling area - Environmental procedure for spills and hydraulic hose bursts. - Fluids under pressure, whether toxic or not, carry the risk of serious harm if injected. - Minor entry wound bellies harm caused as fluid blocks veins or arteries. - No fault should be traced without Kevlar gloves; only Houlihan issue grease guns should be used. - Fitters to adjust excavator tracks unless the driver has had training. - Preventive maintenance of machines. - Daily pre-operation inspection checks are carried out & recorded weekly as a minimum.	3	1	3

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Compressor operations Oil, fuel spills.	Y	Y	N	2	2	4	- Re-fuelling area. - Environmental procedure for spills and hydraulic hose bursts. - Preventive maintenance of machines. - Daily pre-operation inspection checks are carried out & recorded weekly as a minimum. - Check lifting eye prior to lifting. - Whip check fitting attached at hose inlet. - Lifting eye to have compatible shackles. - Plant "happy" under compressor. - Newest compressors are internally banded.	2	1	2
Use of vibrating plant Hand Arm Vibration	Y	N	N	3	2	6	- Plant is selected for low vibration characteristics, and a full assessment has been carried out for tasks where vibration exposure is expected. - The intention is not to expose any operative to even the lower action value. - Drilling and vibrating concrete works of short duration. - Tools should be used for their designated purpose. - All operations have been timed for trigger times, and manufacturers' information regarding vibration has been checked against OPERC emission test results. - As the trigger time is critical, this will be periodically checked by timing actual operations - monitoring sheets for the site supervisor in the vibration pack. - HSE nomogram for each item of plant. - In addition, equipment will be tested using an accelerometer to monitor vibration levels and trigger time (exposure) by process: the results will inform purchasing policy and decision-making regarding continuous safe use. - The plant department will contact the supplier to ensure that they are aware of any engineering control measures that can be installed to minimise vibration levels. - Any damaged equipment must be taken out of use and reported. - All work equipment must have appropriate guards in place. If guards are missing, the item may not be used. - Our vibration assessments will be on site. We do not keep registers, because it involves recording trigger time and is usually not done properly. Our assessments are based on operations which have been timed - as trigger times - by observing operations and collecting the seconds of use as against the ancillary work where there is no vibration. We do not accept it is a good idea to record harm rather than avoiding it.	3	1	3
Use of plant emitting noise Noise Induced Hearing Loss	Y	Y	N	3	2	6	- Plant has been selected for low noise rating. Ear defenders and ear plugs are available to the workforce. Where the noise at the workplace reaches 80dBA ear protection will be worn as company policy. - It is not expected that anyone will be exposed to noise of 90dBA or over, but where the level exceeds 85dBA ear protection must be worn and we will try to reduce the noise dose by reduction at source. - All noisy areas display mandatory 'Ear Protection' signs. - Site monitoring by process and site-specific operations if necessary. - Acoustic blankets deployed at the site boundary and/ or locally to the source depending on ongoing monitoring and site-specific requirements. - Plant department to maintain contact with suppliers to ensure that they're aware of any engineering control measures that can be installed to minimise noise levels. - Any damaged equipment must be taken out of use and reported. - All work equipment must have appropriate guards in place. If guards are missing, the item may not be used. - Wherever possible, noise is combated at the source by enclosures and engineering controls. Acoustic enclosures and engineering controls	3	1	3

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								are regularly inspected to ensure they achieve the designed noise reduction. Access to noisy areas is restricted to only those persons having to enter the zone, thereby reducing the number of persons exposed by distance.			
Cutting concrete – Kerbs, slabs and other PCC items. Inhalation of respirable silica, strike by flying fragments. Vibration.	Y	Y	N	3	3	9		- Kerbs cut in an area excluding the public and other operatives, physical screening positioned to protect other workers and passers-by. - A battery-operated water dust suppression or pressurised bottle unit must be used on disc cutters (on diamond-tipped blades only). - Correct blade used on disc cutters. - Filter masks to P3 standard worn (personal issue, disposable, fit-tested). - Sihl disc cutters selected for low vibration. - Task will not require trigger time over lower action levels. Nomogram for specific work equipment on site. - COSHH assessment in place. - Abrasive wheel training must be provided to all abrasive wheel users. - Eye protection to BS EN166:1995 1. B will be worn	3	1	3
Cutting Steel Strike by flying fragments, Vibration	Y	Y	N	3	2	6		- Steel will be cut on-site in a cordoned-off section on site clear of any fire hazards, with the correct PPE being worn. - Ensure refuelling areas containing flammable substances are at least 20.0m away. - Task will not require trigger time over lower action levels. - Nomogram for specific work equipment on site. - Hot works permit to be in place - Fire extinguishers to be at the work face - Operatives to wear safety goggles - Operatives to wear ear defenders - Fire watchman to be present at all times when cutting	3	1	3
Placing concrete -backing kerbs, slabs, strip footings Contact with wet concrete causing chemical burns, irritant or contact dermatitis	Y	N	N	2	2	4		- Concrete delivered ready mixed to avoid site mixing where practicable. - The chutes from RM lorries will be opened out and directed by the driver ONLY. - Mix for backing kerbs will be dry to prevent slump, and this will minimise the possibility of splash. - Placing by hand from dumper skip. PPE will include nitrile gloves and clothing to cover up arms and legs. - Standing in concrete to be avoided if possible. - Use of vibrating poker limited where possible and selected for low vibration. - COSHH assessment in place	2	1	2
Lifting and placing kerbs/slabs Injury to back from manual handling of standard HB2 pre-cast concrete kerbs	Y	N	N	3	3	9		- HB2 kerbs weigh 67kg; substitution of lighter kerbs is only possible if permitted in the specification. - A wheelbarrow for lifting kerbs will be used: the push force will be only 5kg after the kerb is levered off the ground by pressing down on the handle. - Easy lifter replaces the need to use the machines in constricted space and with passing traffic. - Transit carried out safely by Probst kerb Caddy. Refer to the full Houlihan & Co slab/kerb laying manual handling assessment	3	1	3
Confined spaces in manholes Asphyxiation, Poisoning from toxic gases, injuries from exploding or igniting gases, Infection from contaminated water, e.g. Wells disease, Drowning, Back injuries from	Y	N	N	3	3	9		- Wherever possible consider doing the work from outside the space - A Permit to Work system should be in operation. - A detailed assessment of the task has been carried out: - Available ventilation - The potential for hazardous gases/atmosphere to be present - Hygiene/welfare requirements.	3	1	3

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falls or collisions with structures/ fittings in the working area.							- The local rescue services have been informed of the work and where necessary, advice or inspection has been sought. (High risk operations). - Suitable detection equipment is on-site and used prior to each entry and continually during the presence of people in confined spaces. - Emergency breathing apparatus and harnesses are readily available on site. - Precautions for the use of plant and equipment or heavier-than-air gases are established. - Flood potential and isolation have been checked. - Emergency procedures are fully developed and have been adequately rehearsed. - Workers must be physically fit and competent to enter and undertake work in confined spaces - Effective communication should be established between workers in the confined space and those outside the area - The atmosphere of the confined space should be monitored for the presence of and levels of gases and must always be tested before entry. - If dangerous fumes are present, suitable breathing apparatus should be worn, and the person entering the confined space should wear a safety rope, one of each end is held by the person keeping watch outside - Equipment which may release excess oxygen or engines which omit carbon monoxide gas should not be used in confined spaces - Smoking, naked lights, sparking tools and ant nylon material should be prohibited - If working in contact with contaminated water, e.g. in sewers, workers must be inoculated against serious disease. Any skin cuts should be covered - Washing facilities should be available to encourage good hygiene - Trenches deeper than 4.5m should be treated as confined spaces. - Manholes to be vented for 30 minutes before entering. - Gas monitor to be placed in manhole 30 minutes before entering. - Confined space work permit to be obtained before entering. - Operatives to be briefed on an escape plan. - Operatives to be trained for confined space working. - Topman to be present at all times. - Rescue harness and tripod to be used. - Escape kit to be used where necessary. - Benching should be carried out with the cover slab removed to allow air entry.	3	1	3
Working with live sewers/Sewer diversions Gastroenteritis, Wells disease, Infection of the skin or eyes; and/or occupational asthma, resulting in attacks of breathlessness, chest tightness and wheezing produced by the inhalation of living or dead organisms	Y	N	N	3	3	9	All the above items are covered in Confined spaces in manholes - Overpumping is to be carried out where operatives need to enter a live sewer. - Ensure that employees and line management understand the risks through proper instruction, training and supervision - Waterproof gloves and overalls to be worn at all times - Gas monitors to be in place - Good personal hygiene - Flow to be diverted where possible. - Management to ensure a good standard of welfare is kept on site prior to any live sewerage works taking place.	3	1	3
All work in area- live services Contact with live service resulting in burns from flashover or electric shock. Toxic or flammable gases from damaged sewer pipe. Damaged	Y	Y	N	3	3	9	- A Permit to dig will be completed and authorised by the client site team. Works must be undertaken as per H&Co's safe digging procedure. "works on/near underground services". - Operatives are to receive full TBT relating to site services provided by the services coordinator prior to starting work. - Cable and metal location equipment must be duly calibrated and in good working order. Operatives appointed will be trained on how to locate services using the EzSystem & safe digging techniques as set out in the H&Co works/on near underground services procedure.	3	1	3

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or severed pipes leading to leakage of substances, resulting in potential flood, gas leak, explosion or fire Contact with severed fibre optic cables	Y	Y	N	3	3	9			(Note: Lighting columns may be dormant during the day, so the generator should be used to trace cables). • Utility plans from network operators must be reviewed in conjunction with a visual survey to be carried out for any service covers nearby that may indicate buried services in the trench line. • Located services will be identified, i.e. gas, electricity, etc, and indicated clearly by the survey operative using marker paint on the ground, with depth estimations if possible. • Operatives will now wear flame resistant clothing (a Nomex material by J.Ross) for all close proximity work to any exposed cable. (Note: The clothing can be used in layers to reduce the heat burden of wearing it, but as UKPN have not provided an arc flash risk assessment giving us a calorific value to inform clothing selection, we will assume the worst-case scenario and wear the highest level of protection). • An air pick must accompany every excavation on/near underground services to loosen up fill material, and insulated tools must be used to remove loose material only. Forced digging must be avoided if ground conditions permit. • No mechanical digging within 1m of a known service. • All workers will practise safe digging practices when hand digging in the proximity of an underground service. For example, an air pick must always be the first tool of choice to loosen up backfill material, spades/shovels should be used, not picks or power tools, and horizontal digging should be used to locate the exact position of a cable to avoid fracturing it. • All exposed services must be supported. • It should be assumed that all services are "Live" until proven otherwise. • If a service is struck cease work immediately and report to site management. • The quality of backfill is important for future site users. If a main has to be exposed for service connections- only granular material should be used. No cohesive soil and marker tape is essential. Engineers should record sufficient data before backfilling for the PAS256 recording.			
Work near overhead lines Contact with live conductor, arcing	Y	Y	N	3	3	9			Control measures set out in GS6. • A site visit from the DNO required establishing sag and swing and advice on safety clearance- (GS6 survey). • Routes to transit are set out with goalposts at entry and exit and sideways barriers to delineate the width of access. • Working underneath will require notification to DNO, grant of permission, probably with conditions, and limiters/ chaining back of booms, etc. or use of a small plant, in either case, to prevent absolute reach of the plant into space above clearance limit.	3	1	3
Presence of contaminated ground Chemical injury, skin irritants, burns, blindness, death	Y	N	N	2	2	4			• Ground conditions must be established by a survey to identify the type of ground in which the excavation is to be carried out • Contaminants will be removed by a remediation contractor and validation/clearance report must be issued to us from the client. • Discovery procedure in place for reporting unusual conditions not previously discovered in surveys, e.g. unusual smells, bright coloured layers in the ground	2	1	2
Constructing walls from the foundation level using bricks or blocks & raising brickwork on manholes leads to Manual handling issues, Slip and trip hazards from an untidy working area Repeated contact with mortar. Collapse of brickwork/blockwork Contact with sharp edges Concrete mixers with faulty or missing guards. Silicosis.	Y	N	N	2	2	4			• Small bags of cement (25kg) should be used to minimise the risk of back injuries, etc • Management should arrange for the safe delivery of materials to the work area • As a result of the COSSH assessment, all operatives should be informed of the hazards of dermatitis and the control measures required to avoid contact with mortar and good personal hygiene • The operative knocking-up mortar MUST wear a P3 mask and eye protection when using the mixer • Washing facilities should be available on-site to ensure good personal hygiene • Mechanical or electrical cement mixers should be inspected for faults before use • Safe working platforms should not be required for substructure blockwork; if required, consult with the H&S department. • Foundations must always be stripped to TOC level prior to the bricklayer's arrival • Where practicable, lifting aids are provided to reduce/remove the need for manual handling.	2	1	2

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									- Lightweight blocks are specified where possible. - COSHH data sheets are readily available on-site and displayed on the OHSEQ site noticeboard - Manual handling assessments are readily available on-site. - Work is halted/curtailed in inclement weather. - Suitable and sufficient dust control measures are provided and used. - Bricklayers' foreman should ensure bricks/blocks stacked close to the working area are on a level base and stacked to a safe working height where they cannot topple over – this should minimise bending, carrying, stretching and twisting activities, all of which can generate back injuries. - Concrete blocks to be cut with a block splitter or hammer and bolster to minimise the use of airborne dust. Eye protection must be worn when cutting/breaking blocks manually.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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General - Manual Handling Strained/pulled muscles, abrasions, cuts, foot injuries, back strain, Slip/trips/falls	Y	Y	N	3	2	6	- Assess the task; use appropriate lifting equipment/lifting accessories for the activity. Always use mechanical lifting aids where necessary. - Assess the weight of the load: avoid lifting heavy loads of more than 20kg. - Break the load down into smaller, lighter parts. - Plan the work to avoid excessive carrying. - Change the layout of the work if possible. - Ensure work areas are clean and tidy, free from tripping and slipping hazards. - Check individual capabilities of those carrying out manual handling operations. - The weight of the load is checked before any lifting commences. - Mechanical equipment such as forklift trucks, pallet trucks, trolleys, and sack barrows is used to reduce employees' handling injuries. - Ensure a clear working area for general distribution and installation. - Environmental conditions, including unobstructed walkways, no tripping hazards, adequate lighting etc.	3	1	3
Concrete operations. Vibration, Concrete penetration of eyes, nose or ears due to an uncontrolled surge during cleaning operations or clearing of blockages, Exposure burns to skin	Y	N	N	2	2	4	- PPE & washing facilities should be provided. - Regular toolbox talk training must be provided RE PPE, burn injuries, dermatitis, etc. - Appropriate personal protective equipment (PPE) should be worn - Coveralls to be worn whilst concreting – there should be no exposed skin. - The accumulation of concrete spillage should be prevented. - Glasses to be worn whilst concreting. - Walking boards' are to be in place prior to slab/beams/ crane base pour commencing for safe passage of concrete workers. - Concrete Poker can be used no more than 3hr that is the Daily Exposure Action Value (EAV). (Daily Exposure Limit Value ELV is reached over 12 hours)	2	1	2
Steel fixing, shuttering & general site duties Stepping on tied-steel wire, Cuts to hands from Stanley knife & various site materials, Trapping fingers, Sprained ankles,	Y	N	N	2	2	4	- Exclusion zones to be erected by physical barriers prior to works commencing. Banks manage to enforce exclusion zones. - Steel toe cap boots to have mid sole protection. - NO loose correx to be left 'laying' and especially unweighted. - All loose tie wire to be cleaned & collected by the site fixers as they progress to new work fronts. - Automatic retractable blades only to be used for cutting materials IE correx for shuttering. - Suitable gloves MUST be worn; however - Gloves will not completely protect your hands, but if you do receive a cut, it may not be quite so bad. - NO walking on ground beams or any other RC cages without walking boards. - Glasses high-impact goggles to be worn at all times whilst cutting site materials. Task specific. - Minimum FFP3 dust masks to be worn whilst cutting site timber/ply. - Minimum FFP3 dust masks to be worn whilst cutting any concrete objects, including kerbs & slabs. - Electronic water attachment to be in place on the cut of saws whilst cutting concrete surfaces, including kerbs & slabs. - Cutting station to be fenced off and ear protection to be worn at all times. - A Hot Permit must be obtained prior to any cutting taking place.	2	1	2
Setting out with instruments / surveying with cobrasi/rods Slips/trips / falls, Service strikes, cobra/rod striking operative.	Y	Y	N	2	2	4	- Read and understand setting out and service drawings prior to setting out. - Pins and stakes are only to be installed when no services are present. The site engineer must review the stat plans and CAT survey the area. If services are remotely likely, PinSafe setting out instruments MUST be used. - Cat scanning of the area to take place prior to excavation. - Line marker paint to be stored in the COSHH storage area. - Empty line marker paints to be disposed of in the empty line marker paint can in the general waste bin – ONLY IF EMPTY.	2	1	2

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									- Stripping topsoil must be done in stages to maintain as much vegetation cover across the site as possible. - Retention of vegetation as far as reasonably practicable along western and south-western boundaries to promote infiltration of any surface water and silt run-off. - Temporary infiltration ditches will be installed at three different locations, as shown in Drawing "SA00409-3551-C-SW-GA Surface Water Management Plan." The good infiltration rate will prevent any flooding outside the ditches, both inside and outside of the site. - The ditches will be installed before the start of the construction works, after the demolition and site clearance. They will be approximately 500mm deep, 1m wide and with 1 in 4 side slopes. - Haybale and silt matting are going to be installed inside the ditches at approximately 25m spacing for water cleaning purposes. - Haybale and matting will be changed monthly. - The placement of gulley protection (specially designed gulley guards or standard protection - straw and terram) in all gullies during construction, which are to be inspected and replaced/cleaned when necessary. - Minimising the movement of the plant on and off roads to prevent the tracking of excess soil onto roads and highways. - The installation of hardstanding areas to the front of all plots to enable 'clean' forklift access. - The placement of hardstanding or topsoil at the earliest opportunity to control surface runoff from completed areas. - Avoid tracking on permeable paving areas once installed and otherwise maintaining paving areas. - aul road preferably be topped with tarmac, easy to clean with a road sweeper. - A jet wash will be installed at the site's exit to clean the wheels of vehicles leaving the site. - The designated car park will be topped with stone and be maintained mud-free.			
H&Co's Contracts Manager and Site Manager to ensure suitable first aid arrangements are available on-site at all times & compliance with the above document.												

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B 23.0 HAND ARM VIBRATION & DECIBEL LEVEL REFERENCE CHART						
	Equipment/Plant	m/s ²	Time to reach EAV 2.5m/s ² (Daily Exposure Action Value)	Time to reach EVL 5m/s ² (Daily Exposure Limit Value)	Sound levels	HSE Points (per 15/60 mins)
	Hilti DD130	2.2m/s ²	10hr 20mins	24hr mins	80dB(A)	2.2/10
	Hilti TE 1000	6.5m/s ²	1hr 11mins	4hr 44mins	87dB(A)	21 / 85
	Hilti TE 700 AVR	6.6m/s ²	1hr 09mins	4hr 35mins	86dB(A)	22 / 87
	Hilti AG230-S	8.7m/s ²	3hr 08mins	12hr 34mins	89dB(A)	8 / 32
	Atlas Copco 09 PE (Ver)	3.8ms ²	3hr 28mins	13hr 51mins		7 / 29
	SK12 Med Breaker	4.2m/s ²	2hr 55mins	10hr mins	108dB(A)	25/100
	Atlas Copco 230 PE	4.2m/s ²	2hr 50mins	11hr 20mins		9 / 35
	Tex 150PE Breaker	4.5m/s ²	2hr 28mins	9hr 53mins	90dB(A)	10 / 41
	Atlas Copco LT5005	6.4m/s	1hr 13mins	4hr 53mins	106dB(A)	20 / 82
	Vibrating Poker	4m/s ²	3hr 08mins	12hr 30mins	85dB(A)	8 / 32
	Wacker Plate Belle 320-574mmx320mm	2.42m/s	8hr 32 mins	>24hr	101dB(A)	3 / 12
	Wacker Plate13/40Belle 720mmx400mm	3.20m/s	4hr 53 mins	19hr 32 mins	105dB(a)	5 / 20
	Wacker Plate Belle 320-720mmx320mm	4.43m/s	2hr 33 mins	10hr 11 mins	105dB(A)	10 / 39
	MBW Plate Compactor GBX Series 3550	4.5m/s	2hr 28mins	9hr 53mins		
	Plate compactor	5.18m/s ²	1hr 52mins	7hr 27mins	93dB(A)	13.4/54

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	LF75 Vibration Plate	6m/s ²	1hr 23mins	5hr 33mins		18/72
	Wacker Plate Bomag/1845	7.3m/s	0hr 56min	3hr 45mins	89dB(A)	27 / 107
	Skill saw 5903R	3.0m/s ²	5hr 33mins	22hr 13mins	95dB(A)	4.5/18
	Airsaw Toki 9"	3.6m/s	3hr 51min	15hr 26 min	82Db(A)	35
	Petrol Saw Stihl/TS410	3.9m/s	3hr 17 mins	13hr 9 mins	98dB(A)	8 / 30
	Petrol Saw Stihl/TS420	3.9m/s	3hr 17 mins	13hr 9mins	98Db(A)	8 / 30
	Petrol Saw Stihl/TS800	Left/6.5 Right3.9m/s			116dB(A)	
	Cut-off Saw Stihls	3.90m/s ²	3hr 17mins	13hr 09mins	98dB(A)	7.5/30
	Bosch Angle Grinder GWS 7-115	6.5m/s	1hr 11 mins	4hr 44 mins	91dB(A)	
	Hilti DD130	2.2m/s ²	10hr 20mins	24hr mins	80dB(A)	2.2/10
	Hilti TE 800 AVR	9m/s ²	3hr 0mins	12hr 0mins	87dB(A)	8/32
	Stirrer Drill / Paddle Mixer	3.5m/s ²	4hr 5mins	16hr 20min	87dB(A)	6 / 25
	Ausa 3t Dumper	m/s ²	hr mins	hr mins	101dB(A)	
	Thwaites 9t FTD	m/s ²	hr mins	hr mins	103dB(A)	
	Takeuchi 1.5t	m/s ²	hr mins	hr mins	93dB(A)	
	JCB 4.5t	m/s ²	hr mins	hr mins	94dB(A)	70(dBA) cab
	JCB 13t	m/s ²	hr mins	hr mins	101dB(A)	70(dBA) cab
	Doosan 14t	m/s ²	hr mins	hr mins	101dB(A)	70(dBA) cab
	Doosan 22.5t	m/s ²	hr mins	hr mins	105dB(A)	70(dBA) cab

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	JCB 22t	m/s ²	hr mins	hr mins	105dB(A)	70(dBA) cab
	Bomag 135 AD	2.5m/s	8hr	>24hr	106dB(A)	
	Rammax	Remote control	hr mins	hr mins	109dB(A)	
	Bosch Angle Grinder GWS 7-115	6.5m/s	1hr 11 mins	4hr 44 mins	91dB(A)	
	Pramac 10KVA	m/s ²	hr mins	hr mins	70dB(A)	@ 7 mts
	Soil-Mech 4 piling rig	m/s ²	hr mins	hr mins	103dB(A)	
	SP11 screed pump	m/s ²	hr mins	hr mins	79dB(A)	

[illegible]

RISK ASSESSMENT_25 – Construction Work in Public Highways

Hazard	Consequences	Who is at Risk?	Risk Score			Control Measures	Residual Risk Score	
			S	L	Score		S	L Score
Working in Live Carriageway (Highway) Vehicle strike operative Vehicle strike plant Plant strike vehicle Vehicle strikes members of the public	Death or Major Injury Damage to plant, vehicles, and property.	Employees, Members of Public Pedestrians Drivers Untrained personnel	5	4	20	- Traffic management must be planned at an early stage, seeking approval from the local authority, and this could be either under S278, S50 or S184. - Signs and Chapter 8 barriers were hired in from a specialist contractor complying with the Safety at Street works CoP. - TM initially placed by a specialist contractor from a correctly equipped lorry as per TM approval. - All advance warning signs are used as per the TMP. - All advance warning signs are clean, suitably weighted and clearly visible. - All advance warning signs are placed so as not to obstruct vehicular traffic. - A minimum 450mm gap is maintained between the traffic and each advance warning sign. - Introduction of speed restriction measures. - All operations carried out are done with the operatives facing the oncoming traffic. - Using 750mm size signs on all single carriageways to minimise the width of the obstruction. - All vehicles are fully compliant for road use. - Selection of a plant with minimum tail swing to be used. - Ensuring all flashing lights are working and being used. - Supervisors and operatives must be either qualified to the relevant NRSWA or working towards the qualification. - Use of Class 3 high-visibility clothing compliant with BS EN 471. - Ensure longitudinal and lateral safety zones have been installed correctly as per the carriageway speed limit. - Do not carry out any maintenance in the safety zones.	5	1 5
Working around members of the public Plant strikes public Vehicle strikes members of the public. Failure of the plant Misuse of the plant	Death or major injury	Members of Public Especially at risk Children Pedestrian with disabilities Pedestrians accompanying children.	5	4		- School/hush hours will be avoided, and work will be scheduled for school holidays and weekends if possible. - Ensuring TM equipment is not obstructing access/exit points to properties, maintaining access for emergency services. - Safe pedestrian access is provided with minimum deviation from the normal route. - Ensuring an absolute minimum width of 1.2 m is maintained at all times on footways. - Ensuring all signs used for pedestrians are clean and clear. - Use verge and/or road for sign placement. - Use pedestrian barriers to clearly identify the temporary walkways. - Use ramps to aid access and egress. Ramps must be fixed to the ground. - Install a temporary pedestrian crossing near the works to eliminate unauthorised crossings. - Any excavation left open out of working hours must be secured with Heras fencing. - The plant will be banked across the pedestrian crossing. - Whenever it is safe and possible, the TM will be brought in and set up the following day to minimise the disruption and eliminate the hazards caused by TM.	5	1 5
Slips, Trips and Falls Poor Housekeeping standards	Fractures and Sprains as a result of falling.	Employees, Members of Public	3	4	12	- Always maintain the working zone in good order. - Do not store excess materials within the TM zone. - Road will be kept clear of mud or debris. - All areas accessible to members of the public are to be maintained at all times; no materials or tools are to be left in public areas or safety zones. - Any damage caused to any footpaths and highways must be reported, and any remedial action must be carried out without delay. - Traffic management will be checked every day and at end of shift and left secure.	3	1 3

Hazard	Consequences	Who is at Risk?	Risk Score			Control Measures	Residual Risk Score		
			S	L	Score		S	L	Score
Falls from heights from delivery vehicles. Falls of materials from delivery vehicles	Fractures, Sprains and other serious injuries as a result of falling from a delivery vehicle during loading	Employees Members of Public	4	4	16	- All flatbed delivery to be provided with edge protection. - Edge protection to be installed prior to any operative gaining access to the back of delivery vehicles to commence offloading. - Lorry loader to be used to access the back of delivery vehicles at all times. - Operatives must not climb into dumper skips to offload materials. - Loads to be inspected before releasing restraint straps upon arrival at the site. - Follow a safe system of work for the release of all load restraints.	5	1	5
Manual Handling Effects of lifting, movement of materials	Musculoskeletal injuries	Employees	3	3	9	- All operatives to follow all control measures outlined within the RA Manual Handling - Always use mechanical means of lifting if available for unloading and movement of materials. - Obtain load weights and centre of gravity before materials are moved manually. - When assessing a lift to be carried out manually, supervisors and managers should consider T.I.L.E before completing an individual assessment - All operatives to recognise their capabilities and only lift weights that they are comfortable with.	3	1	3
Planning and gathering information for identifying the hazards	Problems identified: - Provision for a compound and welfare unit. - Selecting a designated safe storage area for plant and materials. - Selecting a safe access route from the storage area to the work area. - Selecting a refuelling area. Hierarchy of control measures followed: - Avoidance of the need to work on the highway by design. - Avoid the need for open-cut trenching with trenchless technology. - Pedestrian access is unaffected if possible, and a safe direction is on the same side of the road as the first choice. - Work scheduled at least during less busy times. Further Guidance on these works is contained in the following: Provision and Use of Work Equipment Regulations 1998, and ACOP Construction (Design and Management) Regulations 2015 New Roads and Street Works Act, 1991 Traffic Signs Regulations and General Directions, 2002 Street Works (Qualifications of Supervisors and Operatives) Regulations 1992 Highways Act 1980 Traffic Management Act 2005. Company Procedures applicable: Safe use of excavators. Excavation Safe use of dumpers Work near underground services Confined space working.								

Risk Matrix Calculation

SEVERITY RATING	
Index	Description
1	No injury, damage, sickness or loss (with no time off)
2	Minor injury or illness, minor damage or loss (and/or up to 7 days off)
3	Reportable injuries or illness, substantial damage or loss (or over 7 days off)
4	Major injury, long-term absence.
5	Fatality, catastrophic damage or loss (death)

Likelihood Rating	
Index	Description
1	Very Unlikely
2	Unlikely
3	Likely
4	Very likely
5	Certain
Definition	
Less than once every 10 years	
Once in every 5 – 10 years	
Once in every 2 – 5 years	
Once in every 2 years	
More than once per year	

L I K E L I H O O D		1	2	3	4	5
1		1	2	3	4	5
2		2	4	6	8	10
3		3	6	9	12	15
4		4	8	12	16	20
5		5	10	15	20	25
		1	2	3	4	5
		SEVERITY				

The following shading indicates the level of risk.	
Very High	16 – 25
High	11 - 15
Medium	6 - 10
Low	1 – 5