



**KNIGHTS BROWN
CONSTRUCTION LTD.**



Original Newport Rd. / River Rhymney works within watercourse

**NEWPORT ROAD EXISTING SHEET PILE ANCHORAGE STRENGTHENING AND RIVER RHYMNEY
PROTECTION**

METHODOLOGY AND FRAP STATEMENT

T4963-MS01

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METHOD STATEMENT**

Revision:
A

Contract No.:	T4963
Site:	Newport Road / River Rhymney Rock Anchor Installation through sheet piles
Report Ref.:	MS01
Task / Activity:	Temporary Works to Allow for Installation and use of Rock Anchor Piling Rig & Waler Beam installation by Operatives.

	Prepared By:	Reviewed By:	Approved By:
Name:	Neil Ingram		Gary Money
Position:	Site Manager		Framework Manager
Signature:			
Date:	12.09.2022		

Record of Amendments to Method Statement:

Revision:	Date:	Details of Amendment:	Amended By:

Note: Following amendment the method statement shall be re-briefed with a record maintained.



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1.0 Scope of Works

The proposed works to be undertaken at Newport Road are to provide a long-term stability and strength solution to the existing sheet piles located along the River Rhymney bank. It was found during construction works for new apartments that the existing sheet piles were moving and upon further investigation it was found that the original tie rods / rock anchors supporting the sheets piles were either severely corroded or snapped and therefore were failing. Site & works location provided in Figure 1 below.

New, Double Corrosion Protected Bolts (DCP) will be drilled into the ground and fixed into existing bedrock to approx. 25m on the landside of the sheet piles and then fixed at the outside face of the sheet piles via a waling beam positioned on the outer face of the sheet piles prior to grouting, tensioning and testing.

The preferred option is to use a suitable Piling method to which can be achieved from the landside of the sheets piles thus minimising loading onto the existing sheet piles.

This method statement includes the following items:

- Installation of temporary works to allow access to waling beam
- Installation of temporary works to allow for suitable access for piling rig;
- Pile installation and grouting activities;
- Maintenance of temporary works;
- Removal of all temporary works.

See WPS Drg: 70077288-001 – Rev. P01 for details.

Construction methods for the installation of the Piles will be provided within a separate and specific method statement.

2.0 Program of Works

Commence mobilisation to site – 14th November 2022

Duration of time on site (inc. removal of temporary works) – 15 weeks Minimum

Projected completion date – 1st December 2023

No works on site will be undertaken within 1 hour of dawn and dusk.

Works will be undertaken during daylight hours and no lighting will be used overnight.

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3.0 Location of Works

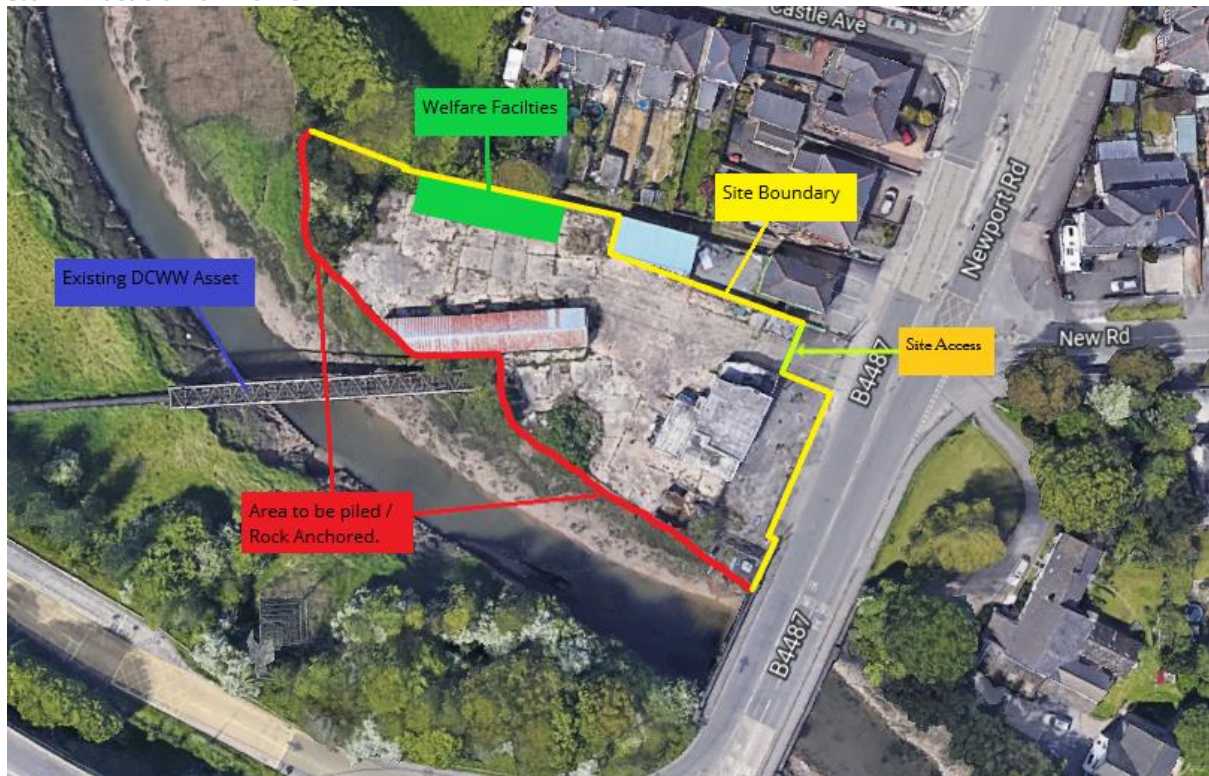


Figure 1: Overview of Site Location at Newport Road and Access to Site.

Ref: <https://osmaps.ordnancesurvey.co.uk/> 51°30'5"N 3°8'22"W

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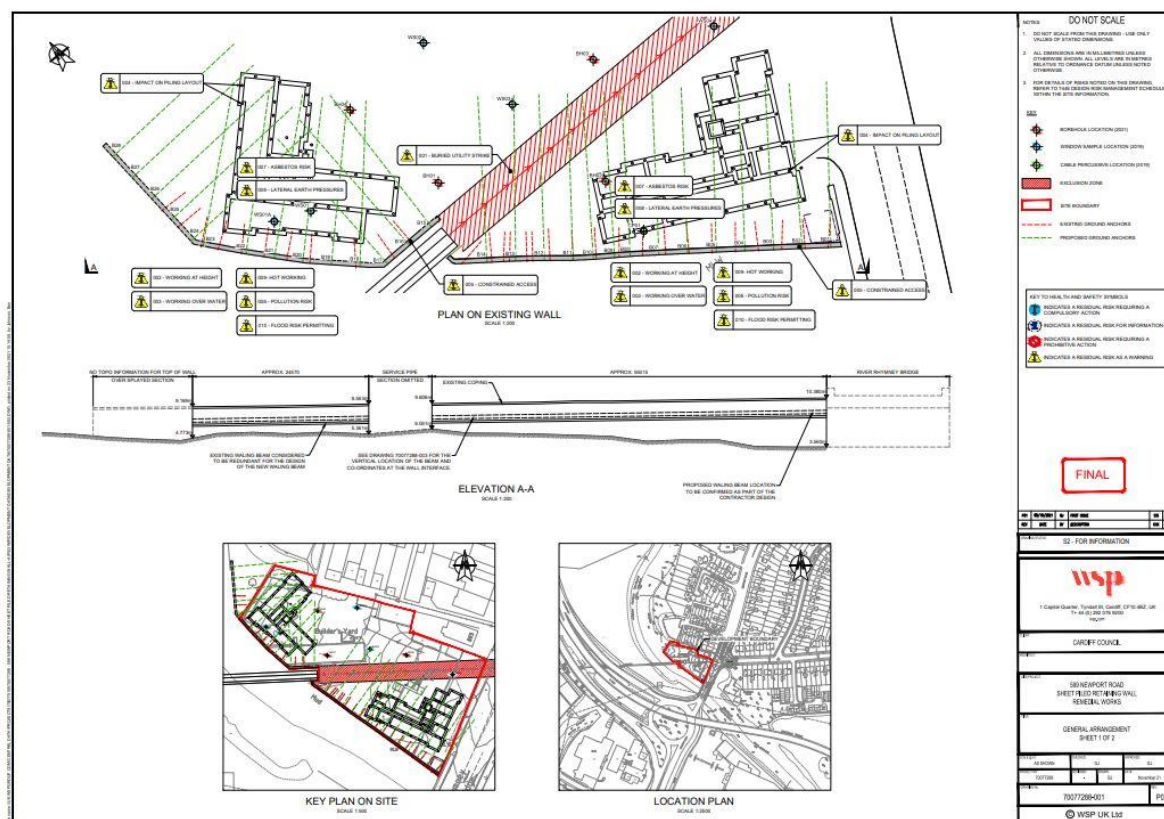


Figure 2: Design Drawing of Piled Area through existing sheet piles and into bedrock *Ref: WPS Drg: 70077288-001 – Rev. P01*



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4.0 River Monitoring

Where temporary works require access to the watercourse and as this area is tidal, the river levels will be monitored to ensure works can be carried out safely. Additionally, the weather conditions in nearby catchment areas will be monitored to limit the risk of sudden changes in river level during works.

The Temporary Works and Waling Beam installation and the Piling Operation itself have potential to produce silt within the watercourse, as such it is proposed that works are undertaken with a start-stop procedure in place to manage and limit the silt entering the river. Grouting works of the installed piles also has the potential to spill cementitious grout. To prevent any material entering the watercourse a suitable catchment area will be constructed around grouting points to prevent runoff. Furthermore, all grouting activities will be carried out from the land side of sheet piles thus minimising any possible spill to the riverbank.

To ensure that the works can always continue Knights Brown will ensure that there are extra/backup sediment controls on site if for any reason the supply we are using is damaged or mislaid at any time.

The existing sheet piles will assist in keeping any silt from entering the river.

All monitoring of the river throughout the works will be completed by Neil Ingram (KB Site Manager) or nominated KB engineer on site. The river will be observed on a min hourly basis when in river works are being progressed, this observation will be carried out at the B4487 river crossing bridge adjacent to the works location. If any silt discolouration is detected as passing this point works will be instructed to temporarily stop for a period of 30mins before recommencing. This process will continue in 1 hour periods of work and 30mins stopped until the phase of works has been completed. All efforts will be made to ensure that silt disturbed by the works will be minimised through good working practices.

Site pictures will be recorded to monitor the river quality at regular intervals.



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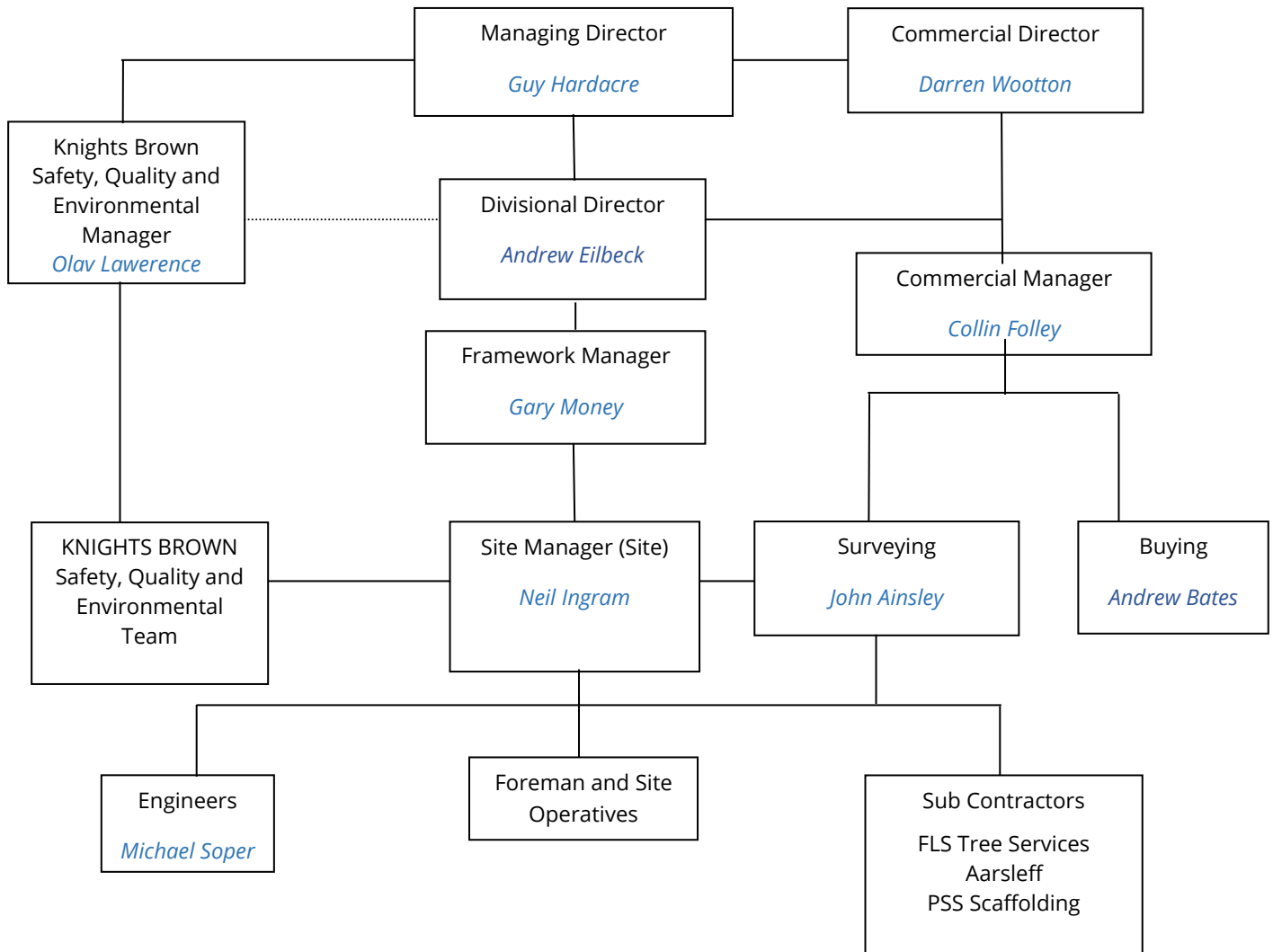
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5.0 Supervisory & Monitoring Arrangements

Who will be supervising the task. While undertaking the task who will be undertaking monitoring or checks.

Knights Brown Representatives:			
Divisional Director	Andrew Eilbeck	07795 250 286	andrew.eilbeck@knightsbrown.co.uk
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Framework Manager	Gary Money	07979 535 683	gary.money@knightsbrown.co.uk
Site Manager	Neil Ingram	07866 688 928	Neil.ingram@knightsbrown.co.uk
Site Engineer	Michael Soper	07792 893 044	Michael.soper@knightsbrown.co.uk
Safety Advisor	Olav Lawrence	07733 367 862	olav.lawrence@knightsbrown.co.uk





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6.0 Schedule of Plant to be Used

List the plant & equipment required to undertake the task.

- 36t 360° Excavator with a mast
- 13T telehandler
- Forward Tipping Dumper to move materials around the compound
- 8T excavator to move materials around the compound
- 4/10 Mixer
- 6T Dumper



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7.0 Sequence of Works

General Works Description:

Installation of DCP bolts to provide anchorage and support for existing sheet piles, replacing the existing and failing rock anchors. This will provide a long-term solution to protect both the river Rhymney and any foundations for new apartments / housing that will be built on site post DCP bolt installation.

The DCP bolts are to be installed from the landside of the existing sheet piles, terminating and fixed at the outside face of the sheet piles via a waling beam which will provide strength and stability to the existing sheets piles. The bolts will ideally be in 3m sections which are driven into the ground. The drill rig is then retracted leaving the first section of bolt in place. From here the next section of bolt is screwed onto the head of the first 3m section and again driven into the ground. This process is repeated until the required / design depth is achieved.

See WPS Drg: 70077288-001 – Rev. P01

Detailed Procedure:

Site Access & Establishment of Site Compound

As shown in Figure 1 above, there is a gated entry point off the B4487 road which runs right next to the site. Figure 1 also shows that there is a site compound already setup on site on the Northern boundary which we have been given permission to use for the duration of the works. These include welfare facilities, site office and a secure store, and a secure bunded fuel bowser will be installed prior to works commencing on site. Security of the site compound will be provided via CCTV monitoring as currently setup by the landowner along with Heras perimeter fencing, KnightsBrown hoarding to the site frontage and also via the existing site block wall boundary. Electricity for the site compound will be provided a mains hook-up which again is already installed.

The two buildings shown on Fig.1 have been demolished and crushed with all material left on site. This will be moved to a suitable location on site to allow for safe and secure material and plant storage during the construction phase.

At the North and Western boundary of the site there is a need to remove dense vegetation to allow access to the existing sheet piles. Ecologists will be employed to check the area for any animals, land based or aquatic in nature, and to include trees for nesting birds and bats. Once they have checked the areas in question and given their approval to do so, a suitably qualified arborist / tree feller will be allowed to clear the area of trees and vegetation.

Storage of all materials will be set away from the watercourse in a secure area of the compound.

The piling working area will be on the landside of the existing sheets piles and at times, due to tides, may be within proximity to the watercourse. It is envisaged that due to the drilling and grouting work mitigation methods will be employed to minimise the risk of contaminants (surface water) entering the river. The main methods being the drilling points will be self-contained, i.e., they will be carried out from a pit dug into the existing backfill behind the sheets piles and any contaminated material removed from the pit once drilling is complete. Also, grouting will be monitored by the operative carrying out this task in order to shut off pumps prior to any spillage. The Site Manager will perform extra monitoring of the river water throughout



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each work task especially the grouting phase, and so the risk of any surface water contaminating the river will be minimal.

All plant will be rigorously checked for fuel, lubricating oil and hydraulic fluid leaks prior to site delivery. Bio-degradable hydraulic fluid will be used in all plant and all plant is to be steam cleaned prior to delivery. A bunded refuelling area will be set up over 10m away from the watercourse and any spilt fuel, lubricating oil or hydraulic fluid shall be immediately contained and removed from site.

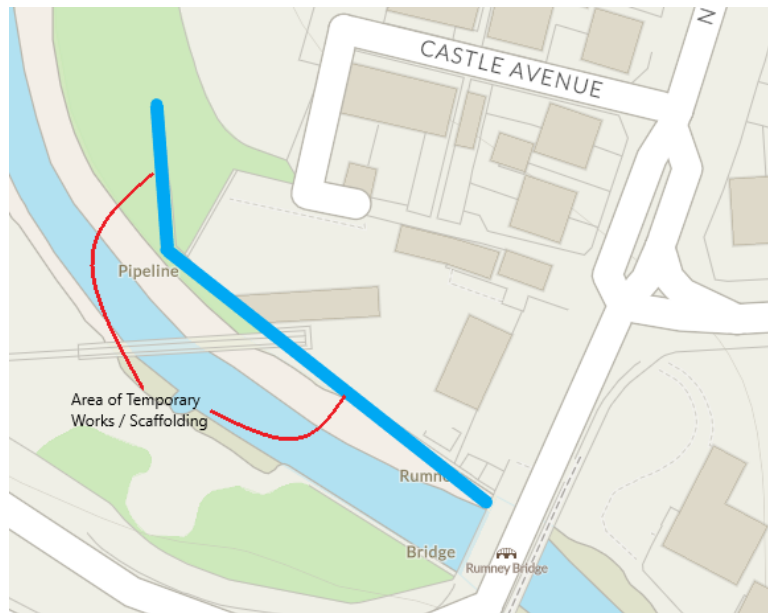
The welfare facilities will be provided by the anti-vandal welfare units, already on site, these units will include toilet, canteen and drying room and site offices.

There is mains water and electricity on site, but the toilet waste tank will be emptied weekly by a licensed contractor. The cabins and fuel storage area will be monitored out of working hours by remotely monitored CCTV static units, located at the site compound.

Space on site is of a premium and so staff parking will be within the compound at a designated location (TBC) and as the site access is quite narrow this will be always kept clear to ease material delivery within the compound.

Figure 3 : Location of Temporary Works / Scaffolding Structure

Ref: [https://osmaps.ordnancesurvey.co.uk/ 51°30'5"N, 3°8'24"W](https://osmaps.ordnancesurvey.co.uk/ 51°30'5)



The temporary scaffolding is to be constructed on the seaward side of the sheet piles, at the approximate location shown in Figure 3 above. This will allow access for operatives to work at the sheet pile / Waler Beam face safely. A cherry picker MEWP with long jib will be used to lower a welder and equipment over to the seaward side of the sheets piles where steel lugs will be welded onto the seaward face of the sheet piles at designated points (to be positioned by Scaffold designers - TAD), and these will provide the structural support to carry all the scaffold elements above. It is not envisaged that there will be any access to the river bed.

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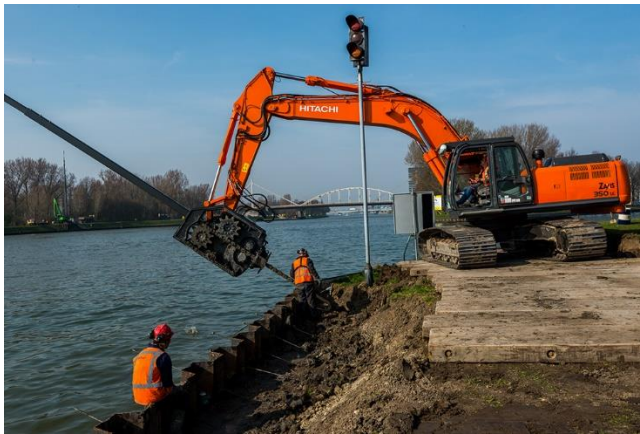
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8.0 Methodology of drilling and fixing rock anchors into place.

A typical rock anchor piling installation method has been provided, referenced from Aarsleff Ground Engineering.

Fig.4 : Indicative installation setup for rock anchors.



Installation of Rock Bolt.

Fig.4 shows the typical setup for the installation equipment to be used on site. A 35t excavator with drill rig attached (*see fig. 5 also*) will be installing the rock bolt from the landside of the sheet piles.

Fig.5: 35t excavator with typical drill rig attached

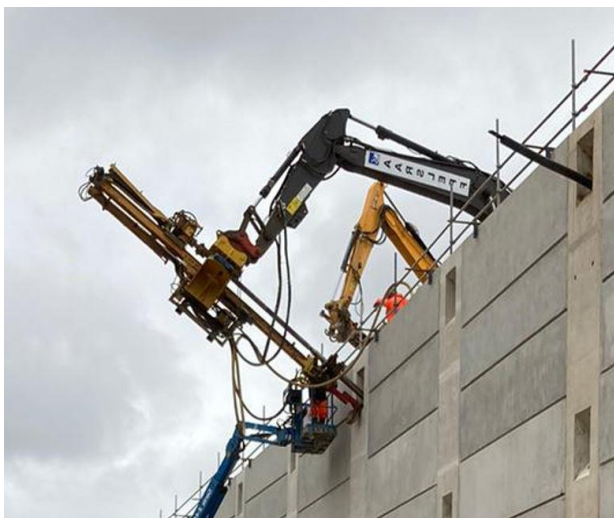


Fig.6 : Indicative drilling and loading of bolt sections



Storage, transporting and loading bolts

Bolt sections will be stored on site away from the immediate working area and a second smaller excavator or telehandler will be used to transport the bolt sections and load them into the drill rig as shown in *Fig.6 & 7*.

A banksman is to be present at all times.

Fig.7 : Loading Rig Head



Driving and Installing Anchor Bolts

Fig.8 : First bolt section being driven



Sequence 1

With the piling rig in position, each bolt section will be lifted and loaded onto the pile rig head. The Aarsleff foreman will ensure they are positioned correctly into the rig head. Each bolt section will then be driven into the ground up to its hilt (*see Fig. 8*). The piling rig head will be retracted, and the next bolt section loaded into the rig head. The foreman will again ensure that the new section of bolt is securely attached to the

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already driven bolt section. This in turn is then driven into the ground up to its hilt. The

Fig.9 : Full bolt section in place



above process for adding sections of bolt will be repeated until the full bolt length is at the required depth within bedrock (*see Fig. 9*).

Fig 10. : Grouting the driven bolts



Sequence 2

Once each bolt is in position and at its correct depth a pumped hose will be attached to the bolt head which will incorporate an attachment to allow high pressure grouting of the driven pile (*see Fig. 10*). Grouting will be closely monitored to minimise the chance of overspill, until the driven bolt hole is completely full. Records of quantities used kept as a reference. Any spillages will be contained within the work area and removed to a safe location prior to moving to the next bolt location.

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***Fig. 11 : Waler support beam with bolts through slot,
plates and nuts affixed***



Sequence 3

When grouting operations are complete a waler beam will be placed against the outside face of the sheet piles allowing the driven bolts to pass through either pre-drilled holes or a slot in the waler beam (see Fig. 11). Holding plates will be installed over the bolts and securing nuts attached. These will be tightened to the correct torque settings and monitored. Re-tightening will be carried out if necessary, until all work is complete.

9.0 Reinstatement

Fig. : 12 – Backfilling and reinstatement



Sequence 4

Once all bolts have been successfully installed the site will be reinstated with all excavations back filled. Fig. 12 shows indicatively backfilling up to original ground level. No bolts will be left above ground level. The site will be left in such a condition as to allow the developer of the land to continue their endeavours

10.0 Obstructions Within Underlying Strata

Should a boulder / obstruction be identified during the piling process, the only feasible option available would be:

- Excavation of obstruction – Where hard bounders are found within the piling zone an excavation may be required to remove the obstruction.



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Due to the nature of the site ground makeup and riverbank and river bed makeup, i.e. silty, all works on site whether they be drilling new bolts on to the landward side or scaffold placement onto sheet piles have the potential to produce silt within the watercourse, as such it is proposed that works are undertaken with a start-stop procedure in place to manage and limit the silt entering the river, as well as the use of a geofabric to intercept silt entering the watercourse.

Silt curtains will also be inserted downstream which will be monitored every day. An example of this can be seen in *fig. 13*. There will also be spare silt curtains on site as well for use where needed.



Figure 13: Silt curtains being used- for illustration purpose only

**11.0 Reference to Occupational Health Standards:
COSHH, Manual Handling, Noise Exposure**

Leptospirosis: Briefing during induction, toolbox talks and distribution of information cards.

12.0 Permits to Work

Permit to Work – Required for all works within or above the watercourse or riverbank.

Permit to dig – Required for any digging operations

13.0 Quality Controls

Inspection and monitoring regimes to be developed for the following:

- Targets inspection;
- Water level inspection:
 - Monitor catchment area weather;
 - Monitor river level at site location.
- Assess track stability and construction prior to tasks.
- Testing of bolts post tightening.

14.0 Environmental Controls

Environmental; controls are to be in place for the following:

- Re-fuelling procedure to be in place away from the watercourse where possible;
- Spill kits to be maintained at work areas and refuelling point;



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- Additional backup kits to be maintained in site compound.

All plant to utilise biodegradable hydraulic oil. Plant to be checked daily for fuel and oil leaks (this forms part of KBC's mandatory daily plant checks).

Inspection and monitoring regimes to be developed for the following:

- Targets inspection;
- Water level inspection:
 - Monitor catchment area weather;
 - Monitor river level at site location.
- Assess track stability and construction prior to tasks.

15.0 First Aid & Emergency Arrangements

Site first aid and emergency procedures to include:

- All personnel to be briefed daily on the hazards of working on or near the river;
- Self-inflating life jackets to be worn at all times when working adjacent to the river;
- Certified first aider to be present on site at all times during working hours;
- River rescue procedure required.

16.0 Control for the Safety of Third Parties

Key to establishing and maintaining safe access to the site is liaising with CCC & NRW and developing / agreeing a suitable Traffic Management scheme. This will enable a safe access via the B4487.

Heras security fencing or wooden hoarding to be erected around site compound.

Orange bunting to be erected around construction areas and tracks beyond access field.

Warning signs for river users i.e. kayakers, anglers etc to be placed on scaffolding.

17.0 Details of Temporary Services

N/A

18.0 Lifting Operations

Lift plans will be required for the following:

- Lift plan required for the waler beam install.

19.0 Waste Arrangements

List of materials with waste management plan:

- No waste from piling activities is to be removed from site.

20.0 Attachments

- RA01 – Plant Equipment (360° Excavator, Dumper Truck, Movax Rig)
- RA02 – Hand Tools (Disc Cutter)
- RA04 – Site Welfare Set Up 1
- RA07 – Excavations
- RA09 – Forward Tipping Dumpers
- RA14 – Excavators used for lifting
- RA22 – Hand Tools



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- RA26 – Diesel Storage
- RA31 – Vibration
- RA33 – Noise
- RA34 – General Operative
- RA36 – Slips & Trips
- RA40 – Work near or over water

- CA01 – Gasoil
- CA07 – Petrol
- CA10 – Aggregates
- CA25 – Marker Paint

All sub-contractors bringing hazardous substances onto site must provide a COSHH assessment.

21.0 Method Statement Briefing

Linear methodology

- Install Access track and compound
- Set up compound
- Reinstate holes dug on site to expose and survey existing rock anchors
- Install Silt curtain chicane down stream of proposed works
- Install scaffolding fixing lugs and scaffolding using MEWP
- Install warning signs to scaffolding
- Install environmental protection measures as required (silt fences and mats).
- Set out new anchor hole positions in sheet piles
- Burn new anchor holes
- Mobilise piling rig and start piling new anchor bolts to required depth through newly burned holes.
- When sufficient bolts are drilled into place the new waler beam will be positioned and bolted to the sheet pile face.
- Piling rig will continue to drill new bolts until all 25-28 are in place and the waler beam is bolted into its final position.
- All bolts will be stress tested and signed off when tests are completed successfully.
- The piling rig will be demobilised and removed from site along with all other equipment.
- The MEWP will again be used to dismantle the scaffold.
- The lugs will be left attached to the sheet piles for possible future works.
- The site will be completely demobilised of all KnightsBrown equipment, banners etc... and returned to the client.

22.0 Method Statement Briefing

The signatories confirm that this Method Statement and attached Risk Assessments / COSHH Assessments have been briefed to, understood and that the task shall be undertaken as described.

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Name (Please print clearly)	Signature:	Date:	Briefed By: (Name/Position)