1. **Introduction**

On BVL construction projects, there have been two serious accidents during the extraction of sheet piles. A failure of the extraction shackle resulted in a sheet pile falling and striking the personnel involved.

This policy applies to sheet-pile extraction work undertaken by BVL personnel and by sub-contractors on BVL-managed sites.

2. **Policy on the use of pile-extraction shackles on BVL projects**

The BVL Health and Safety Committee is committed to ensuring that the business operates in a manner that is considered to be industry-leading best practice. It has therefore decided that, with effect from **1 August 2013:**—

— Manually-operated sheet-pile extractors supplied for use on BVL projects shall be fitted with a secondary independent safety device (a safety chain) that, in the event of the failure of the other safety features (mechanically or through human intervention), will prevent the sheet pile from accidentally falling to the ground.

— Only the temporary ground-support equipment that has been designed for that particular purpose shall be used in the course of excavation work — this includes the pitching and extraction shackles.

— Personnel who use pile-extraction shackles shall use the equipment in accordance with the hirer’s or supplier’s instructions and any associated safety documentation.
Only personnel who are trained and competent in ground works shall use pile-extraction shackles and assist in the planning of the safe system of work and the preparation of risk assessments and method statements.

3. SAFE SYSTEMS OF WORK — RISK ASSESSMENTS AND METHOD STATEMENTS

When sheet piles are to be installed or extracted, a safe system of work must be developed. This will normally require the preparation of a risk assessment, a method statement and a lifting plan.

Individual risk assessments and method statements must be developed for installation and extraction activities since the hazards and risks for the two are different — it is unacceptable for a method statement for extraction simply to state ‘reverse the installation sequence’.

Personnel involved in the installation and extraction of sheet piles must be asked to assist in the preparation of the risk assessment and method statement — refer to BVL process A441.

The following aspects must be covered in either the risk assessment or the method statement:

(a) The name of the company or supplier who has designed and supplied the temporary ground-support system to be used.

(b) The safe vertical pulling load and type of sheet-pile extractor that has been specified for use.

(c) Copies of the relevant lifting test certificate for the pitching and extraction shackles — which must be subject to a six-monthly thorough examination.

(d) The inspection of the pitching and extraction shackles for evidence of damage, prior to every use.

(e) A requirement for the personnel using the equipment to be competent and to understand fully the safe use of pitching and extraction shackles including placing the extractor onto the sheet pile, fixing the locating pin, securing the shackle and securing the secondary safety device.

(f) The marking out of a lifting or lay-down area with a secure fence which is set back a minimum distance of 1.5 times the length of the longest sheet pile being extracted. If it is not practicable to fence off such an area, arrangements should be made to ensure that only those personnel directly involved in the lifting and extraction tasks are within this area. All other personnel must be excluded while pile lifting, pitching or extraction is in progress.

(g) Identification of a slinger/signaller who holds a relevant CPCS card and has been briefed on the requirements of the lifting plan.

(h) The name of the person within the work gang on site who is responsible for the installation or extraction of the sheet piles.
4. IMPLEMENTATION ARRANGEMENTS

1. Specific instructions are being sent to current equipment suppliers that extraction shackles will be required to be fitted with an appropriate safety device in accordance with this policy.

2. Sub-contract documents for sub-contractors providing their own ground-support equipment are being amended to include the BVL requirement for a secondary safety device to be fitted to manually-operated sheet-pile extractors.

3. Internal communications are being sent to BVL site managers on the requirements of this policy.

5. GUIDANCE ON THE USE OF SHEET PILE PITCHING AND EXTRACTION SHACKLES

This equipment must only be used by personnel who have been trained and are competent in groundworks.

5.1 Pitching shackle

Pitching shackles are specifically designed for the handling of sheet piles during the installation sequence. A pitching shackle must:

— only be used for the installation of sheet piles and in conjunction with the temporary works equipment supplied;

AND must never be used as an extraction shackle — they are not designed to withstand the loads exerted when removing sheet piles from the ground.

The pitching shackle allows sheet piles to be lifted vertically from a flat stack into a vertical position before lifting and lowering them into a driving frame or a gate ready for driving with a pile hammer.

The pitching shackle has a spring-loaded locking pin mechanism which is designed to ensure the handling pin is fully locked until the mechanism is manually activated by pulling a rope attached to the lever arm vertically downwards to disengage the pin.

The main advantage of this system is that the shackle can be safely released from the sheet pile from ground level.

When using a pitching shackle:

DO familiarise yourself how the shackle works. Before first use, inspect and then test the locking mechanism and other mechanical moving parts while they are at ground level. Re-inspect the shackle before each use thereafter. If any faults or damage are found report them and do not use that equipment.

DO connect a length of rope that is long enough to allow the locking lever to be released from ground level.
DO establish (by fencing, where possible) a lifting zone at least 1.5 times the length of the longest sheet pile. Ensure that only those personnel directly involved in undertaking the work are within this area when lifting and pitching operations are in active progress.

DO ensure that all personnel involved are briefed on the safe system of work at the place of work, including details of the lifting plan and lifting sequence.

DO secure the locking mechanism release rope in a position where it will not become snagged during lifting, so as to prevent the accidental release during lifting or lowering.

DO ensure that the pitching shackle is used with the sheet piles supplied by the same hire company — never mix and match equipment.

DO ensure that, when the pitching shackle is not being used, it is stored such that it will not be exposed to damage, mud or grit. It should be cleaned before use on the next working shift.

DO NOT use the pitching shackle to extract sheet piles.

DO NOT allow the release rope to be caught or snagged — it must be kept clear during the lifting and lowering of the sheet pile.

DO NOT force the locking mechanism.

DO NOT use the pitching shackle if the locking mechanism fails to open or close.

DO NOT jar or shake the pile excessively.

DO NOT use the shackle for any other purpose than the pitching of sheet piles.

DO NOT allow the shackle to be damaged on site or left lying in mud and grit — this may damage the locking mechanism.

5.2 Extraction shackle (sheet pile extractor)

Sheet pile extractors are solely designed to raise or release previously-installed sheet piles or trench sheets from within the confines of an excavation. Once released, the extractor can be used to lift the sheets out and lay them down or stack them adjacent to the excavation.

Sheet pile extractors are typically robust in design and are provided with a pin which is manually slotted through the jaws of the extractor and the upper pile-handling hole. The pin is manually secured by means of an ‘R’ clip at one end. A second hole is provided in the pile at a lower level for the attachment of the secondary device. The R clip and the independent safety device must be secured in position before any sheet piles are extracted.
Extraction shackles must:
— never be used to pitch or place sheet piles ready for driving;
AND always be used in conjunction with the temporary works equipment designed and supplied by the hire company or sub-contractor.

Before first use and during use:
DO ensure the extractor is connected to an excavator or crane using an appropriate and tested chain and shackle.
DO establish (by fencing, where possible) a lifting and lay-down zone at least 1.5 times the length of the longest sheet pile. Ensure that only those personnel directly involved in undertaking the work are within this area when extraction and lifting operations are in active progress.
DO make sure that the extractor that will be used is the extractor that has been specified by the design or hire company — there will be a unique serial number and safe working load (SWL) imprinted on the extractor body. The SWL is the maximum safe vertical pulling load only.
DO make sure that the mechanical parts of the extractor are in place before first use, that they move freely and that the extractor has been inspected for any obvious defects or damage.
DO engage the handling pin fully through the body of the extractor, the sheet pile and ensure the handling pin is secured with the R clip. The safety chain or other independent safety device should also be attached to the sheet pile at the same time.
DO ensure that the R clip and safety chain (or other device) are used at all times when extracting and handling sheet piles that are suspended from a lifting point.

DO NOT mix and match sheet pile extractors — extractors are designed to lift specific weights and lengths of sheet piles and the hire company will specify the type of extractor to be used and its safe lifting capacity.
DO NOT use a worn or damaged extractor. The extractor must be visually inspected at the start of each shift and before each use on site.
DO NOT use the extractor if the in-built safety features are not in place, not working or damaged — this includes the independent safety device to prevent sheet piles from falling should the extractor fail at any time.
DO NOT snatch or shock-load the extractor.
DO NOT stand under or within the falling radius of a suspended load.
DO NOT stand within the landing or lay down area.