

**ESSENTIAL
STANDARD
no.32**

Lifting Operations

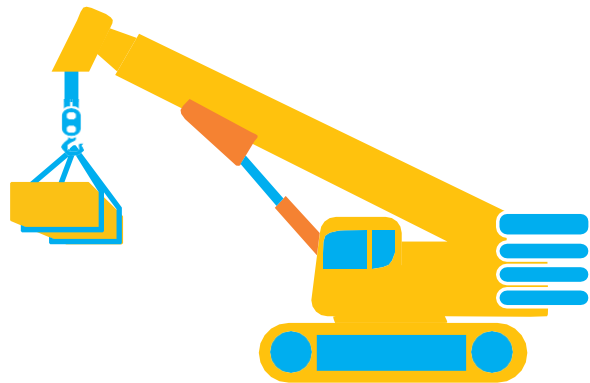


KEY MESSAGES

- Plan all lifting operations
- Select suitable lifting equipment and accessories
- Ensure there is a method statement and a completed risk assessment
- Inspect all test certificates
- Ensure all personnel are trained and competent
- Provide comprehensive supervision
- Never lift loads over people or remain in the line of fire while lifting is taking place above you

1. Introduction

Lifting operations using cranes, excavators, telehandlers, HIABs, lorry loaders and grab lorries are high-risk activities, which take place frequently on Thames Water sites and they represent a key risk to our people. Thames Water and the Lifting Operations and Lifting Equipment Regulations (LOLER) 1998 require all lifting operations to be properly planned, supervised and carried out in a safe manner.



This standard provides guidance to all people involved in, or nearby, lifting operations and should be used to keep all of our people safe.

2. Definitions



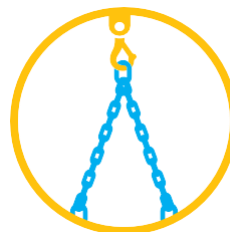
- **LOLER:** Lifting Operations and Lifting Equipment Regulations.



- **Lift Equipment:** Equipment used for lifting or lowering loads e.g. cranes, telehandlers, manual lifting devices, etc.



- **Appointed Person:** The person appointed who has complete control of lifting operations on site.



- **Lifting Accessory:** Item used to attach load to lifting equipment e.g. chains, ropes, slings, etc.



- **Lift Supervisor:** The person who controls the lift operation and ensures it is done according to the lift plan.



- **Lifting Operations:** Lowering or raising of a load using a mechanical lifting device.

3. Procedure

3.1 Roles, Responsibilities and Training Requirements of Lifting Personnel



Responsible Individual for Lifting (RI)

The RI manages overall lifting operations in an organisation, business or on a major project. This role is for construction projects only.

Responsibilities include:

- ensuring organisational lifting procedures meet the requirements of relevant legislation and best practice
- performing regular audits to ensure lifting procedures are followed
- reviewing or approving alternative lifting procedures, where necessary e.g. during joint ventures



Appointed Person

According to LOLER 98 and BS7121, the appointed person has overall control of each lifting operation to ensure that it is carried out safely.

As a minimum, the person must hold a current CPCS Appointed Person Card and have completed the Appointed Person training course and assessment.

Duties include:

- ensuring the procedure is followed
- overall planning of lifting operations
- producing, reviewing and updating lifting plans
- ensuring lifting operations are done safely
- assessing the risks involved

Note: An Appointed Person can have combined roles such as a Contracts Manager, Site Manager or Supervisor.

A Lift Supervisor can have combined roles such as a Site Manager or Supervisor.



Lift Supervisor

Each lifting operation must have a Lift Supervisor to ensure lift plans are followed and operations are carried out safely. The degree of supervision will depend on the risk assessment and the complexity of the lift on the lift plan.

Lift Supervisors must have a current CPCS Lift Supervisor card and have completed the Lift Supervisor training course and assessment.

Duties include:

- ensuring procedure is followed
- checking that lift equipment and accessories are in accordance with the lift plan and have valid Certificate of Report of Thorough Examination
- ensuring enough competent personnel are available
- ensuring site conditions are the same as on the lifting plan

- reporting problems to the Appointed Person
- briefing operatives before lifting activity begins
- supervising the Slinger/Signaller and Operator
- implementing a safe operating zone around lifting equipment
- ensuring that only items identified in lifting plan are lifted
- stopping work in the case of any risk/danger

Note: These duties may be delegated e.g. to the slinger/signaller on smaller projects/low risk activities, provided that the person is competent.



Plant Operator

The plant operator is in charge of lifting equipment. Reading and understanding load capacity charts are key for this role.

Plant operators must be at least 18 years old, medically fit and have good eyesight. They must have a CPCS or NPORS for the equipment that they operate.

If lifting with 360° excavators, Operators must have an additional 'Lifting Operations with 360° Excavators' category on their CPCS card.

Duties include:

- ensuring procedure is followed
- establishing roles within the lifting team
- establishing which signalling system will be used
- following instruction from one nominated Signaller at a time
- only doing lifts according to lifting plans
- stopping operations if instructions are not the same as lifting plans
- informing the Lift Supervisor of any problems
- daily pre-use check for defects and reporting problems if found
- ensuring the load radius indicator and other safety devices are functioning properly



Slinger/Signaller

At least one Signaller/Slinger must be allocated to each item of lifting equipment on site.

Slings/Signallers must be at least 18 years old, competent and trained with a CPCS or NPORS in slinging and signalling.

Duties include:

- ensuring procedure is followed and lifts are controlled throughout its duration
- slinging loads
- using the correct lifting accessories as per lifting plans
- only doing lifts according to lifting plans
- checking accessories before and after use
- ensuring loads are correctly slung before giving the signal for the lift
- giving clear and correct hand signals to the operator to ensure a safe lift
- maintaining communication with the Operator throughout lifting operations
- ensuring a safe operating zone around equipment and that immediate areas are clear of any hazards
- reporting defects
- stopping operations in the event of a risk to safety



Temporary Works Coordinator (TWC)

A TWC must confirm the suitability of any support structure, such as temporary works, permanent works or adjacent structures, to support the load of lifting equipment. Approval for loadings may come from different sources, such as a permanent works designer, but the TWC is responsible for getting this approval.

Understanding the impact of temporary works on lifting operations is important, particularly in areas where ground conditions are an issue.

Assessing Competence

Holding a qualification doesn't necessarily mean competence, therefore the competence of all those involved in lifting operations must be regularly assessed.

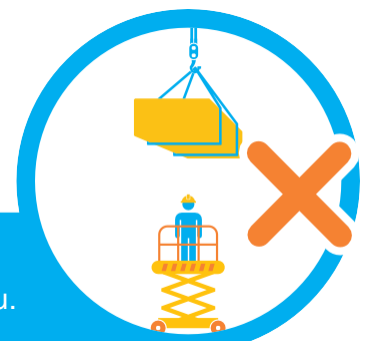
Pay attention to Tier 2 and Tier 3 contractors who may not have the right processes to assess competence.

Each organisation must have specific criteria to assess the competence of staff. The following are guidelines:

- qualifications and how long they've had them
- whether the qualification is as a trained individual (CPCS red card) or competent individual (CPCS blue card)
- training received
- experience with equipment and lifting operations
- evidence of having correctly followed the lifting procedures
- testimonials from others
- the outcome of the assessments conducted at the time of appointment
- the level that the individual believes their own competence to be at (an individual should never be appointed to a role they are uncomfortable with)
- experience of the type of operational environment being proposed
- if the individual's behaviour is aligned with the behaviours required by the role on the project



Test individuals' knowledge and understanding to assist in assessing their competence. Potential questions that a proposer/appointer may want to use to test this knowledge are available on the [CPCS website](#).



Never lift loads over people or plant with people working in them. Don't remain at the bottom of shafts whilst loads are lifted or lowered above you.

3.2 Lifting Categories

The Appointed Person should classify and plan all lifts at the beginning of the project. To enable lifts to be planned, supervised and carried out effectively, BS7121 defines three categories of lifts. The category of lift depends on the assessment of the hazards associated with the site location, the load and the lifting equipment. Higher levels of complexity lead to a higher category.

Lifting operations are divided into the following three categories:



Basic Lift

When the weight of the load(s) can be simply established and there are no significant hazards within the working area or on the access route for the lifting equipment to the working area.

Basic lifts can be of two types:

- One-off lift:
a lift where the hazards are assessed as basic e.g. lifting a simple load with a mobile crane in an area free from significant environmental hazards.
- Repetitive lift:
regular repetitive lifts that utilise grab lorries, lorry loaders (HIABs, flat bed lorries with cranes, etc.), telehandlers and excavators as cranes.



Intermediate Lift

When there are significant hazards, either within the working area of the lifting equipment or on the access route for the lifting equipment to the working area.



Complex Lift

Lifting equipment is used to lift complex loads or persons, where two or more cranes are used to lift the load or where the lifting operation is carried out at a location with specific hazards.

Table 1:
Relationship Between Complexity Index and Lift Category

| | | Load Complexity (L) | | | |
|-------------------------------|-----|---|---|---|--------------|
| | | L1 | L2 | L3 | |
| | | <ul style="list-style-type: none"> 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. | <ul style="list-style-type: none"> A load of estimated weight with an estimated central centre of gravity and without designated lifting points. The load does not contain fluids, is not fragile and is inherently stable when landed. | <ul style="list-style-type: none"> Lifting of a complex load or persons. Two or more cranes are used to lift the load. The load contains fluids, is fragile and is not stable when landed. | |
| Site Location Complexity (SL) | SL3 | <ul style="list-style-type: none"> The load is to be placed on a structure at height, without line of site. Exceptional hazards in working area. Load path close to proximity hazards such as scaffold or overhead powerlines. Difficult ground conditions, engineering solution required to support outrigger loads. | COMPLEX LIFT | COMPLEX LIFT | COMPLEX LIFT |
| | SL2 | <ul style="list-style-type: none"> The load is to be placed over an obstruction, the operator does not have clear sight of the landing area from the control position. Significant hazards within the working area or on the access route to the working area. Stable ground conditions, bearing capacity requires verification. | INTERMEDIATE LIFT | INTERMEDIATE LIFT | COMPLEX LIFT |
| | SL1 | <ul style="list-style-type: none"> The operator has clear sight of the load path and the load is lifted from and to the ground. No significant hazards or obstructions within the area of operation. Stable ground conditions. | BASIC LIFT | INTERMEDIATE LIFT | COMPLEX LIFT |

3.3 Safe System of Work

All lifting operations should be planned. Planning should be carried out by a trained and competent Appointed Person. If your business or contract does not have competent staff in-house, you should enter into a Contract Lift agreement.

When planning a lifting operation, consider:

- | | | | |
|--|--|--|--|
| | a) the load, its weight, characteristics and the method of lifting. Remember, loads lifted out of water have additional weight added | | f) the position of the lifting equipment and the load before, during and after the operation |
| | b) any bond between the load and its support, causing resistance when lifting the load | | g) the site location including any hazards nearby e.g. availability of space, suitability of the ground or foundations and enabling works required |
| | c) the stability and strength of the load when being lifted and set down | | h) proximity of other lifting equipment and/or plant/structures |
| | d) the selection of suitable lifting equipment, ensuring that adequate clearances are maintained between the load(s) and the lifting equipment | | i) any necessary set up for the lifting equipment |
| | e) the selection of lifting accessories | | j) the identification and selection of personnel for the lifting operation |

3.4 Safe System of Work for Repetitive Lifting using Grab Lorries, Lorry Loaders, Telehandlers and Excavators as Cranes

There is a requirement to plan lifting operations for repetitive lifting activities which are generally undertaken by Grab lorries, Hiab/Lorry loaders, Telehandlers and the use of Excavators as Cranes. Repetitive lifts refer to basic lifts that take place every day on multiple sites across the Thames Water business including Grab lorries collecting spoil from an R&M maintenance team, a telehandler moving pallets in a yard or an excavator lifting a muck skip into a shaft.



In many instances these lifting operations will be categorised as basic lifts where the operator may be fulfilling the role of Operator and Slinger/Signaller as per the lift category. Repetitive lifts can also be categorised as intermediate lifts where a Slinger/Signaller and Lift Supervisor may be required based on risk assessment. Each Lifting Plan should consider the category of lift, the type of crane including load diagrams and lifting capacity, the shape/weight/centre of gravity of the load, the condition and adequacy of the lifting accessories.

Each different type of crane and lifting equipment would require a specific Lifting Plan signed off by an AP.

A trial lift should be undertaken on all loads (i.e. extension just above the ground) to assess the viability of the lift before proceeding with the planned lift.

Note: Thames Water prohibits telehandlers travelling with underslung loads.

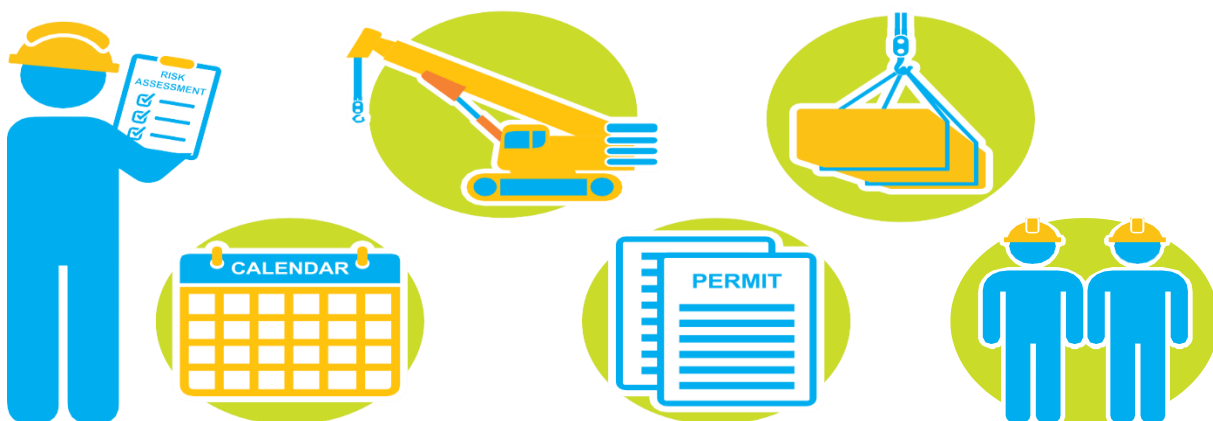
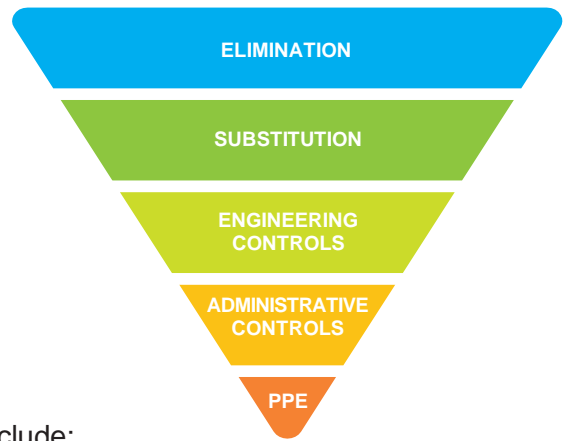
3.5 Planning Lifting Operations

When planning lifting operations, the AP's aim is to ensure that they will be carried out safely and all risks will be managed. The level of planning and preparation should be proportional to the categorisation of lifting complexity determined by the AP.

The AP must carry out a risk assessment to identify the hazards and risks associated with the proposed lifting operation. The risk assessment process must follow the hierarchy of control, consider any hazards that are present at the proposed lifting site and the measures required to mitigate those risks.

Key elements to consider during the lift planning process include:

- scheduling - including site preparation, lifting equipment erection/dismantling and time to perform the lifting operation
- selecting, providing and using suitable lifting equipment, lifting accessories and work equipment, including the use of tag lines, push/ pull sticks, etc.
- ensuring safe slinging and signalling arrangements
- checking the attachment points on loads, internal bracing of the load, things that fix the load internally, etc.
- obtaining permits to load and temporary works sign off
- ensuring that the load is prepared for lifting, e.g. draining down tanks, etc.
- determining what factors of safety must be applied to the lifting equipment and accessories to take account of the category of the lift, the characteristics of the load/environment and any specific local requirements. If load is unknown (taking into account breaking forces, hydraulic loading, blockages etc) then a load cell should be used.
- determining whether the load can be put back down once lifted or, once the lift has started it is committed and must be completed
- doing regular maintenance and examination of lifting equipment
- providing properly trained and competent personnel
- supervising of operations by authorised personnel
- doing thorough examinations, inspections and reports, etc.
- preventing unauthorised movement or use of the crane
- implementing measures to secure the safety of persons not involved in the lifting
- use of external guidance documents such as Guidance Note GS6 "Avoiding danger from overhead power lines" and checking requirements for notification of a crane to the Civil Aviation Authority, (will apply to cranes exceeding a height of 10 metres above ground level or that of the surrounding structures or trees (if higher). Civil Aviation Authority guidance can be found [here](#).



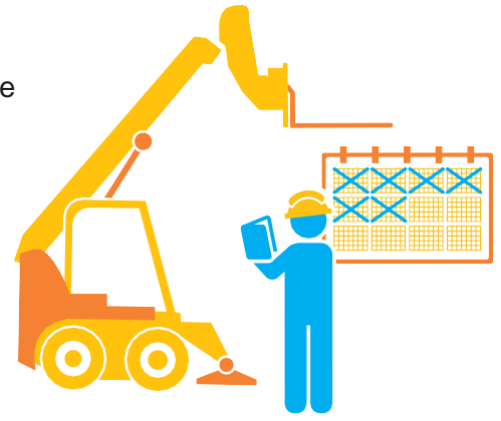
3.6 Work Practices

The site management team must check that equipment arriving on site was selected during the planning stages.

The Lift Supervisor should check:

- that the lifting equipment has a Valid Certificate Of Report Of Thorough Examination within 12 months, or 6 months if the lifting equipment is being used for lifting people
- record of daily/weekly inspections of the lifting equipment. All lifting equipment must be visually inspected daily and formally recorded every seven days
- that the lifting accessories have a Valid Certificate Of Report Of Thorough Examination and lifting identification tag. This should be within 6 months

All personnel involved in the lifting operation must have their responsibilities clearly allocated and have the opportunity to review the findings of the risk assessment and the details of the lift.



Note: The Lift Supervisor or nominated competent person is responsible for briefing the personnel before the lifting operation begins.

3.7 Inspection, Testing and Certification of Lifting Equipment and Accessories

All lifting equipment and accessories, including any hired, must be inspected before being used on site. When receiving lifting equipment or accessories on site, it must not be deployed until copies of the current Thorough Examination have been seen. A copy of the certificate should be kept on site for inspection.



Marking of Lifting Accessories

Each piece of lifting equipment and all accessories must be clearly marked with an identification number and safe working load. For example, on chain slings a tag holds all the key information about the chain and should include:

- Identification of the manufacturer
- Identification of material or grade
- Nominal chain size and number of legs
- Working Load Limit (WLL)
- Serial number of the sling
- The CE mark

On web slings the tag must include, as a minimum:

- The Working Load Limit (WLL)
- The Safe Working Load for given configurations
- Serial number

If no tag is present, DO NOT USE the lifting accessory.



Daily Pre-Use Checks

A daily pre-use check of lifting equipment and accessories must be carried out by the plant Operator and Slinger/Signaller at the beginning of each shift or before being used during that shift. Any defects found must be fixed, or the equipment/accessory taken out of service and arrangements made for repair or quarantine.

Slinger/Signaller must visually check lifting accessories and Plant Operators should use the Operator's pre-use checklists to record their daily check.

The Site Manager is responsible for ensuring and checking that the Operator has completed the daily pre-use checks.



Weekly Inspections

The Slinger must formally record a visual check of the lifting accessory every 7 days in the Lifting Equipment & Accessories Inspection Register. The Site Manager must ensure that this process is followed.

Any damaged or defective lifting accessories must immediately be taken out of service and the item quarantined. Slinger/Signaller must notify their Site Manager/Supervisor immediately.



Thorough Examinations

All lifting equipment and accessories must be thoroughly examined and tested at regular intervals by a Competent Person. This is a statutory requirement.

You must have lifting equipment and accessories examined:

- before using it for the first time – unless the equipment has an EC Declaration of Conformity, less than one year old and was not assembled on site
- after assembly and before use at each location for equipment that requires assembly or installation before use
- regularly in service (12 months for lifting equipment, 6 months for lifting accessories and 6 months for anything used to lift people)
- after any event likely to have affected the safety of any lifting equipment or accessory

A Report of Thorough Examination should detail the defects found or include a statement that the lifting equipment or accessory is fit or unfit for continued use. Examined lifting accessories should have a tag clearly displaying the serial number and date of when the next inspection is due.

Lifting equipment and accessories obtained from a third party must be accompanied by physical evidence of the last Thorough Examination before it is used on site.

All lifting equipment and accessories must be tested on a six or twelve monthly basis.



Sub-Contractor Lifting Equipment and Accessories

Before any sub-contractor uses lifting equipment or accessories on site, documentation for the equipment must be given to the Site Manager. If a sub-contractor can't produce the necessary documentation, NO lifting operations may be carried out.