Hot Tub Lifting - Technical Information Note

1.0 Scope

This Technical Information Note (TIN) provides guidance for the safe use of mobile cranes (*Figure 1*) and lorry loader cranes (*Figure 2*) to lift hot tubs for domestic and non-domestic customers. It is also applicable to exercise spas (sometimes referred to as swim spas) and one-piece pools.

Figure 1: Mobile Crane

Figure 2: Lorry Loader Crane

2.0 Introduction

This joint-association TIN has been produced by the British and Irish Spa and Hot Tub Association (BISHTA), Association of Lorry Loader Manufacturers and Importers (ALLMI), the Construction Plant-hire Association (CPA) and the Swimming Pool and Allied Trades Association (SPATA) following a number of lifting-related incidents. It provides guidance on the issues associated with the lifting of hot tubs and directs readers to existing published guidance where appropriate.

According to estimates from BISHTA, there are around 300,000 hot tubs in domestic properties in the UK. These are increasingly being unloaded and lifted into position with either mobile or lorry loader cranes, or in some cases, being removed from a property.

Unfortunately, there has been a significant number of accidents whilst hot tubs have been lifted. These accidents could have been prevented if the lifting operations had been correctly planned, supervised, and carried out safely.

2.1 About the Associations

As this TIN potentially has a wide audience, this section outlines each of the associations involved in the production.

British and Irish Spa and Hot Tub Association (BISHTA)

BISHTA was established in 2001 to both raise standards and ensure that companies engaged in the display and sale of hot tubs are adequately trained in water hygiene management and work to BISHTA standards and their code of practice. BISHTA exists to promote high standards of safety, enjoyment, and value, by registering suppliers of spas, hot tubs, accessories and water purification products. BISHTA further offers a range of informative factsheets on a complimentary basis, designed to make hot tub and swim spa ownership and maintenance safe and understandable.

The Swimming Pool and Allied Trades Association (SPATA)

SPATA was established in 1961 and works with companies involved in building swimming pools and spa pools so that they are working to British and European Standards. SPATA Members conform to SPATA Standards and a Code of Ethics.

SPATA further provides consumers with a range of sources of information on swimming pool ownership including links to its membership and free consumer guidance resources such as planning and designing, servicing and maintenance etc.

The Association of Lorry Loader Manufacturers and Importers (ALLMI)

ALLMI was founded in 1978 at the request of the Health & Safety Executive. It is the UK's only Trade Association devoted exclusively to the lorry loader industry and its members include manufacturers / importers, service companies, ancillary equipment suppliers, fleet owners and site operators. ALLMI serves, represents, and promotes the interests of its members and the industry at large, and it is the leading authority on all issues involving the design, manufacture, application and use of lorry loaders. ALLMI promotes the safe use of lorry loaders, produces good practice guidance, assists in the formulation of relevant legislation and Standards, and provides a training accreditation service.

The Construction Plant-hire Association (CPA)

The CPA was founded in 1942 and is the leading trade association for this sector in the UK and CPA Members supply over 85% of hired plant to the construction industry. CPA is the UK's principal point of contact for all issues relating to use of construction plant and works closely with government departments and agencies, local authorities, construction clients, contractors and manufacturers. CPA publishes a wide range of safe-use and technical guidance documents and other publications, including through their special interest groups such as the Crane Interest Group (CIG) and all publications are distributed free of charge widely throughout the construction industry to support and promote safety.

Case Example 1

A 60-tonne mobile crane was attempting to lift a hot tub into the back garden of a house when the pavement gave way. This caused the crane to overturn, and the boom of the crane crashed through the roof of the house, throwing the tub into the garden.

Severe damage was caused to the house, as well as a neighbouring property, and a six-inch gas main in the street was thought to be ruptured, meaning 20 homes in the area were evacuated as a precaution and because of the risk of falling debris.

Trains on a nearby line were also suspended during the recovery operation.

The crane had been provided on a 'Crane Hire' arrangement, but the householder did not have sufficient expertise in lifting operations to plan, supervise and safely execute the lift.

The crane should have been provided on a 'Contract Lift' arrangement whereby the planning, supervision and execution of the lifting operation would be planned and carried out by the crane owner.

The incident could have been avoided if the lift had been properly planned. This should have included a site visit by the appointed person to assess the position of the crane and nearby hazards. The plan would have further included suitable measures to spread the load applied by each of the outriggers.

3.0 Costs of a Lifting Operation

The execution of a lifting operation to place a hot tub, spa pool etc. from delivery into the final position can add a considerable amount to the overall purchase costs that will be ultimately borne by the purchaser of the hot tub.

Typical or estimated costings should be made clear to them or their contractor/installer during the purchasing period and prior to, or early within, the sale and the planning of the lifting operation to avoid disputes or cost-cutting measures which can severely affect safety.

4.0 Planning

It is a requirement of the Lifting Operations and Lifting Equipment Regulations 1998 (usually abbreviated to LOLER 98) that:

Every employer shall ensure that every lifting operation involving lifting equipment is:

(a) properly planned by a competent person;

(b) appropriately supervised; and

(c) carried out in a safe manner.

It requires that one person should be appointed to have overall control of each lifting operation to ensure it is carried out safely. This person, the lift planner, is normally called the *'appointed person'* and they should be competent to carry out the planning for the task in hand.

Their first step in planning is to carry out a site survey to identify site specific hazards and constraints. A risk assessment should then be completed, followed by preparation of a method statement, which will set out the safe system of work to be followed and form the basis of a 'lift plan'. This provides information to the person supervising the lift to enable them to complete the operation safely.

The planning will look at both the hot tub to be lifted, the type and size of crane and other equipment required, and the location in which the lift is to be carried out.

This will indicate the extent of planning required and the lift will be categorised as one of the following:

Basic lift - a lifting operation where the load characteristics are considered straightforward and there are no significant hazards within the working area or on the access route for the crane to the working area; or

Intermediate lift – a lifting operation where significant hazards have been identified with the load or within the working area or on the access route of the crane; or

Complex lift – a lifting operation where significant hazards have been identified with the load or within the working area or on the access route of the crane; or the crane is used to lift complex loads or persons; or where two or more cranes are used to lift the load; or where the lifting operation is carried out at a location with exceptional hazards.

Where a hot tub is to be lifted from a public road, over a house and into a rear garden or vice versa, the lift should be categorised as **Complex**.

A **Basic lift** will require a generic risk assessment and method statement to form the basis of a lift plan, which can be used in similar situations. An **Intermediate** and a **Complex Lift** will require job specific planning for each lift.

All successful lifting operations require a team of people to work together. The number of people involved will vary depending on the nature of the lift and will be determined by the appointed person.

Guidance on the selection and role of an appointed person, planning and the preparation of a lift plan is provided in the publications listed at the end of this TIN.

The publications also provide information on:

- selection of a suitable crane;
- selection, training, and competency assessment of lifting team members;
- allocation and combination of roles within the lifting team, where appropriate;
- lifting from a public highway.

Case Example 2

A lift had to be abandoned when it was found that the plinth that had been prepared for the hot tub by the customer was incorrectly sized. The customer had to pay the crane company for their wasted visit and when they returned for a second time after the plinth had been modified.

5.0 Types of Hire Contract

The responsibility for planning and carrying out lifting operations will depend on the type of contractual arrangements between the crane owner (company) and the person requiring a hot tub to be lifted into place. In general, where any person or organisation requires a lifting operation to be carried out using a crane but does not have their own, they have two basic options:

1. Hiring a crane from a crane owner and managing (e.g. planning and supervising) the lifting operation themselves.
    - This is known as a '**Crane Hire**'. In this case, the person hiring the crane is responsible for ensuring there is a lift plan in place, detailing a safe system of work, and ensuring that all lifting operations are carried out safely.
2. Employing a contractor, such as the crane owner, to carry out the lifting operation.
    - This is known as a '**Contract Lift**', in which the planning, supervision and execution of the lifting operation(s) will be carried out by the crane owner.

If a customer, e.g. a contractor/installer or hot tub supplier, does not have sufficient expertise in the planning and execution of lifting operations, they should **NOT** hire a crane but opt for the contract lift option.

Crane Hire agreements should not be offered to domestic customers as they would not have the necessary crucial expertise in planning and organising lifting operations.

Where a customer (apart from domestic customers) opts for a contract lift, they have a duty to provide information to the crane owner to assist them with their planning, such as ground bearing capacity (i.e. the weight the ground will support) and the total weight of the load to be lifted. One common factor in crane overturns is ground collapse, where the ground has been unable to support the weight of the crane and the load.

The customer should be reminded that whichever contract option they adopt, they retain certain contractual liabilities and responsibilities, and should ensure they have adequate insurance(s) in place before the lift commences.

5.1 Selecting a Crane Hirer

CPA provides a set of Model and Contract Lift Conditions for their Members, which are hire agreements fair to both the hire company and their customer and clarifies each party's responsibilities for the hire and health and safety requirements and are well respected in industry.

ALLMI also provides its members with a set of 'Industry Standard Terms and Conditions for Lifting Operations using a Lorry Loader', setting out the rights and responsibilities of all parties involved and ensuring conformity and professionalism. Furthermore, all ALLMI members sign up to the requirements of the ALLMI Code of Practice, confirming they will work in accordance with applicable standards and legislation, manufacturer guidelines and good practice etc.

Both associations produce guidance and good practice documents (such as this TIN) - with many supported by the HSE - to ensure that lifting sector safety standards are maintained and enhanced.

Case Example 3

A 7-tonne mobile crane was being used to lift a 320kg hot tub into the back garden of a bungalow. The crane operator positioned the crane at the side of the bungalow to reach the rear garden. The front outriggers were not fully deployed due to lack of space. The crane overturned as the hot tub was being lifted over the bungalow.

The boom of the crane struck and damaged the roof of the bungalow and an adjacent house. The hot tub was destroyed when it hit the ground and the crane driver suffered minor injuries.

The short rigged front outriggers increased the load applied to the ground. The spreader mats used were too small and the ground gave way. The incident could have been avoided if the appointed person had visited the site to assess access for the crane and prepared a suitable lift plan that took account of the site constraints.

6.0 Slinging and Handling of Hot Tubs

6.1 Information to be provided by the hot tub manufacturer or supplier

Section 6 of the Health and Safety at Work etc. Act 1974 places duties on manufacturers and suppliers to provide information on the safe use of equipment.

The manufacturer or supplier of the hot tub should provide the following information within the installation instructions:

- weight, dimensions, and position of the centre of gravity of the hot tub and any covers. These should include the weight and dimensions of any protective packaging materials, timber frame or pallet;
- how the lifting accessories (such as the slings) should be attached to the hot tub.

Note: *Covers, such as those on some big swim spas can be of a significant weight. Dependent on the lift capacity and site, it may be necessary for a second lift to be carried out for covers and any other accessories such as steps, cover lifters etc.*

If any of this information is not provided, the appointed person should contact the manufacturer or supplier to obtain the required details.

The appointed person should confirm with the supplier that the hot tub has been fully drained and emptied of water and is fully disconnected from all services prior to delivery or collection. This is especially important if the hot tub has been purchased secondhand, has been tested prior to delivery, or is being retrieved from a property.

Hot tubs are pressure tested during manufacture and although drained before transportation, residual trapped water may be present and with the extent of internal piping, there could be a significant weight increase on larger units.

Those planning the lift should consider an additional factor of safety to compensate for any increase over the declared weight of the unit.

6.2 Selection and attachment of lifting accessories

The appointed person should plan how the hot tub is to be attached to the crane. Details of this should be recorded in the lift plan.

Unless the manufacturer confirms otherwise, it is recommended that a lifting beam, spreader frame or lifting stillage is used to avoid placing compressive loads on the hot tub.

Care should be taken when using lifting eyes to ensure they are of the correct thread form to match those on the hot tub, are fully secured and correctly aligned.

Slings should be protected by suitable packing material to prevent contact with any sharp edges that could cause damage. If the packing could be dislodged during, or at the end of, the lifting operation, it should be lashed securely in place.

Once the slings are attached, they should be monitored as the tension increases so they do not slip, become fouled, or damage the hot tub during the initial raising of the load.

Before lifting the load clear of the support, a check should be made as to whether the point of attachment to the load is vertically above its centre of gravity, so that any hoist rope, hoist chain or hook hangs vertically.

As the load is lifted clear of the support, a check should be carried out to ensure it remains secure, level and orientated as intended. If either condition is not met the hot tub should be lowered onto suitable supports and any necessary corrections made before proceeding.

Case Example 4

A hot tub was lifted with webbing slings that passed under and around the hot tub. As the hot tub was lifted, compressive loads induced by the slings damaged the hot tub and it had to be replaced at considerable expense.

6.3 Use of tag lines

A tag line is a line (usually a dedicated rope) of sufficient length that is attached to the load, with the other end controlled by a load handler. Tag lines should be used:

a) if there is a possibility that the load could come into contact with any other object during the lifting operation;

b) to prevent loads from spinning due to wind;

c) to orientate or align the load for landing.

Tag lines must not be used to:

a) pull the load out of its natural suspended line;

b) hold a load against wind forces;

c) contribute to supporting the load.

The lift plan should identify how many tag lines are to be used and how they are to be attached to the load. Tag lines should be attached to a structural member of the load (not to pipework for example) and should never be attached to the lifting accessories themselves. Care should be taken that tag lines cannot become fouled during use.

7.0 Inspection Prior to Lifting from the Delivery Vehicle

Prior to unloading from the delivery vehicle, the hot tub should be inspected for any damage and to identify if any rainwater has entered the hot tub. Any accumulated water should be drained (see 6.1) and any loose or damaged packaging material should be removed.

A check should be made that all devices used to secure the hot tub to the vehicle for transport have been removed.

8.0 Supervision of the Lift

The lifting operation should be supervised by a crane supervisor, ensuring that it is carried out in accordance with the lift plan. The crane supervisor should be competent and suitably trained and have sufficient experience to carry out all the relevant duties.

The crane supervisor should have sufficient authority to stop the lifting operation if they consider it dangerous to proceed.

9.0 Additional Guidance

Further guidance is provided in:

LOLER - Lifting Operations and Lifting Equipment Regulations 1998 - The Approved Code of Practice to the Lifting Operations and Lifting Equipment Regulations 1998 (L113)

HSE Leaflet INDG163 (rev 4) – Risk assessment - A brief guide to controlling risks in the workplace

HSE publications are available for free download from: http://HSE.gov.uk

BSI Standards Publication BS 7121-3:2017+A1:2019, Code of practice for the safe use of cranes - Part 3: Mobile cranes

BSI Standards Publication BS 7121-4:2010, Code of practice for the safe use of cranes - Part 4: Lorry loaders

British Standard Publications are available to purchase from: http://shop.bis.com, *as well as from ALLMI.*

ALLMI – GN030 – Kerbside Deliveries with Lorry Loaders **–** March 2019.

Available for download from: *https://www.allmi.com/guidance-notes/view-all-products.html*

BISHTA – Publications and factsheets:

Available for download from: https://www.bishta.co.uk/trade/trade-publications/

CPA - ALLMI - Best Practice Guide (Revised November 2010) - The Management of Lifting Operations with Lorry Loaders

Available for free download from https://www.cpa.uk.net/crane-interest-group-publications-guidance/ or https://www.allmi.com/allmi-cpa-best-practice-guide.html

CPA Publication - CIG 9801(5) – (Revised May 2016), CPA Best Practice Guide - Crane Hire and Contract Lifting

CPA Publication - CIG 0201 – (Revised September 2018), CPA Best Practice Guide - Risk Assessment and Method Statement for a Contract Lift

CPA Publications are available for free download from: https://www.cpa.uk.net/crane-interest-group-publications-guidance/