



Key Risk Area (KRA)

KRA 3.8 Overhead Travelling Cranes

1. Purpose

This document provides guidance for the operation and management of overhead travelling cranes including bridge and gantry cranes installed in University of Newcastle (University) buildings to ensure that staff, students, conjoints and contractors are not placed at risk from the operation of the crane, so far as is reasonably practicable.

2. Scope

This Guideline applies to all health, safety and wellbeing activities of staff, students, visitors (including volunteers and contractors), Council members, and other persons interacting with the University of Newcastle (workers); the operations of staff of University aligned Research Centres and controlled entities; and all activities conducted by or on behalf of the University of Newcastle on and outside of the University's campuses.

3. Guidelines

3.1. Risk Identification and Assessment

Leaders and Supervisors will ensure that a risk assessment is conducted by a competent person and recorded in writing for all work involving travelling overhead cranes, so that risk elimination or control measures can be determined, so far as is reasonably practicable, and in accordance with Guideline [HSG 3.1 Health and Safety Risk Management](#).

Prior to any crane operation commencing, the Leader / Supervisor will ensure that the hazards associated with the work will be identified, assessed and elimination or control measures determined, which will be included in the Safe Work Method Statement (SWMS); Job Safety Analysis (JSA) or Standard Operating Procedure (SOP).

Consideration must be given to the following:

- Task to be carried out;
- Range of methods by which the task can be done and the appropriateness of using the crane rather than another method;
- Hazards involved with the lift and the associated risks;
- Equipment to be used for the lift such as slings, spreader bars and hooks with appropriate ratings;
- Proposed route of travel while a load is suspended; Clear space and location for setting down the load;
- Possible results of a failure of the crane or gear;
- Possibility of persons entering the lift zone;
- Location and type of warning signs and barricading required;
- Exposure to energised busbars or other equipment;
- Emergency procedures;
- Other activities that may be occurring in the space that could pose a safety risk;
- All other risks associated with the activities that the lift is being used for that do not relate directly to the use of the crane e.g. manual handling.

3.2. Risk Controls and Pre-Operational Checks

Prior to the task commencing the operator and dogman will conduct a pre-operational check which will include the following items of equipment:

- Hooks;
- Chains;
- Ropes;
- Slings;
- SWL is visible on the crane and lifting equipment;
- All buttons operational on the control;
- Hoist brake;
- Check the weight and centre of gravity of the load to ensure it does not exceed the SWL and that it can be slung safely;
- Ensure that the load is suspended safely before commencing the lift.

See Appendix 1 for an example of a Pre-Operational Checklist and Appendix 2, 3 and 4 for Inspection Guides for Chains, Wire Ropes and Slings.

Minimum PPE for staff assisting in the use of the crane include:

- Steel cap or similar protection boots;
- Hard hats;

- High visibility vests;
- Eye protection;
- Riggers gloves for added protection against pinch points, cuts, abrasions etc.

3.3. Standard Operating Procedures

A Standard Operating Procedure (SOP) will be developed for all routine tasks where an overhead travelling crane is used. SOPs are developed following a risk assessment for the task so that all the potential hazards can be identified and appropriate risk elimination or control measures selected, so far as is reasonably practicable and in accordance with [KRA 1.12 Standard Operating Procedures](#).

Suitable and adequate information, training and instruction in relation to the operation and use of overhead travelling cranes will be provided to relevant workers when required by the Work Health and Safety Regulation 2017 (NSW). Refer to Guideline [HSG 4.2 Health, Safety and Wellbeing Induction, Training and Competency](#) for competency requirements. All workers who carry out the task described in the SOP will be given specific instructions in its use and must have been deemed competent prior to performing the lift in according to the SOP.

The following requirements apply to the development of SOP's for tasks involving the operation of an overhead travelling crane:

- Completed in consultation with the workers who will be carrying out the task e.g. crane operators and dogmen;
- The SOP will describe the lift to be undertaken and the equipment and method that will be used;
- All workers who will be required to carry out the task described in the SOP will be given specific instructions in its use and must have been deemed competent prior to performing the lift according to the SOP;
- The SOP will be available at the crane site and must be reviewed on a regular basis to ensure currency and understanding;
- Where a failure or other error is identified in the SOP, the SOP will be reviewed and updated.

3.4. Routine Lifts

A routine lift is considered to be a lift that has been planned and conducted by a suitably trained staff member but do not meet the criteria of the complex lifts. A Standard Operating Procedure (SOP) will be developed for all routine lifts where an overhead travelling crane is used.

3.5. Non-Routine Lifts

If the proposed lift is not covered by an SOP or if the initial risk assessment prior to the job commencing indicates that there are hazards not covered by the SOP, the work will not proceed and the following actions will be taken:

- The risk assessment will be reviewed and a Safe Work Method Statement (SWMS) or Job Safety Analysis (JSA) will be developed;
- The SWMS or JSA will be reviewed and signed off by the Leader/Supervisor for the area;
- The Leader/Supervisor will prepare and issue a Permit to Work in consultation with the crane operator and the dogman which will be signed off by all the Workers involved with the task (refer to the IFS Permit to Work Procedure);
- When the task has been completed, the area will be inspected and if it has been returned to safe normal function the Permit to Work will be signed off by all involved.

3.6. Defective Equipment

If equipment is found to be damaged during the pre-operational check, or if a fault is identified during operation the following action will be taken:

- The equipment will be tagged as 'Out of Service' with an 'Out of Service' tag – refer to [KRA 3.6 Electrical Safety and Isolation](#);
- The matter will be reported to the Leader/Supervisor for the area;
- The hazard will be reported through the University's online Incident Management System;
- The Leader/Supervisor for the area will be responsible for arranging inspection and repair of the item of lifting equipment that was found to be defective, or its removal from site if repair is not possible.

3.7. Records and Documentation

The following documents will be maintained at the location where the crane is installed:

- Risk assessments;
- Standard Operating Procedures;
- Inspection records;
- Defect records;
- Load testing records for ropes and slings;
- Maintenance records for cranes.

Standard operating procedures and risk assessments developed for the crane should be stored in a central location easily accessible to users either in an electronic or hard copy

format and in accordance with Guideline [HSG 7.1 Health and Safety Records and Document Control](#).

3.8. Raising Concerns

Any member of the University community who has concerns about a breach of the KRA may identify their concerns to the person breaching the guidance and remind them of the KRA requirements. If not confident with approaching the person directly, they should approach their Leader / Supervisor.

If a matter cannot be resolved directly workers should contact the Health, Safety and Wellbeing Team and the incident must be reported as a hazard using the online [Incident / Hazard Reporting System](#) (AIMS) as soon as possible.

4. Definitions

In the context of the Health and Safety Management System Framework:

Competent Person	A person who has, through a combination of training, education and experience, knowledge and skills enabling that person to correctly perform a specified task.
Crane	Any certified powered equipment designed specifically for lifting loads exceeding 500kg above head height and which is a fixed item
Crane Operator	An individual who has successfully completed a verification of competency (VOC) through a designated RTO or via the internal university VOC. This person can only control the operation of the crane. They are not certified to inspect slings or sling a load. A crane operator that is not also a dogger is required to have a dogger inspect the slings and sling a load.
Dogger	An individual who currently holds a high risk working dogger licence. This licence allows individuals to carry out work which involves: inspecting and selecting lifting gear, applying slinging techniques to sling a load and direct a crane operator in the movement of a load when the load is out of the operator's view. A dogger is still required to complete a VOC in order to operate a crane.
Employer	Means the University of Newcastle (the University).
Executive Committee	Consisting of the Vice-Chancellor, the Deputy Vice-Chancellors, the Pro Vice-Chancellors, the Chief Operating Officer, Chief People and Culture Officer and the Chief Financial Officer, the University Secretary and the President of Academic Senate.
Leader / Supervisor	Any member of the University who is responsible for supervising staff and/or undergraduate or postgraduate students and/or for leading research projects.
Lifting Equipment	Any device which is used to connect a load to a crane and which does not form part of the load, e.g. wire rope, slings and hooks
Routine Lift	Work that is covered by a standard operating procedure (SOP) or checklist and does not require a Permit to Work. Routine work nominally involves medium to high frequency tasks

Non Routine Lift	Any activity that is outside the regular operations of the crane in that location. Non-routine work is not normally covered by an SOP or checklist. It generally involves low to medium frequency tasks with medium to high levels of risk and the work may require a Permit to Work depending on the risks identified in an initial risk assessment for the work.
SWL	Safe Working Load as shown on the crane, slings and other lifting equipment.
Worker	Includes an employee, conjoint, student on work experience, contractor, sub-contractor, and volunteer. A person is a worker if the person carries out work in any capacity for the University or another person conducting a business or undertaking, including work as: (a) an employee, or (b) a contractor or subcontractor, or (c) an employee of a contractor or subcontractor, or (d) an employee of a labour hire company who has been assigned to work in the person's business or undertaking, or (e) an outworker, or (f) an apprentice or trainee, or (g) a student gaining work experience, or (h) a volunteer, or (i) a person of a prescribed class.
Workplace	Means any recognised or defined area, location or vehicle where workers carry out their work.

5. Responsibilities

A comprehensive list of health, safety and wellbeing responsibilities is provided in [HSG 1.2 Roles and Responsibilities Guideline](#).

Specific responsibilities under this KRA include:

Infrastructure and Facility Services (IFS)

- Maintain a register of all overhead travelling cranes installed in University buildings;
- Arrange for competent contractors to undertake routine servicing and repairs for each crane and associated lifting equipment and maintain records of these services;
- Facilitate the Permit to Work process for Non Routine Lifts.

Supervisors and Leaders

- Ensure workers, visitors and contractors who report to them are aware of this KRA;
- Manage issues of non-compliance of staff or students in accordance with the KRA;
- Maintain records of routine inspections of lifting equipment;
- Ensure that SOPs for routine lifting tasks are in place and reviewed periodically to ensure they remain current;
- Ensure that all operators of cranes and associated lifting equipment receive the appropriate training and instruction so that they are competent to undertake the work;
- Maintain records of certificates of competency for all crane operators and dogmen;
- Ensure that risk assessments are conducted for all non-routine lifts and that where necessary a Permit to Work is issued;

- Monitor compliance with the SOPs and where non-compliance is noted discuss with the operator and/or dogman to assess whether further training is required;
- Cease operation of a task if personnel or equipment are at risk and review the SOP to assess whether amendments are required.

Health, Safety and Wellbeing Team

- Monitor the effectiveness of this KRA and support its implementation;
- Implement and maintain procedures to support this KRA;

Crane Operators (Workers)

- Staff members, employees, students, visitors, contractors and workers must comply with reasonable health and safety instructions, policies and procedures including this KRA; and
- Advise issues to supervisors, their leader or the Health, Safety and Wellbeing Team.
- Ensure that they have appropriate training and competency to operate the crane in a safe manner;
- Ensure the SOPs for the work are followed;
- Conduct pre and post lift inspections of the crane and lifting equipment;
- Ensure there are appropriate access restrictions in place to prevent entry to the area by any persons not involved in the lift;
- Report any maintenance needs that are identified to the Leader/Supervisor

Dogman (Workers)

- Staff members, employees, students, visitors, contractors and workers must comply with reasonable health and safety instructions, policies and procedures including this KRA;
- Advise issues to supervisors, their leader or the Health, Safety and Wellbeing Team;
- Ensure that they have the appropriate training and competency to carry out the work;
- Ensure that the SOPs are followed for the work so that lifting of materials is conducted safely;
- Calculate the load (mass, shape and centre of gravity) to be lifted;
- Assess the appropriate safe lifting technique including the type and suitability of slings, chains, spreader beams or equaliser beams, connection points and grips and shackles;
- Inspect the lifting gear prior to use to verify that it is in good condition and remove it from service if defects are found and report the matter to the Leader/Supervisor.

6. References & Related Documents

The following documentation is referenced in, or applicable to this KRA:

[HSG 1.2 Roles and Responsibilities](#)

[HSG 3.1 Health and Safety Risk Management](#)

[HSG 4.2 Health, Safety and Wellbeing Induction, Training and Competency](#)

[HSG 6.1 Contractor Health and Safety Management](#)

[HSG 7.1 Health and Safety Records and Document Control](#)

[KRA 1.12 Standard Operating Procedures](#)

[KRA 3.6 Electrical Safety and Isolation](#)

[IFS Permit to Work Procedure](#)

7. Amendment History

Version	Date of Issue	Approval	Section(s) Modified	Details of Amendment
1	September 2015	Director, People and Workforce Strategy	-	Original version KRA 3.8 Travelling Overhead Crane Safety.
2	October 2023	CPCO	All	1. All sections reviewed for legal compliance 2. Updated content in all sections including new title KRA 3.8 Overhead Travelling Cranes 3. Added new/renamed Related Documents 4. Added Amendment History 5. Amended document control header and footer Changed to new KRA template

8. Appendices

- Appendix 1 Overhead Travelling Crane Pre-start Inspection Checklist
- Appendix 2 Inspection Guides for Chains
- Appendix 3 Inspection Guides for Wire Ropes
- Appendix 4 Inspection Guides for Slings
- Appendix 5 Inspection Guides for Certified Lifting Points/Lifting Lugs

Appendix 1 Overhead Travelling Crane Pre-start Inspection Checklist

Lifting Gear

Lifting gear must be checked before and after use and inspected regularly by a dogger. Before any lifts are undertaken it is critical that all lifting gear **clearly** has relevant markings such as rated, capacity, grade, manufacturer and Australian standard marking.

If any users are concerned regarding the functionality of any lifting gear it should immediately be removed from service and usability verified by a competent person.

Each piece of lifting equipment must have the current colour tag attached that corresponds to the correct inspection period. Many areas within the college contracts Bullivants to inspect and test lifting equipment. Lab managers that contract Bullivants should have access to Bullivants electronic asset management system (BEAM) which outlines the following:

- The asset
- Asset description
- Location
- Tag colour
- WLL
- Inspection result (Pass/Fail)
- Frequency of inspection
- Next inspection date

If staff have concerns regarding the current correct tag colour please contact your supervisor for confirmation.



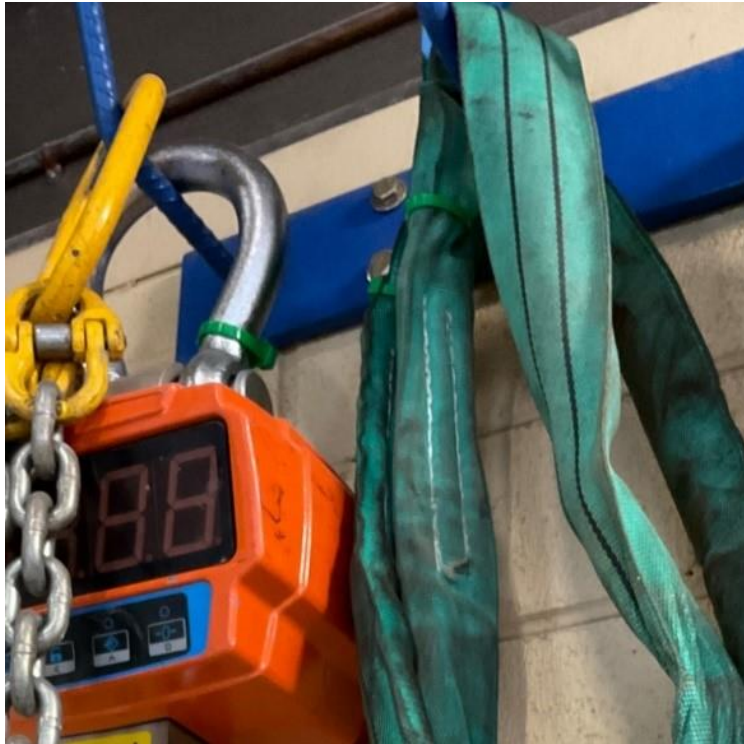


Figure 1 and 2 - Examples of lifting gear that have the associated testing tags attached.

Storage

Lifting gear shall be stored in locations that have the following conditions:

- Clean and free from dirt and grit
- Dry and ventilated to prevent condensation
- Off the ground, off the floor and without contact with any surface that may corrode during use.
- Away from:
 - Direct sunlight and ultraviolet rays
 - Sources of heat
 - Sparks of any source
 - Chemically degrading fumes and liquids
 - Locations where mechanical damage is likely to occur.

Appendix 2 Inspection Guides for Chains

To avoid dangerous lifting practices and in-service damage a chain sling shall have durable and indelibly marked tag(s) showing the WLL for its various configurations. Packing such as wooden blocks may be required where a chain comes into contact with a load, to protect the chain and load from damage.

Defects requiring withdrawal from service

If any of the following defects are visible, the sling shall be withdrawn from service and referred to a competent person for review:

- Where a tag has become detached or illegible
- Defective safety catches and self-locking hooks
- Wear on mechanical connective devices
- Cuts, nicks, gouges, cracks, weld spatter, excessive wear and corrosion, bent or distorted links or any other defects.
- Deep nicks in high tension areas
- Signs of overloading, such as visible opening or twisting or stretching of master links

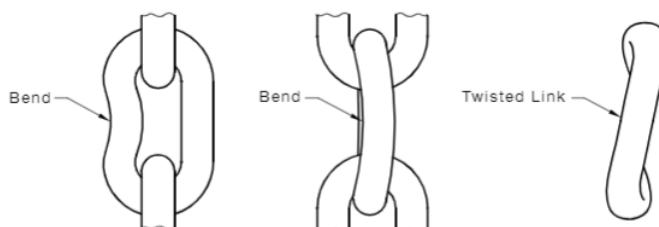
A chain may be returned to service after being assessed and identified by a competent person that it:

- Is in good condition
- Has been retested; and
- Has been retagged.



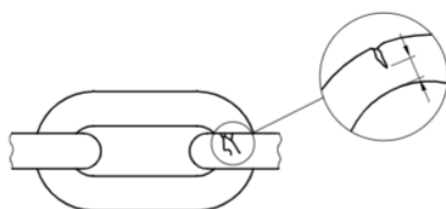
(Figure 5)

Figure 5 - An example of a worn component of a chain. Source: AS 3775.2

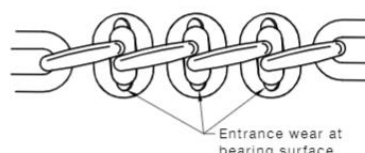
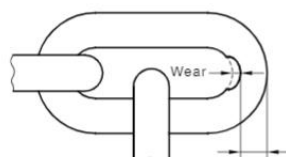


(Figure 6)

Figure 6 - An example of damage to links while in service. Source: AS 3775.2



(Figure 7)



(Figure 8)

Figures 7 and 8 - Examples of damage to links while in service. Source: AS 3775.2

Inspection frequency of chain slings

Chain slings are required to be inspected on a periodic basis by a competent person.

APPENDIX C
PERIODIC INSPECTION GUIDE FOR ALLOY CHAIN SLINGS—T(80) OR
V(100)
(Informative)

Number of lift cycles per week	Inspection monthly	Inspection 3 monthly	Inspection 6 monthly	Inspection 12 monthly
1 to 5	—	—		Yes
6 to 25	—		Yes	—
26 to 200	—	Yes		—
201 plus	Yes	—		—

NOTE: The above is a guide and the inspection schedule has to be determined by the end user based on the duty cycle (of M3 as specified in AS 1418.1) and the environmental conditions of use.

Figure 9 - Periodic inspection guide for the chain slings. **Source: AS 3775.2**

Appendix 3 Inspection Guides for Wire Rope

Wire Rope Slings

Wire rope slings constructed of stainless steel or other fatigue-prone materials may require periodic inspections at higher frequencies than expected for wire rope slings made of carbon steel.

Damage of wire rope can appear as the following:

- Fractures caused by severe overloading
- Worn outer wires and severing
- Abrasion
- Cuts, rupturing and loosening of wires/strands
- Kinks
- Birdcaging
- Corrosion due to exposure to chemicals or inadequate storage
- Distortion of load bearing points

Any decision whether or not to withdraw a sling from use shall be based on an assessment of the general condition of the sling by a dogger. After examination if any doubt exists regarding the safety of a sling, it shall be withdrawn from service.

Appendix 4 Inspection Guides for Synthetic Sling

Synthetic webbing slings/ Synthetic round sling markings

Each sling is required to permanently and legibly be marked with the following information:

- Working load limit (WLL)
- Fibre materials
- WLL load chart
- Month and year of manufacturer of the sling
- Identification of marking to correlate the sling to a test certificate/or batch number i.e. serial number.
- Manufacturers identification.

If the sling tag is damaged to the point where details are illegible, or the tag is missing immediately remove the sling from service and render the sling usable.

Precautions for the use of synthetic webbing slings/ Synthetic round slings

- Avoid contact with hot surfaces and exposure to hot gasses
- Slings that have become wet in use, or as the result of cleaning, should be hung up to dry and be allowed to dry naturally. Under no circumstances should slings be heated or otherwise force dried.
- Never use a knotted sling.
- Protect the sling from sharp edges by using protective sleeves or corner pieces. Do not pass a sling over sharp corners or edges without adequate protection from abrasion or cutting.
- Avoid snatch or shock loading.
- Do not drag a load that is slung or allow a sling to be dragged over the ground or rough surfaces.

Signs of damage for Synthetic webbing slings and Synthetic round slings

The following signs of damage should be looked for during inspections, particularly during periodic inspections:

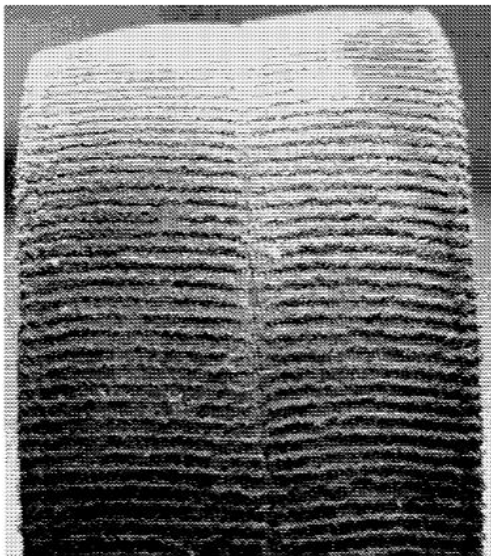
- External wear caused by dragging over rough surfaces causing opening on the surface of fibers (a furry appearance). (See Figure 3)
- Local abrasion which is caused by movement over sharp edges while the sling is under tension.
- Cuts and contusions may be indicated by local rupturing or loosening of the yarns.
- Internal wear will be caused by repeated flexing.
- Unexplained lumps or thin regions inside the cover
- Damage to protective coating or sleeve can allow abrasive grit easier access into the sling.
- Damage from high temperatures can be the result of a hot environment, radiation or friction
- Prolonged exposure to sunlight. Degradation may be indicated by hairy appearance of fibres

- Chemical exposure is indicated by local weakening or softening of the webbing material
- Label damage
- Deterioration of stitching
- Damage to any eyes
- Damage at the connection to any terminal attachment
- Damage to any end fittings

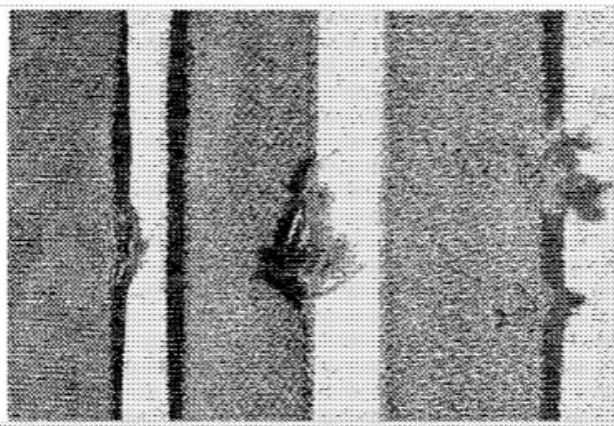
At intervals of not more than 3 months the slings shall be inspected by a competent person. For heavily used slings the inspection should be more frequent. Inspections for any signs of damage shall cover all surfaces along the full length of the sling.

The dogger may recommend the sling be discarded, repaired or approve of the sling being returned to service. Upon discarding of slings, they shall be rendered unusable e.g. sling be cut through.

If you notice damage to a fabric sling do not use it. Withdraw it from service, attach a danger tag and have a certified dogger inspect the lifting gear. The dogger may certify that it is still suitable to use. In that event remove the tag and place back in service.



(Figure 3)



(Figure 4)

Figure 3 Surface wear on synthetic webbing sling due to abrasion. Note furry surface. Source: AS 1353.2 - 1997

Figure 4 Example of load-bearing fibers that have been cut. Source: AS 1353.2 - 1997

Appendix 5 Inspection Guides for Certified Lifting Points/Lifting Lugs

Some pieces of equipment may possess certified lifting points for the purpose of moving a piece of equipment with the use of a crane. Manufacturers of equipment will provide location and further specification of certified lifting points. You must only use a certified lifting point that has been identified as such by the manufacturer. These lifting points must have a load rating clearly identified with associated WLL.

Before using a certified lifting point, it must be inspected before use by a competent person and be routinely inspected as per manufacturers requirements. These points must be added to a register to be inspected.

The following must be considered when making pre-use checks:

- Has the lifting point been properly identified as such?
- Is the load rating visible or otherwise identified by the manufacturer?
- Has the lifting point been modified?
- Has the lifting hole degraded or is it no longer the same shape? Are there sharp edges, dents or dings? If so, this indicates excessive wear and will need to be repaired before use by a competent individual.