PRO-4.5-0001-1-06
Lifting Operations

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This document has been approved for release and changed as per the associated eMoC.
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1. **Purpose**

Whenever BP conducts construction, maintenance, demolition, remediation and other similar work that are typical of our industry, there is the potential for harm to people and the environment and for damage to equipment. This document provides requirements for Lifting Operations in support of PRO 4.5-0001-0-01 Control of Work and PRO 4.5-0001-1-01 Permit to Work.

This procedure sets out a required approach to lifting operations in accordance with BP’s Golden Rules of Safely, the requirements of GDP 4.5-0001 Control of Work, Annex1: Task Requirements:1.5 Lifting Operations and OMS Group Essentials 3.2.1 and 4.5.1.

The document defines the requirements that apply to lifting operations within ANZ MS&L to protect personnel from injury and property from damage.

2. **Scope**

The requirement specified in this procedure applies equally to BP employees, contractors and visitors engaged in BP ANZ Fuels Value Chain; Marketing, Supply & Logistics.

Specific sites, areas and activities may have more detailed OMS requirements and where these exist the requirements will be specified in local procedures, safe work instructions, manuals, handbooks or specific standards.

3. **Definitions**

- **Competent Person**: A person who, through past experience, training or qualification, has demonstrated capability in performing a particular task. There are various levels of what is deemed competent for different aspects of lifting from simple lifts or basic rigging to operating cranes (fixed/mobile) to perform complex lifts.

- **Complex Lift**: A Category 2 lift, as prescribed in Section 5.1

- **Critical Lift**: A Category 3 lift, as prescribed in Section 5.1

- **Lifting Equipment**: Mechanical or manual lifting device used to perform lifting operations, e.g. crane, forklift, hyabb, winch, pulley, etc. and axillary equipment used in direct association of lifting operations, e.g. to secure a load (i.e. chains, slings, spreader beams)

- **Lifting Operations**: Lifting operations are the lifting of any load with lifting equipment

- **Lift Plan/or Study**: A study by a competent person(s) of the factors affecting the safety of a proposed lift and the controls necessary to manage it. The required level of competency of the person(s) depends on the complexity and hazards of the lift.

- **Rated Capacity (Safe Loading Load)**: The maximum mass (in kg or tons) which may be handled by a crane at a specific working radius (in metres) and a specific boom or jib length without the strength or stability requirements being exceeded. The rated capacity shall comprise the following Mass of the lifted load and lifting attachment and Mass of the hook block in use.
Safe Working Load (SWL)  
The maximum load, determined by an approved engineer that an item of Lifting Equipment might raise, lower or suspend under particular service conditions.

Simple Lift  
A Category 1 lift, as prescribed in Section 5.1

Working Load Limit  
The maximum load that the lifting equipment is designed to raise, lower or suspend under ideal conditions (the Safe Working Load will usually be the same as the Working Load Limit – but may be less).

4. Roles & Responsibilities

4.1. Planner

The person planning the Lifting Operations is responsible for ensuring that the performing authority is communicated the requirements of this procedure as part of the planning process prior to work. This may be discharged through the Issuing Authority if the work is conducted under a work permit. The planner role is often not a dedicated role and may be fulfilled by Project Manager, Project Engineer, Retail Field coordinator, Terminal Manager, etc.

4.2. Issuing Authority

PRO-4.5-0001-1-01 Permit to Work documents the responsibilities of the Issuing Authority for work permits associated with Lifting Operations.

The Issuing Authority is responsible for ensuring that:

- The Lift Plan / Lift Study is undertaken by a competent person(s) and in consideration of the complexity and hazards of the lift and shall approve the Lift Plan / Lift Study.
- Verifying that operators of lifting equipment are trained and certified for that equipment
- Verifying that lifting devices and equipment are certified and inspected before each use.
- Verify that rigging of the load will be undertaken by competent persons.

4.3. Performing Authority

PRO-4.5-0001-1-01 Permit to Work documents the responsibilities of the Performing Authority for all work permits or work clearances (as applicable) associated with the Lifting Operations.

Performing Authority is responsible for ensuring that:

- Providing the Lift Plan / Lift Study which is to be undertaken by a competent person(s), the required level of competency depends on the complexity and hazards of the lift.
- Overall responsibility and control of the lifting operation.
- Ensuring the lift is undertaken in accordance with the lift plan.
- Ensuring that operators of lifting equipment are trained and certified for that equipment.
- Ensuring that the rigging of the load is undertaken by competent persons.
- Ensuring that lifting devices and equipment are certified and inspected before each use.
- Ensuring that assembly and disassembly of cranes (if applicable) is risk assessed.

4.4. Site Representative

The Site Representative shall be the Site Manager or delegate, or if the site is unmanned it may be the Issuing Authority. The Site Representative is responsible for the overall safety of the site.
The Site Representative is responsible for communicating to the Issuing Authority (work under a Work Permit) or Performing Authority (work performed with a Work Clearance) the site operations that may affect the lifting operations. They shall also ensure that other parties on site that may be affected by the lifting operations are informed.

No works shall be undertaken before the Site Representative countersigns the work permit or work clearance form.

5. Lifting Operations

5.1. Risk Assessment

a. Lifts utilising cranes, hoists or other mechanical lifting devices shall be risk assessed prior to the task commencing.

b. The BP Task Risk Assessment Table (TRAT) documents the level of risk assessment required depending on the type and complexity of the lift.

1. Category 1: Simple Lifts

   These are low risk, simple lifting operations to which none of the Category 2 or 3 items apply to the lift. For example:

   i. The load is pre slung or very easily slung, with no external factors that complicate the operation

   ii. Use of forklift

   iii. Use of a vehicle loading crane (eg. Hyabb). This is a powered slewing crane mounted on a vehicle for the principle purpose of loading and unloading the vehicle. A licence is not needed where the crane’s capacity is less than 10 metre tonnes.

![Figure 1: Calculating the metre tonnes for vehicle loading cranes](image)

   A non-slewing mobile crane (eg Franna). This is a powered mobile crane incorporating a boom or jib that is not capable of being slewed. This includes an articulated type mobile crane and a locomotive crane. It also includes a mobile multi-function unit capable of being operated as a non-slewing crane, but excludes a crane engaged in vehicle tow truck operations.
Figure 2: A non-slewing mobile crane (articulated type)

v. The load is either pre-slung or involves only basic slinging
vi. Personnel involved are competent and well-practiced in the lifting operation
vii. The load has certified anchor points
viii. The weight of the load is <450 kg

2. Category 2: Complex Lifts

Complex Lifts require a higher level of experience, qualification, and/or certification in order to plan and/or execute than a Category 1 Lift, but do not require high risk lifting activities such as those listed under the Category 3.

For example:

i. The load will be lifted, cross hauled or restrained using two or more non-powered lifting appliance with 100% redundancy.

ii. The lift is conducted within a confined space or trench or excavation.

iii. The load has an offset centre of gravity without special slings to compensate, or is an awkward shape or has a large sail area.

iv. The load is fragile.

v. The lifts require slings to be used at an angle of < 60° from horizontal.

vi. There is restricted headroom for the lifting appliance.

vii. The lift requires use of fixed temporary installed powered lifting appliances.

viii. The weight of the load is <4,500 kg. This includes loads <450 kg if all other requirements of a Category 1 can’t be met.

3. Category 3: Critical Lifts

These are lifts to which any of the following apply:

i. Approach/removal route is obstructed

ii. The suspended weight is ≥ 80% of the WLL of any lifting accessory or a combination of accessories (e.g. lifting a 4T load using a 5T shackle)

iii. The load is 80% of the Net Capacity of the lifting appliance

iv. Involves lifting personnel (i.e. in a “man cage” / work box)

v. The suspension point is not directly above the load centre of gravity (i.e. load is eccentric / unevenly distributed) or a high centre of gravity where the load has the potential to become unstable

vi. Limited boom clearance is <1m

vii. The existence of proximity hazards (i.e. public road, overhead power cables, etc) within the minimum exclusion zone area. Refer local regulations and Safe Work Australia guides for working in the vicinity of overhead electric lines.
viii. The lift is over, or in close proximity to live process equipment/plant.
ix. The lift requires transportation with suspended load
x. The load is to be lifted, upended or rotated by two or more powered lifting devices
xi. The load contains hazardous material
xii. Involves jacking tank walls/roofs or any load that is not self-supporting
xiii. The load is a non-rigid object (e.g. tank shell)
xiv. The lift carries potential for severe business impact based on the outcome of the lift due to the potential consequences of a failed lift (e.g. process safety event) or the value of the load
xv. The lift involves an appliance or load over water
xvi. The lift requires a heavy lift crane to be built on site
xvii. The load will be lifted, cross hauled or restrained using two or more non-powered lifting appliance without 100% redundancy
xviii. The load is classified as a heavy lift (≥4,500 kg)
xix. All other lifting activities which carry a high residual risk or incorporates a task which would be considered high risk but is not listed in Category 1 or 2.

c. The risk assessment for the task should utilise the hierarchy of controls, i.e.:

1. **Elimination**: For example designing items so they are of a size, shape and weight that can be delivered to, handled or assembled at the location where they will be used without the need for a crane.

2. **Substitution**: For example, replace a crane with an operating cabin that has a restricted field of vision with one that has a clear field of vision.

3. **Engineering controls**: For example, enclosing the operator with a falling objects protective structure to minimise the risk of being hit by a falling object.

4. **Isolation**: For example, use of physical barricades to create an exclusion zone to separate mobile plant from crane operations and workers.

5. **Administrative controls**: For example, crane cleaning or maintenance procedures could require that all controllers are placed in the "off" position and the main switches are open and locked. Controls are physically locked out and tagged to prevent unauthorised or unintentional start-up.

6. **Personal protective equipment**: For example, gloves for rigging, hard hats, high visibility vests, and hearing and eye protection.

### 5.2. Requirement for Lift Plan / Lift Study

Lifting operations shall not proceed until a formal lift planning process (lifting study) of a level applicable to the lift categorisation has been conducted. There are many lifting plan formats in use; it is not the intent of this procedure to enforce a standard format. The following criterion sets out the minimum level of information that should be considered in a lift plan.

a. Category 1 lift plans can be defined within a standard operating procedure which does not vary in its execution. Basic Lift Plans must clearly define the limitations on the loads, lifting methods and areas of operation. These shall be supported by a job safety analysis or safe work method statement to identify hazards and assess risk.

b. For each Category 2 and Category 3 lift a lift plan should be developed which as a minimum should consider or identify the below where applicable:

1. Name and job title of person producing the lift plan
2. Site name and location of lift
3. Title describing the lifting operations
4. Load weight and centre of gravity
5. Weight of lifting tackle and hook block
6. Number of personnel, roles and competence
7. Method of communication
8. Method statement or step-by-step procedure
9. Detailed safe operating limits of the lifting equipment (capacity charts or curves)
10. Crane capacity at selected (worse case) radius and crane utilisation percentage
11. Applicable approval, endorsement, review and authorisation names, dates and signatures
12. References to associated documentation (e.g. pre-lift readiness check sheet, risk assessment, contingency plan, rescue plan, permit to work)
13. Other proximity hazards e.g. lifting over live plant, overhead power cables, public roads, etc.
14. Consideration of the placement of lifting equipment, plus potential consequences of catastrophic failure or unintended motion of the load or equipment, with particular attention to other proximity hazards and areas where people congregate
15. Assessment of whether to use tag lines, including their hazards and limitations
16. Tackle list or sketch - for non pre-slung loads
17. Pad-eye / shackle interface details - for non pre-slung loads
18. Engineering calculation
19. Load integrity and dropped object inspections
20. Wind / weather (e.g. limitations of cranes, sail area of load)
21. Extreme cold or heat and de-rating of equipment
22. Exclusion zone definition
23. Site assessment to determine soil load-bearing capability of the site, including the lift area and the route to the area in the case of mobile cranes
24. Maximum allowable ground bearing pressure calculations and load spreading details
25. Acceptable proximity of outrigger or tracks to underground services and the route in the case of mobile cranes

c. The lift plan shall be conducted by a person competent in development of a lift plan commensurate with the lift categorisation

d. The lift plan shall be reviewed by a competent person:

1. This shall either be the Performing Authority for the task, or for more complex lifts this may require a person with a higher level of competency to review the lift study. In this case the reviewer shall document their review in writing, including their name and signature.
2. The Performing Authority shall confirm that each individual lifting task is correctly risk assessed for the conditions it is to be conducted in.

e. Where applicable, the Performing Authority shall confirm that assembly and disassembly of cranes are fully risk assessed.
5.3. Lift Planning Considerations

A formal lift planning process shall include the following:

a. Assessment of the lifting task (e.g., load rigging and handling arrangements, load manoeuvring, load integrity and stability, pick-up and set-down arrangements), including simultaneous operations.

This shall be considered and documented within the lift study or task risk assessment completed in accordance with the lift categorization in the BP TRAT.

b. Use of certified personnel with clearly defined roles and responsibilities.
   1. Operators of lifting equipment shall be familiar with and competent in the operation of the type of equipment (e.g. crane, forklift, etc.) that they are required to operate including with the design, layout, operating functions and maintenance and inspection requirements.
   2. All persons either operating, rigging, or inspecting cranes and auxiliary equipment shall be trained and qualified for the particular discipline and meet all regulatory competency requirements for the jurisdiction that the task is undertaken.

c. A visual inspection of the crane and associated environmental and operational conditions in which the crane is intended to be installed, erected and used

d. Confirmation of clear lines of communication to allow the work to be conducted in accordance with the approved lift plan.

e. Assessment of overall lifting conditions (e.g., the adjacent live equipment, worksite environment, ground and weather conditions, load rigging method and handling arrangements), including lift area barrier management and warning signage.

f. Verification that specified lifting equipment has been visually inspected and certified prior to the lift commencing in accordance with:
   1. Regulatory requirements.
   3. Applicable BP practices.

g. The crane operator shall carry out a visual inspection and functional tests before the start of each work shift, including inspecting and testing the following:
   1. All relevant items indicated in the operations manual
   2. Operating and emergency controls
   3. Brakes
   4. Safety switches and interlocks, including limiting and indicating devices
   5. Visual inspection of the structure of the crane
   6. Wire ropes to ensure they are on the drum, correctly reeved on the sheave and are not damaged or excessively worn.

The results of the inspection shall be entered into a logbook and kept with the crane.

h. Pre-use checks shall be completed for all lifting equipment confirming it is fit for purpose. All lifting equipment including slings and hooks shall be visually inspected prior to each use and periodically inspected for damage and wear by a competent person with inspection records kept. All auxiliary lifting equipment should be tagged or otherwise physically identified (e.g. plate on spreader beam) with the date of the lifting equipment’s last inspection and shall be done so to certify equipment in accordance with regulatory requirements in jurisdictions where these exist. Documented maintenance records for the lifting equipment shall be available.

i. Confirmation that lifting capacities which are specific to the crane and rigging configuration are detailed in the lift plan. The Performing Authority shall confirm that this is in place prior to commencement of the lift.

j. Confirmation that safety and load limiting devices are installed and functional. The competent person conducting the lift shall confirm that these are in place prior to commencement of the
lift, as part of the equipment pre start. The equipment pre start / log shall be kept with the vehicle.

5.4. **Barricading and Exclusion Zones**

a. The isolation of personnel from lifting operations shall be considered in the risk assessment for the task.
   1. Workforce members who are not involved with the lift shall be restricted from the lift zone through effective barrier management.
   2. Personnel involved in lifting operations shall not walk under the load once the lift has commenced.

b. Forklifts shall not be used without the operating area being segregated for pedestrians or warning signs are in place

5.5. **Lifting Management**

a. Lifting operations should be conducted by BP accredited contractors or sub-contractors engaged through contractors BP Accredited to manage sub-contractors.

b. The organisation (contractors or subcontractor) responsible for performing the lift shall keep auditable records of lifting equipment certification and competencies of those involved in the lift (including appropriate licences for the task as required by local regulations).

6. **Associated Documents**

6.1. **Documents**

NIL

6.2. **Records**

NIL

7. **Verification**

The information outlined in this document shall be included in the ANZ FVC MS&L Self-Verification Programme (PRO-8.2-0001-0-01) or an equivalently approved BP assessment process.

8. **External / Internal References**

This Document was drafted with reference to relevant legislation at the date of drafting, including but not limited to, relevant Acts, Regulations, Australian Standards and industry codes and practices. Details of current legislation can be provided by the HSSE team on request.

9. **Revision Summary**

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<tr>
<th>Version</th>
<th>Prepared by</th>
<th>Description of Change</th>
<th>Date</th>
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<tr>
<td>1</td>
<td>A. Connolly</td>
<td>Initial</td>
<td>14/11/2014</td>
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<tr>
<td>2</td>
<td>A. Connolly</td>
<td>Updated to improve formatting and readability. Incorporation of definitions of Critical, Complex and Simple lifts and details of what these levels subsequently require. Updates to responsibilities.</td>
<td>13/5/2016</td>
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