

Contract Title	Crown Trading Estate Hayes
Principal Contractor	HCPL
Crane User	HCPL

Tower Crane Lift PLAN

TOWER CRANE LIFT PLAN

ISSUE CONTROL

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REVISION HISTORY

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37 Confirmation of Induction to – and Acceptance of – this Lift Plan “I hereby sign to confirm that I have been inducted to this lift plan by either the AP or the crane supervisor as stated in BS7121 and LOLER 1998” 30

Crane Supervisors must ONLY be inducted onto this Lift Plan and Schedule of Common Lifts by the Appointed Person. The AP and Crane Supervisor can induct Slingers and Crane Operators onto this Lift Plan and Schedule of Common Lifts. 30

“By signing this lift plan I confirm that I shall work strictly in accordance with and to the lift plan and Schedule of Common Lifts” 30

38 Confirmation of Induction to – and Acceptance of – this Lift Plan 31

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Controlled Copy Distribution List

CONTROLLED COPY NO.	JOB TITLE
01	Appointed person / Michael Tucker
02	Project Manager / John Munteanu
03	Safety Manger / Daren Banner

3 Preface

This lift plan (LP) is provided and authorised by Michael Tucker the Appointed Person (AP) this must be followed and implemented. **The plan fulfills the requirements to discharge condition 16 of Application Ref. 73955/APP/2022/2613.**

All installations must also always follow the strict code of practice outlined within this documentation and completed/witnessed by a confident and competent AP.

All project tower crane/s will be utilised for the purpose of assisting with ground and enabling works, floor and frame construction, cladding, roofing works, and internal fit-out, and the lifting of all associated materials, plant and machinery, plus any other lifting applications as undertaken within the parameters of this lift plan, its Schedule of Common Lifts, or subsequently drafted addenda to it, or AP approved slinging proposals from subcontractors.

This LP relates to all tower crane lifting activities on the above project by HCPL and by their authorised trade contractors or subcontractors, as work progresses. All lifting operations must only take place within the site boundaries, which includes any officially designated pit lanes deployed throughout the life of this lift plan.

This lift plan does not cover any lifting operations performed by other parties. However, if commercial agreements are in place whereby HCPL lifting team performs the lifting operations for those other parties, on the same site, and the slinging methods are in accordance with this lift plan, then under those circumstances it would remain in effect.

In addition to the lift plan itself, the lifting team is to work in accordance with the accompanying Schedule of Common Lifts. Only those load types, which are covered by the Schedule, or by an addendum to it authored by the Appointed Person (AP) are authorised to be lifted by the tower cranes on site. Any company proposing to make use of the tower crane to lift anything not in the Schedule, must first submit their slinging proposals to a member of Henry management, who will email them on to the AP for review - see Section 23 Slinging of Loads.

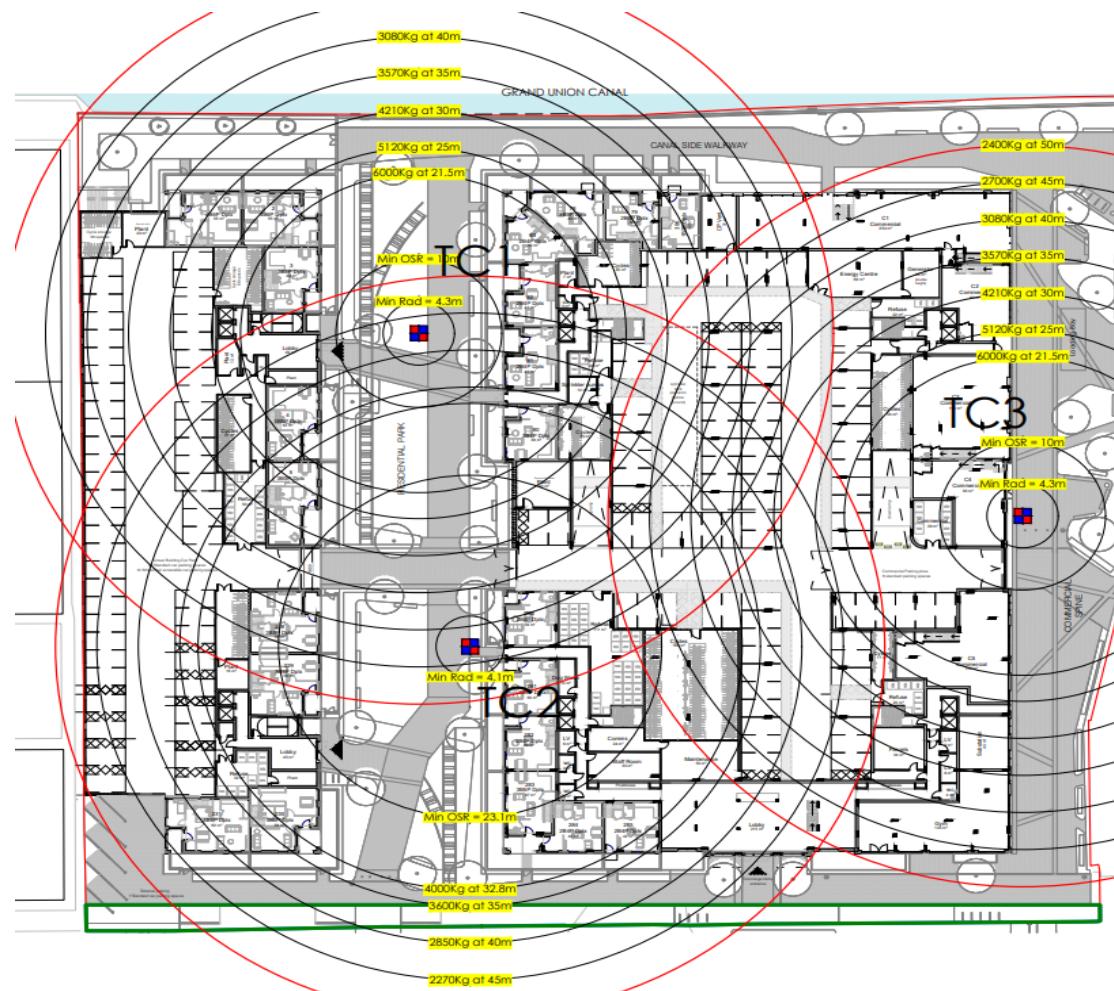
All operating, supervising, slinging and banking operations remain the ultimate responsibility of the user, HCPL who undertakes to ensure that all of its other subcontractors, are providing only trained and qualified personnel that are appropriately qualified, have experience of working with tower cranes, experience and knowledge of the accessories being used, and who will be made familiar with the contents of this lift plan - signing to confirm their acceptance to work in accordance with - prior to being allowed on to the lifting team.

Please see the scheme drawings that follow which show how the cranes will interact with each other.

CONTACT DETAILS FOR THE NON-RESIDENT APPOINTED PERSON, AND FOR Henry EMERGENCY CONTACTS:

AP Name	Michael Tucker
AP Mobile	07778220192
AP Email	Mtucker@henryconstruction.co.uk
Site Emergency Contact	John Munteanu - 07721064981
H&S Emergency Contact	Daren Banner - 07852904252

- **Crane Scheme Drawing**



4 Tower Crane Details

The tower cranes below were erected on sacrificial frames supplied by the crane manufacturer and cast into a reinforced concrete base, as per a temporary works design prepared using foundation loadings obtained from the crane's manufacturer, by a structural engineer, checked and signed off as part of a (minimum) **Category 3 process**, by another structural engineer, and then constructed by the contractor in accordance with the design. They were to be confirmed as having reached the required cube test strengths, with all the above facts being confirmed by the issue to the erection company of a base sign-off certificate for the tower crane and installation, before the erection commences.

Tower Crane Data TC1	
Crane Make	Jost
Model	JTL158.6
Tower Height	42M
Jib Length	50M
SWL @ 21.4m	6000Kg
SWL @ 50m	2400Kg
Out Of Service Radius	10m
Minimum Working Radius	4.3m
De-Rated Due To Network Rail	N/A

Tower Crane Data TC2	
Crane Make	Comedil
Model	CTL140
Tower Height	42M
Jib Length	50M
SWL @ 32.8m	4000Kg
SWL @ 50m	1800Kg
Out Of Service Radius	23.1m
Minimum Working Radius	4.1m
De-Rated Due To Network Rail	N/A

Tower Crane Data TC3	
Crane Make	Jost
Model	JTL158.6
Tower Height	42M
Jib Length	50M
SWL @ 21.4m	6000Kg
SWL @ 50m	2400Kg
Out Of Service Radius	10m
Minimum Working Radius	4.3m
De-Rated Due To Network Rail	N/A

5 General Information

The tower cranes are owned by Henry and erected by Bennett's who erected them in accordance with their submitted RAMS. They will also routinely service, maintain, and eventually dismantle the deployed tower crane, providing full method statements and risk assessments for each operation, in sufficient time for the user to check, and if necessary, query any unclear aspect of the provided documentation. In accordance with HSE guidance, each tower crane must be fitted with an anemometer sensor on the highest point of the crane e.g., the nose of the jib.

The manufacturer's record book for the cranes is to be filed within section 3 of the folder, available for inspection.

The load test certificate and independent thorough examination reports, along with zoning installation confirmation, are to be kept filed within section 4 of the folder.

Service reports, and repair worksheets, can be found in section 10.

6 Aerodrome & Related Notification Status

The CAA have been notified of all crane locations and heights. All tower cranes on Henry Constructions are notifiable and in line with CAP 1096.

7 Post Erection Procedures Prior to Commissioning

The pre- and post-erection statutorily required procedures must be correctly carried out, as evidenced by the documentation (available for inspection in the project's lifting files), prepared by and being maintained by HCPL project management and the Henry crane supervisor, and routinely checked on a monthly basis by the AP.

For information, and to ensure the users have knowledge of the procedures carried out, they are detailed below:

- Following each tower crane's erection to the above configuration, using the signed-off method statements, risk assessments, and COSHH assessments, the tower crane must be subjected to a full pre-test examination / inspection by the erection supervisor, and if in order a safe working load at both maximum load, and maximum radius load, is carried out, followed by a minimum 110% over-load test at both radii. (125% in the event of the crane being new; this test might be carried out in the yard prior to delivery.)

- This will be followed by the issue of a hand -written test certificate issued by the erection supervisor, which will be followed by a formal test certificate issued to the project by Bennett's within 14 days. (NB: It is a duty of the crane supervisor to ensure the formal certificate is subsequently received.)
- An independent LOLER required thorough examination will then have been carried out, by a suitably qualified independent examiner, and if all is in order, he will issue a handwritten draft thorough examination certificate, again being followed by a formal typed copy within 14 days, with the crane then qualified to commence operations. (NB: It is a duty of the crane supervisor to ensure the formal certificate is subsequently received.)
- It is a requirement that the induction of the TC operator, to be utilised to operate the make and model of tower crane deployed, be organised as an integral part of the erection and hand over process of the tower crane, with documentary evidence being provided to HCPL by Bennett's, to substantiate this induction, which will include confirming their abilities and competency to both operate, place out of service, carry out statutory daily and weekly checks, and complete all required routine maintenance and lubrication of moving parts etc. It is also a requirement for the deployed TC operator to bear current and compliant CPCS cards, bearing the category A04 Tower Crane and endorsement B Cab Controlled Luffing Jib, and a tower crane specific certificate / letter of medical fitness be supplied, and copies retained in the lifting file, confirming that they are suitably qualified and fit for the duties they will provide/perform.
- *The above operator credentials/requirements are all required to be in place before any relief or replacement operator, regardless of expected duration on site, are allowed to operate the tower crane. The Appointed Person MUST be given 24 hours' notice if there is a change of crane operator, this is to allow for the Appointed Person to check the operators' credentials and competency.*
- It must be recognised that the formal lift plan launches by the HCPL non-resident appointed person, including the signing of the lift plan, by the Bennett's operators and the Henry lifting team, must take place before operations commence.
- Note that additional thorough examinations, by an independent examiner, will be required every six months as per statutory requirements, or whenever exceptional circumstances have occurred that would create a statutory need for such e.g.: shock loading or the mast being struck by a load.

8 Tower Crane Security Procedures

There are expected to be specific site security requirements that HCPL will be putting in place, as a result of company policy but likely also site- specific measures as considered necessary by the responsible health & safety professional. It is fully expected that these will either meet or exceed the AP's expectations, but for the avoidance of doubt as a bare minimum the following would all be expected to be in place, specifically regarding the tower cranes, and adhered to:

- Secure base hoarding with a lockable door, the lock of a type that can always be unlocked from within
- Cab door locked at the end of each shift
- Power to the crane isolated at the end of each shift
- Anti-climb protection grilles against intruders to be fixed on all sides of both towers, with the power cables routed on the inside of them so that they cannot be used to bypass the grilles
- The lifting team is reminded to adhere to any further measures that have been put in place by HCPL.

9 Electronic Zoning System

An electronic system that restricts the movement of the tower cranes into pre-defined areas, also known as a 'zoning system', will have been fitted by a company experienced in the use of such equipment, in order to

physically prevent the tower crane from over-sailing the site boundaries. An installation certificate confirming the successful installation, and showing its parameters, will be retained in the lifting folder available for inspection by any interested parties.

The tower crane operators are/will be instructed never to over-sail the site boundaries, and not to rely on the electronic system - it is purely there as a fail-safe measure, and first and foremost we require fully competent operators to adhere to the boundary rules. Please see the signed drawing, indicating the extent of the zoning configuration, to be filed in section 4 of the project's crane folder.

10 Anti-Collision Procedures

An integral anti-collision system (secondary system) will be fitted to the tower cranes as part of the commissioning process. It operates by each crane fitted to the system transmitting radio signals to the adjacent crane's CPU which have all been programmed to recognise and respond to adjacent crane's locations and motion movements. It is also a fail-safe system, that will cease all crane activities if one crane's motion limiting device fails.

Each crane is also operating under an anti-clash arrangement (primary system) which is an anti-clash radio facility where the operators of both deployed tower cranes are issued with an additional radio on a discreet channel and must advise adjacent crane operators when they are slewing or derricking into air space potentially occupied by the adjacent tower crane. The crane supervisors will also be provided with radios & collar mics in case they need to transmit on this channel, but they are instructed never to use it except in the case of genuine concerns. The channel must never be clogged up/engaged by chit-chat.

Where new operators are inducted by the crane supervisor, on behalf of the AP, it is a duty of the crane supervisor to draw their attention to this system and explain it in the same way. It is a requirement for operators & crane supervisors to perform a radio check on their anti-clash radios at the start of each shift, and each time a crane which was out-of-service (for any reason) resumes service. It is expected that the Henry list of operator daily checks includes a check on the working condition of their anti-clash radios, but if not then it must be added to the Henry daily shutdown procedures form.

11 Non-Static Crane/Concrete-Placing Boom Use in Range of the Tower Crane

It is currently understood that no other types of cranes will be working on this site; if that is to change, the AP must be consulted in advance so that he can consider the situation and specify minimum safety requirements as needed to minimise the risk of collision. Should concrete-placing booms be deployed, the operator must first be toolbox-talked by the crane supervisor on the basic statistics of the tower crane and given a rundown of the expected lifting operations the tower crane will perform whilst the boom is in use. The boom operator will also be given a radio handset configured to the cranes' anti-clash channel.

The crane operator must warn the boom operator before taking any part of the crane or its load within ten metres of the boom. The boom operator must warn the crane operator when a) working moving to work near to a crane which is facing away from the boom, b) the boom is positioning in an area that would be blind to the crane operator, or c) allowing the boom to approach the height of a crane's counterweight or centre of rotation.

12 Procedure for Use of One Crane When Another in Collision Range is Out-of-Service

There may be occasions where not enough operators turn up for the shift on a given day, or where one or more cranes are unusable due to defects or other circumstances. When this happens, it is permissible for one crane to be used whilst the other is out-of-service, but there is a very strict procedure that must be followed:

- The crane which is not going to be used must first be climbed by the operator, who must point it in the most convenient direction possible i.e., where it will be least obstructive given the planned activities that day for the working crane, leave the jib angle set at 45 degrees, and then lock the jib in place with the slew brake. The hook must be left as found.
- He must then sign to the effect that he has done so, and then the other crane may work.
- At the end of the shift, or should strong wind emerge during the shift, the working crane/s must be put out-of-service as per the standard procedure for such, and then the non-working crane/s must be returned to its designated out-of-service radii and left in free slew. Before leaving site, the relevant operator must sign to confirm both cranes are correctly out-of-service.

13 Placing the Tower Cranes in Safe Out-of-Service Condition

It must be recognised that no tower crane should be vacated by its operator, either overnight or at any other time, particularly when the maximum permitted operational wind speed of 38 miles per hour is being approached or exceeded, without adopting the following procedure:

- The crane must be left in free slew when out of service, with nothing left on the hook
- The hook must be raised near to its maximum height but leaving enough to be able to nip it up in the morning/crack any ice or frost that may have formed on the sheaves overnight and be parked at the out of service hook radius as per those specified in Section 3 - Tower Crane Details on page 5.

At the end of the shift, the cranes must be secured & made safe, in line with the requirements specified by Henry as part of their project risk assessment on the security of the cranes outside of site hours. As a minimum, the cab door must be locked, the hoarding door locked, and power to the crane isolated at the base (if possible, do without compromising the aircraft warning beacon).

HCPL and management are to instigate a procedure whereby at the end of each shift, prior to leaving site, the operator confirms in writing i.e., a sign-off sheet that the crane has been correctly put out-of-service. This should include such details as nothing being on the hook, the hook being raised to an appropriate height, the crane being set to weathervane, the cab door being locked, the hoarding door being closed/secured, there being no loose items left on any part of the crane, and that the crane has been powered down (and isolated where possible).

The crane supervisor is responsible for ensuring this is recorded and filed on a regular basis.

14 Operator Maintenance & Inspections

The operators of each crane are to perform daily visual inspections as per the requirements of the inspection sheets provided by Bennett's. A record of these inspections, together with details of any identified defects, will be entered on the inspection sheet, and stored in the crane file. Any identified defects must be immediately reported to HCPL and management, who must not only telephone Bennett's but also follow up with email notification so that there is documentary evidence of the notification.

All defects must be rectified at earliest possible juncture, and not considered rectified until the crane supervisor, or HCPL, has personally witnessed documentation from Bennett's confirming the defects are rectified. (Said documentation to be stored in the crane file.)

In addition to daily inspections, operators are reminded to perform routine maintenance as per the requirements of the Bennett's inspection sheets, to note on the inspection sheets when additional supplies such as lithium grease or wire rope spray are required, and to ensure that HCPL are routinely emailing the inspection sheets into Bennett's each & every week! The crane supervisor is responsible for ensuring all of these have been done thoroughly, on time, and with any defects having been reported and recorded appropriately.

The crane supervisor is responsible for ensuring that these inspections take place & that records of these inspections are kept up to date. He must pay particular attention to the operator checks, ensuring that there are no indications that the operators are just "going through the motions", i.e., check they have not confirmed performing a check of equipment which the particular crane does not have. (If in doubt, call the AP.)

15 Tower Crane Thorough Examinations

As per the requirements of LOLER, the cranes must be thoroughly examined every six months. It is imperative that both the crane supervisor and HCPL both read the provided certification, in case there are any specified time defects i.e., defects which must be rectified within a stated time to ensure the cranes remain legal to use.

Always ensure, before the examiner leaves site, that he has fully completed the certificate and included the correct make, model, and serial number. HCPL will email crane thorough examination reports to the AP for further scrutiny. All parties are reminded that thorough examinations would also be immediately required following "exceptional circumstances". Examples include, but are not limited to:

- Shock loading
- Crane/plant/building collisions
- Loads hitting towers
- Other plant hitting towers
- Other plant undermining the crane base
- Lightning strikes
- Fires on the crane
- Winds of 90mph or greater
- Any sort of failure, such as the hook block lowering uncontrollably
- Firm evidence of intruders having been on the crane
- Several bolts are suddenly found to be loose to the hand
- Non lifting personal conducting lifting operations

If in doubt as to whether or not an event constitutes exceptional circumstances, please ask the AP.

16 Wind, Weather and Other Natural Phenomena

The stated maximum permitted wind speed for tower cranes in the whole of Europe is 38mph. It is important to note that this is a maximum; operators may need to refuse a lift for safety reasons at lower wind speeds, depending on the dimensions of the load and the conditions local to site. There is a lot of confusion regarding wind speed, and the numerical maximum specified. To clarify, the 38mph figure refers to gusting wind speed. If the average wind speed is lower, but gusts are exceeding 38mph, then the operators must wind off until conditions improve. If the average is lower, but high enough to be of concern to the operator, given the loads to be lifted and the location in which the loads are picked up, travelled through, and dropped off to, then he must also wind off under such circumstances.

It must not be forgotten that other weather can seriously impact on lifting operations. Driving rain can hamper the visibility of all members of the lifting team, but particularly so the operators and even more so if their windscreen wipers are not fully operational and fit for purpose.

Likewise, operators must be patient and understanding with the other members of the lifting team during rainy and/or cold conditions. In addition to visibility, they can of course affect balance, grip on the load, and the ease with which lifting tackle can be deployed. They can also impair radio communications.

Lightning is one of the least discussed topics in terms of weather and its effects on cranes. If any member of the lifting team observes lightning in the vicinity of the site, the blocks must be immediately pulled up. Although the operators are safe - provided they stay in their cabs - anybody else working with the crane is potentially vulnerable to electrocution in the event lightning strikes a crane. A period of at least twenty minutes of calm must elapse following nearby lightning strikes. During this time the operators must not vacate the cabs.

Darkness and other phenomena causing low visibility greatly to increase the risk of incidents and accidents. The PUWER regulations require that sufficient task lighting be provided for all work activity being done. Sometimes tower-mounted floodlights are sufficient, but other times - such as lifting to & from roofs or on the far sides of obstructions - additional, location-specific lighting will be required. It must be remembered that the risk comes not only from an operator with impaired vision; no member of the lifting team has nocturnal vision.

In addition to the potential for slips, trips and falls, snow and ice can cause other risks where cranes are concerned. Not only can they add to load weight and present falling object hazards, in extreme cases, but they can also cause damage to hoist ropes. When conditions are at or below freezing in the morning, it is important that the operators nip up on the hoist before they lower off the rope, to crack any frost or ice that may have formed on the sheaves of the hook block.

17 Personnel Training and Documentation

Senior crane supervisor & Deputy crane supervisor: to possess CPCS categories A62 "crane supervisor" and A40 "slinger/signaller - all types of static duties" or "slinger/signaller - all types all duties" or "slinger/signaller"

Slinger/Signaller: to possess CPCS category A40 "slinger/signaller - all types of static duties" or "slinger/signaller - all types all duties" or "slinger/signaller".

Tower Crane Operators: to possess CPCS category A04 B "tower crane - cab controlled luffing jib", make & model induction certification/evidence for the crane they are to be deployed on, and a medical certificate/letter that clears them for work on tower cranes, and which is dated within the last twelve months - in accordance with BS7121:1 2016.

With the exception of certain ECITB qualifications in lifting related disciplines, it is highly unlikely that dispensation can be made for alternative qualifications. Anybody hoping to join the lifting team with anything other than CPCS must not be allowed to do so until confirmed in writing by the AP. For the avoidance of doubt,

"CSCS Steel Erector Slinger/Signaller" is not accepted. This is because the card is achievable without the need for formal training.

Despite rumours in recent years that NPORS has become equivalent to CPCS, the AP has yet to see any evidence that the training and standards behind it are as robust, despite requesting such from NPORS. On that basis, this lift plan does not accept NPORS.

Only trained and competent personal will be allowed to preform lifting operations, each member of the lifting team **MUST** be competency assessed.

18 Lifting Team Roles

Non-Resident Appointed Person

The Appointed Person is the competent person under Regulation 8 of LOLER who must plan the lifting operations. Day-to-day management of the operations falls to the crane supervisor, on the appointed person's behalf, but the AP is responsible for periodically checking that such management is being adequately provided, and for providing oversight to ensure all statutory obligations and industry best practice are being met.

The AP- Appointed Person must be contacted at any time if any member of the lifting team, or any other party, is concerned by the way the lifting operations are being conducted.

Crane Supervisor - Senior

The project's senior/main crane supervisor, representing HCPL, will not only take direct charge of the crane, but also manage and police the overall tower crane lifting operations on this project, and all matters relating to its safe use.

It is the responsibility of the senior crane supervisor to continually risk assess as work is done, bearing in mind that lifting operations on site take place in an ever-changing environment, and what may have been simple and relatively risk-free one day, may suddenly have become much riskier due to new factors and hazards in the work environment. Whereas the slinger/signallers can assess the risks involved with basic/routine lifting, the senior crane supervisor must directly involve himself in any situation where it could be more complex and assist any deputy crane supervisor and slinger/signallers alike in identifying hazards and assessing the risks.

The AP will ensure initially that the tower crane lift plan is in place and understood (prior to lifting operations commencing) and is being fully implemented, but then it falls to the senior crane supervisor to maintain these moving forwards. He will ensure newcomers sign the lift plan in the correct place correctly and legibly. Additionally, the senior crane supervisor (on behalf of the AP) will ensure that all personnel involved are informed when any amendments or additions are required or implemented.

Crane Supervisor - Deputy

Similar to above, the ultimate responsibility and overall authority lies with the senior crane supervisor. Typically, on a single crane site, it is not deemed a requirement for there to be a deputy crane supervisor.

Tower Crane Operators

The tower crane will be manned by the designated operator, who must be inducted in the make and model of tower crane being deployed and operated. This induction must be documented & copies of this documentation retained on site (in the LF/Tower Crane Folder).

As with crane supervisors, tower crane operators have a duty to the lifting team to consider hazards whilst lifting, and to continually assess the risks as they work. They must always communicate their observations regarding specific hazards they've spotted to the crane supervisor, and this is particularly important due to their unique vantage points.

Operators are responsible for monitoring wind and other weather conditions that can affect safe lifting, and for informing the lifting team when it is too windy or otherwise risky to operate, whether just for a particular load type that is more vulnerable e.g., shuddering or insulation, or for any lifting full stop. Operators are reminded that weather forecast information is available from the project office.

Slinger/Signaller

One or more slinger/signallers must be allocated to each tower crane. They will direct the tower crane lifting operations and will ensure that the load details conform to those stated in the Schedule of Common Lifts. Ground control of the tower crane will be the responsibility of the designated lead slinger/signaller, and he/she shall be identified by an orange, high-visibility vest and hard hat. (Management are reminded to restrict non-lifting team members to non-orange hard hats/PPE)

Where more than one slinger/signaller is required (one at high level and one at ground level, or due to distance, obstruction, or any other factor) an additional slinger/signaller will be appointed. It is the responsibility of the lead slinger/signaller to inform the TC operator of the change from one to the other specific slinger/signaller directing the lift (he/she may choose to introduce a radio call sign system). At no time must the TC operator take instructions from more than one slinger/signaller simultaneously.

Slinger/signallers are reminded that they have a duty to always consider the ever-changing work environment, new hazards that emerge, and to assess the risks involved with their everyday common lifting operations. If ever in doubt, ensure the crane supervisor is aware of the situation and taking control of the risk assessment process.

19 Communications and Signals

Two-way radios to be used, with reserved / licensed frequencies, to avoid interference with any nearby public transport or other sensitive/official communications channels in operation. The crane cab is to be equipped with 2 no. handsets, one for signalling & ordinary communications, one for anti-clash purposes. The cab must have a charging dock for each of these handsets.

Each crane supervisor and each slinger/signaller are to be provided with 1 no. handset for routine use. At least 1 spare anti-clash handset must be available, for use by concrete boom or mobile crane operators. Crane channels must always be at least 2 numbers apart on the dial, so as to reduce the risk of flicking to an incorrect channel.

The crane supervisors are to each be provided a second radio, with a collar mic for ease of use, which will be set to the anti-clash channel. This is a very important additional control measure with regards to the risk of collision, but also to general risk i.e., he may spot something first and be able to emergency stop an operator who would otherwise not stop in time.

Crane operators are to not accept any signals from any personnel who are not on the lifting team, except in the event somebody signals to stop/emergency stop. If that happens, then the lift must stop until the reason has been established and appropriately dealt with.

Hand signals, when used, must be clearly gestured i.e., never just a finger on its own when signalling to lower off. Take visibility and weather conditions into account when determining whether hand signals are appropriate to be used.

Personnel of all types are strongly reminded NOT to blindly transmit on a crane channel. This has been known to be the cause of incidents and accidents. Nobody - regardless of position - must transmit on a crane channel without first firmly establishing the channel is not busy. Works' supervisors must not use crane channels for the purpose of logistics; separate channels must be deployed.

20 **Forbidden Operations**

This list is not exhaustive but is given as an indication of some of the main things which the lifting team may be asked to do by those with less understanding of the limitations of cranes and safe lifting, but which they must never agree to do.

- Tandem lifting, whether between two cranes or with any other item of plant
- Lifting over welfare units, green routes, and any other designated areas which are PPE-free
- Lifting over any people, including all slinger/signallers
- Any load type not covered by the Schedule of Common Lifts (or addenda to it)
- Lifting out of radius
- Pulling of loads
- Dragging of loads
- Lifting in a manner whereby any part of the load can over-sail a site boundary
- Lifting of personnel, unless either a) in a stretcher cage during an emergency, or b) in a working cage which has been authorised for its specific activity, in the form of an addendum to the lift plan which you've signed
- Chandelier lifting

21 **Lifting Accessory Maintenance & Inspections**

All lifting accessories in use with the tower cranes must be formally inspected weekly, by an appropriate person i.e., a crane supervisor or slinger/signaller and recorded by that person. It is acceptable for some accessories to be inspected by one person, and others by another; just remember that the person who performs any given inspection must be the one that records that particular one.

Regardless of who performs which, the senior crane supervisor is ultimately responsible for ensuring all accessories on site (unless securely stored/not in reach of the cranes) are inspected and recorded, regardless of who uses them. He is also responsible for ensuring defects are reported and acted upon, and for obtaining worksheets confirming the fact they have been repaired, or marking quarantined, destroyed, or removed accessories appropriately on the lifting register.

Though in practice it doesn't always happen as effectively as the HSE intended, all lifting team members are reminded of their statutory duty to perform a visual inspection of all accessories each time they are used. (This does not need to be recorded of course.)

The lifting team is encouraged to look after all accessories, applying WD40 or other appropriate lubricants to the chains from time to time, washing mud off them when needed etc., and it is recommended that one or more lifting tackle boards or boxes be made available so that accessories can be properly stored off the ground & sheltered from the elements.

The AP is a qualified lifting accessory thorough examination, and should anybody have any concerns or questions about the condition of an accessory, e.g., not sure whether something noticed qualifies as a defect, then please ask. (Please note, however, that HCPL does not provide thorough examination services/issue certification.)

22 Lifting Accessory Thorough Examinations

All accessories on site and in use with the tower cranes to be thoroughly examined every six months, as per the statutory requirement of LOLER. Industry best practice is for accessories to be independently examined, and this is to be strongly encouraged. However, if any subcontractor is to examine its own accessories, then the qualifications of its examiners must be presented to the AP for inspection to ensure statutory compliance.

NO accessory to be allowed in to use without the senior crane supervisor, or a deputy crane supervisor, having first seen valid certification for it, a copy of which is to be placed into the crane file at the earliest practical opportunity (as a minimum: that day)

23 Safe Working Load (SWL) and Working Load Limit (WLL)

A SWL or WLL must be clearly stamped on all lifting accessories, together with a discreet identifying mark or number. This must never be exceeded, under any circumstances. It must also be remembered that the SWL of chains/straps is drastically reduced if the angle between any two legs of the chains/straps exceeds 90 degrees. NEVER exceed a 90-degree angle in any lift.

SWL must not be confused with working load limit (WLL) – SWL can sometimes be the same as WLL but is also often lower. A good example is a set of two leg chains. In this configuration its WLL applies, but if one leg is back hooked to the master ring, then the remaining leg will be weaker on its own and therefore the SWL is now lower than the WLL.

Information about how to use an accessory can usually be found with the accessory, but if not - and it is an accessory which you are not familiar with - then ensure you obtain and read the instructions prior to using. If you struggle to find the information you need, please call the AP for help.

24 Slinging of Loads

All loads must be strictly in accordance with the Schedule of Common Lifts, or any AP-issued addenda to it, or subcontractor slinging proposals that have been email-approved by the AP. If in doubt, seek clarification from the senior crane supervisor or directly from the AP.

As new subcontractors arrive to site, their slinging proposals must be submitted - via project management - to the AP for review & approval to be appended to the lift plan, noting that this is the project lift plan and is in force at all times with the tower cranes/subcontractor lift plans will not be in effect, but rather their slinging proposals will be adopted under this lift plan. (Once approved.) As much notice as possible must be given, as if the proposals are incomplete, unclear, or give cause for concern it may be necessary for several emails to be exchanged.

It must be remembered that if any load is lifted which does not comply with the above requirements, i.e., the AP is not aware of it or has not approved it, this lift plan will not cover it, and the persons performing the lift are therefore taking upon themselves the responsibility but without the authorisation, putting themselves and HCPL at risk.

- No lifting tackle must ever be allowed an included angle in excess of ninety degrees
- No lifting tackle must ever be pulled out from under a load
- All lifting tackle to be used as intended, i.e., Peri lifting clamps to always be used in vertical application
- All lifting tackle to be appropriately stored and looked after
- No lifting tackle for the cranes to be shared in any way with, or be borrowed from, any excavators

25 Path of Load Travel

Consideration must be given by the lifting team of the path each load travels, from pick-up to drop-off, to ensure that loads are never knowingly travelled over the heads of any persons. There are numerous hazards posed by loads going overhead, ranging from partial or full load failure through to catastrophic failure of the crane itself, all of which would result in one or more elements falling and posing a risk to life.

Generally, it is preferable for the lifting team to travel the load in the shortest possible route, though there may be times where this strategy would not necessarily be the safest, and so they must adapt to the situation. But, as an example of why it is preferable, the majority of the loads delivered to this site will be lifted from a pick-up point at ground level, and then dropped-off either on the frames as they are being built up, elsewhere on the ground level for storage, and on to loading bays at later stages in the project. By hoisting straight up from the pick-up point, until the load is sufficiently high for the operator to then be slewing and altering the radius, the lifting team is effectively maintaining an exclusion zone whilst the hoisting occurs. (The lifting team must always remember to look after themselves, not just others! Whilst this hoisting occurs, they are themselves to maintain a safe distance from the load position.)

Before any load is lifted to/over any part of site that could constitute an occupied area, i.e., one where one or more workers are situated*, steps must be taken to warn those in the occupied area so that they are aware of the risk and co-operate in minimising the risk by temporarily standing clear. By far it is preferable that the path the load travels avoid such areas as much as possible in the first place, as that is safer than taking the loads over occupied areas,

even when warning people in them. **Areas where persons aren't currently present, but are likely to be at any given time, e.g.: the area outside of a block's points of access/egress, are also to be treated as occupied areas.*

However, from time to time on this site it is anticipated that there will be occasions where this is not reasonably practicable, and on those occasions, warning must be given, combined with a reduced speed of work and heightened supervision during the time where the load travels over an occupied area. Additionally, where reasonably practicable, steps are to be taken to exclude access to an occupied area. For example, when a load is being lifted from an area in between two blocks, where persons are likely to walk across from one to the other, those entrance/exits points should, depending on the time involved with the load being in that area, either be restricted or manned by lookouts.

The form warnings are to be regularly discussed and managed, as the site progresses, with an overview from site management, to ensure that they are deemed suitable and adequate. The crane's horn should be used each time a crane goes into service following a period of inactivity, and each time a load is taken above head height from the pick-up point, and also whenever the operator is told he is about to travel over a potential occupied area, and also at any time where the operator otherwise believes it is appropriate. All involved must remember that the crane's horn may not always be audible; thought should be given by management to equipping those on the lifting team with air horns or whistles, for times when they need to warn many people at once, particularly if in a noisier than usual part of site.

The lift team **MUST** make sure that all non-lifting personal are aware of all lifting operations that may come in close proximity to their work area, this **MUST** be done prior to the lifting operation. The lift team **MUST** ensure that all personal are removed from the pickup or landing when performing lifting operations. In some circumstances exclusions zone with appropriate signage will be set up to prevent non-lifting personal from entering the lift area.

26 Blind (to the Operator) Lifting Operations

It is virtually impossible for a non-resident appointed person, associated with numerous sites, to continually sufficiently risk assess blind lifting on a given site, because construction sites are fluid and ever-changing environments. It needs to be done therefore by somebody who is based on a site full-time. Management of blind lifting operations falls within the remit of the lift supervisor, not the lift planner. The responsibility for risk assessment is therefore assigned to the site crane supervisors, who must ensure that only authorised and CPCS trained personnel are signalling the operators under blind lifting conditions. However, the AP is able to give guidance on the subject as follows.

When performing lifting operations with cranes, of any kind, it is imperative that a complete line of sight is always maintained on the load from where it is lifted to where it is dropped off. A lot of the time it is possible for the operator himself to maintain this complete line of sight, due to lack of anything that obscures his view along the way.

However, where it is not the possible for the operator to maintain a complete line of sight all the way through a given lift, due to one or more obstacles that obscure his view to some degree, then it becomes necessary for others i.e., signallers, to aid and direct the operator, and ensure that at no point during a lift is a load left unwatched (and therefore uncontrolled) by somebody on the lifting team.

We refer to this assisted control of the load by signallers as "blind lifting". Only a small percentage of lifts performed by a particular tower crane throughout its lifetime on one site are actually 'completely blind', i.e., the operator never sees the load at all during the lift, but whether they are completely or only partially blind, nonetheless they all come under the heading of blind lifting.

Remember then that it is critical that on every single lift performed by any crane in use, that the load must always be under the watch and control of somebody on the lifting team! A load must never be in motion without being watched by either the operator or the relevant signaller in control of the load.

Only one member or operative can be in control of a load at any moment in time

At every point of the lift, the load must be under the watch of at least one member of the lifting team.

If the operator can sufficiently see the load, given his distance and orientation from it as well as the line of sight being free of obstructions, and so long as the load is comfortably above head height, then the operator is in control at that time. If the above is not the case though at any given point in the lift, then the relevant signaller - who may also be the crane supervisor depending on the site, number of cranes, number of personnel deemed adequate to be on the lifting team etc. - is in control of the load at that time.

Blind lifting is, to some degree, at more risk of a near miss, incident, or accident. This is for a number of reasons, but the main ones are that there is a small delay in the time needed for the operator to react, because the signal comes from the signaller by radio, not from his own eyes, and also because signallers have a different visual perspective to operators, this can make it harder to give precise instructions in adequate time to allow the operator's reacted movements to control the load to the same degree as if the operator were doing it all himself.

Because there is a somewhat increased risk level, it is therefore sensible to take extra precautions (control measures) to help make it as safe as possible. For example, blind lifting should always occur at a slower, smoother pace. The relevant signaller must always pay extra thought to his position & any localised noise which may make it harder for the operator to properly hear his instructions. (The signaller must halt the lift and manage the personnel in the area to make them quiet, wait for them to finish the noisy works, or ultimately move to another location if needs be.)

Extra thought must also be given to wind speeds, because if the load becomes unstable it will be harder for the signaller to control it through the operator than it would be for the operator himself to control it with a visual of it. This is important at all times, but especially so when working anywhere near to the boundary, as poor planning on the part of the signaller and/or crane supervisor could result in increased risk to the general public.

Ultimately the involved crane supervisor must consider and authorise each case of blind lifting on its own merits and must ensure he deems it safe before allowing any blind lifting to occur.

27 Loading & Unloading

A detailed traffic management plan will have been devised by HCPL. The plan will be followed at all times by the lifting operatives and an up-to-date copy of it must be kept with the lift plan at all times. All members of the lifting team to be notified of any amendments to it as & when they may occur. For logistics considerations, please see applicable Henry management systems folders, in particular familiarise yourself with site logistics drawings that show the general plan for site logistics.

The lifting team is to communicate, co-operate and co-ordinate with all HCPL traffic marshals and are reminded to be respectful of all MOP- members of the public wherever contact is made. Unless otherwise communicated to the lifting team by HCPL, collective edge protection must be in place to protect slinger/signallers from falls. If an alternative is to be used, then the ground-based lifting team must be properly briefed, and appropriately trained where necessary. These safety arrangements must be documented.

Remember that no vehicle or trailer should begin to be unloaded prior to first having been established that there will be sufficient areas about site where it can all be safely stored, consider the blocking walkways or otherwise causing a nuisance. If in doubt, consult management to see whether they prefer to send the vehicle away.

28 Use of Man Riders

BS7121 states that personnel carrying must not be performed with cranes unless there is no safer, more reasonably practicable method of performing the work. At the time of writing, there is no intention for HCPL to use man riders. Should management decide in future that man riding has become necessary, the AP must first be consulted and following an assessment of the proposed activity, they will devise a safe system of work to be appended to this lift plan.

29 Use of Stretcher Cages

In the event that, as part of the site's emergency evacuation procedures, a stretcher carrier is retained on site, the following procedures/requirements must be noted. The stretcher cage is not to be used as a work platform or for lifting or carrying materials. It must have its identification markings and safe working load clearly identified and have been constructed in accordance with statutory guidance. A current thorough examination certificate must be retained on site.

In the event personnel are being raised or lowered using the stretcher cage they must be wearing suitable harnesses during the lift. These harnesses must be certificated and have been examined within the statutory period (with the register detailing these examinations being retained on site). All appropriate personnel must have been instructed in the use of the harness, with documentation detailing this instruction also be retained on site.

When the stretcher cage is utilised, the personnel involved must have connected the lanyard (which must be an integral part of the certificated harness they are wearing) to anchorage points strategically located and identified within the stretcher cage.

Use of stretcher cage must be undertaken in accordance with existing site lifting procedures, with care being taken to ensure the assembly is lowered onto a secure level area at the completion of the lift. BS7121 specifies that the lifting of personnel must only be carried out whilst the wind speed remains at or below 15mph.

It is very important to ensure that the wind conditions allow safe use of a stretcher cage. In the event that the wind is in excess of 15mph, then the risk posed by the wind speed must be weighed against the severity of the need to use the stretcher cage. The TC operator and the senior crane supervisor must assist Henry management in making the decision whether to proceed or not.

30 Operator Recovery Arrangements

**IF THIS IN AN EMERGENCY, IMMEDIATELY GO TO THE RESCUE PLAN
SECTION OF THIS FOLDER**

In the event an operator or other worker requires rescuing from the crane, the emergency services must be used where appropriate. However, training for the use of a proprietary recovery system (with certificated evidence of competency being retained for future inspection) is recommended to take place prior to the cranes being erected. It is further advisable that there is an auxiliary/back-up system in case the emergency services are unable to assist.

A rescue plan, which details what to do and in what order, as well as relevant names, numbers and other information, will be kept in the folder, and signs put up on the crane base hoardings that instruct all on site what to do in an emergency. Please this is a principal contractor/HCPL duty under the CDM regulations.

Tower Crane Operations – RISK ASSESSMENTS
GENERAL

<u>HAZARD</u>	<u>PROBABLE SEVERITY</u>	<u>PRE-CONTROL LIKELIHOOD</u>	<u>CONTROL MEASURES</u>	<u>POST-CONTROL LIKELIHOOD</u>
Crane collapsing	Death	Low	Category 3 base design check; overload test; max. in service wind speed lower than manufacturer allows; low % utilisation during routine lifting; declaration of free slew confirmation	Very low
Crane shock loaded	Damage	Low to medium	Crane prohibited to pull loads; slingers to check bottoms of load for signs of suction; SWL of tackle never to be exceeded; tackle to be used properly	Very low
Catastrophic failure of crane (general)	Death	Low	Operator daily inspections & weekly maintenance performed and recorded; Eight- weekly routine servicing performed by crane company; Six monthly independent examination; all defects reported same day, and rectified as soon as reasonably practicable	Very low
Other plant (collision)	Damage	Low to medium	Familiarised operators; crane supervision & co-ordination; plant supervision; monitored traffic management plan; tandem operations prohibited.	Very low
Load striking workers	Serious injury	Low to medium	Pedestrian routes; physical exclusion zones; crane supervision; vigilant personnel; tag lines; warning whistles or horns	Very low
High winds (instability & loss of control)	Serious injury	Medium	Wind gauge stood-off (unbaffled) from jib nose; max. wind speed as per best practice; operator to use discretion at lower speeds; personnel to work by lower specified maximums for certain vulnerable loads; regularly consult weather forecasts	Low CONTINUOUS VIGILANCE CRITICAL!

Catastrophic failure of lifting accessories	Death	Low to medium	Personnel working in accordance with lift plan; pre-use inspection of each accessory deployed; formally recorded weekly inspection of all accessories by qualified slingers; six monthly thorough examinations; all accessories used and stored properly; all defects reported immediately, with defective items being quarantined	Low CONTINUOUS VIGILANCE CRITICAL!
Load slipping slings	Death	Low	Qualified slingers working to lift plan; crane supervision; precautions listed in Schedule of Common Lifts.	Very low
Lightning strikes	Death	Low to very low	If lightning observed in vicinity, suspend lifting for at least twenty minutes; consult weather forecast if planning any long-duration lifts that involve conductive loads; use of interposed non-conductive slings where welding to be performed on suspended loads	Very low
Blind Lifting Operations	-	-	See Section 25 on Page 18 – Crane Supervisors to continually assess as work is carried out; Only CPCS qualified personnel to carry out works	Low CONTINUOUS VIGILANCE CRITICAL!

SITE SPECIFIC				
<u>HAZARD</u>	<u>PROBABLE SEVERITY</u>	<u>PRE-CONTROL LIKELIHOOD</u>	<u>CONTROL MEASURES</u>	<u>POST-CONTROL LIKELIHOOD</u>
Crane lifting over pedestrian areas / roads	Death/Serious Injury	Low to Medium	AMCS zoning configured to prevent restrict the hook blocks of the crane ever lifting beyond the site boundary. This will remain operational at all times throughout the project with only Bennetts's crane install team able to adjust / disable. Tag lines used on all loads within 6 metres of site boundary.	Extremely Low
Lifting over workers (welfare & office area) – <i>short-term following erection</i>	Death	Medium	Prohibition on lifting over welfare & office area; no top speed movements within three metres of the area; such area zoned out; tag lines on all loads to aid load control; blue card operators only	Low CONTINUOUS VIGILANCE CRITICAL!

31 Tower Crane Operations – Risk Management

In the realm of lifting operations, it is understood that it is not reasonably practicable for the person who plans the lifting operations to be present at all times whilst his or her plans are enacted. It is a fluid, constantly changing environment, and therefore it is generally understood (and certainly by the Health and Safety Executive, as evidenced by the way in which they crafted Reg. 8 of LOLER) that due to the lifting operations planner not being present it is impossible for him or her to foresee all risks that may arise - hence the requirement for supervision.

All personnel must therefore be continuously vigilant & recognise the need to identify hazards and take appropriate action in accordance with their training and experience. The importance of feedback to management must also be noted. In addition to the guidance and control measures detailed within this project lift plan, recognising the requirement for all members of the lifting team to be qualified to perform the duties being undertaken, there is a need to define general hazards, risks, and control measures.

Likely Hazards may be identified involving the following areas:

- Plant and machinery (e.g.: collisions)
- Failure of lifting equipment or lifting accessories (e.g.: lifting point welds or electrical supply)
- Falling materials (e.g.: stones left on the lower struts of pallets)
- Free falling loads (e.g.: straps breaking and shedding loads)
- Heavy and abnormally shaped loads (e.g.: large wall shutters spinning)
- High winds (e.g.: loads being blown to the side and striking other objects or personnel)
- Unscheduled and non-assessed lifts (e.g.: a load everybody on lifting team is unfamiliar with) close proximity of other lifting equipment, structures, and public amenities (e.g.: welfare containers)
- Other lifting equipment, out of service or otherwise incapacitated (e.g.: the two TC jibs clashing)
- Hazardous substances as defined by COSHH (e.g.: lithium EP grease used for slew ring lubrication)

Likely **Risks** associated with the above Hazards:

- Injury to personnel
- Damage to structures, buildings, lifting or other equipment and injuries or fatalities to personnel
- Failure of Lifting Equipment and/or Machinery
- Instability and/or loss of control during lifting operations
- Entanglement leading to loss of integrity of load
- Collisions between cranes or other lifting appliances

General **Control Measures** that should contribute to the reduction of risk regarding the above:

- All plant and machinery to be inspected and serviced regularly, as per the PUWER and LOLER Regulations and industry best practice guides (copies can be provided if required).
- All lifting tackle and equipment are to be certificated and inspected regularly, as per the LOLER Regulations.
- All lifts are to be carried out by competent trained slinger/signallers, with a method statement having been prepared and risk assessment carried out if outside the scope of the generic details contained in this lift plan.

- Daily inspections and checks are to be carried out by the crane operators, to ensure that the crane or other lifting appliance remains safe, fit for purpose and operable.
- Visual assessments are to be carried out by the crane supervisor at regular intervals to ensure that - (a) the slinger/signallers are using the correct lifting tackle in the correct way, (b) tag lines are being used where necessary and (c) the lift expectations are within the capacity of the lifting equipment being deployed.
- Wind speeds within the site (and at the level of the pick point and placement point) are being monitored to ensure that all lifting operations are being carried out, not only within the defined wind speed, but also at a speed dictated by the shape and wind attack areas of the items being lifted.
- Ensure that the designated maximum permitted operational wind speed (38mph) is not being reached or exceeded and that the wind speed is appropriate for size of lift being organised. Note that the wind speed is displayed on a digital display within the operator's cab.
- Regularly check that no unauthorised or unqualified persons are carrying out any lifting operations, by regularly checking their CPCS cards for compliance (ensuring that cards are valid & have not expired).
- Regularly check that safe systems of work continue to be used, ensuring that the risk of collision is reduced as much as possible, and that the primary system of anti-collision involving anti-clash radios remains in use, with the electronic secondary system, remaining as a back-up, as considered appropriate by the HSE.
- Ensure tag lines are being used to help control and stabilise large or awkward loads, and any loads being lifted in tight and/or sensitive locations. (Free of knots and tangles, which are snagging hazards!)
- Ensure that all slung loads are landed on timber battens to prevent any damage to slings and chains.
- Ensure that the angle between chain and sling legs is less than 90 degrees. Any angle greater than this could overload the leg of the lifting equipment.
- Ensure that all loads are stable with centre of crane's hook block being over centre of gravity of the lift being carried out.

32 Reporting of Concerns, Near Misses, Incidents and Accidents

All parties are reminded of the legal duty placed on every individual to report safety concerns. Depending on the seriousness of them, you may decide to report to the crane supervisor and/or management, and possibly to the AP. Whatever judgement you make in this regard, you must then ensure that appropriate action is taken/that you feel it has been adequately dealt with.

Should any near misses, incidents or accidents occur, the crane supervisor and HCPL are to ensure the AP is immediately notified by mobile telephone.

33 Statutory Legislation and Industry Codes of Practice

Considered in the preparation of this lift plan were the following statutory instruments and best practice guides:

- 1.1.1.1 Health and Safety at Work Etc. Act 1974
- 1.1.1.2 Lifting Operations and Lifting Equipment Regulation 1998 (LOLER) Provision and Use of Work Equipment Regulations 1998 (PUWER) Construction Design and Management Regulations 2015 (CDM)
- 1.1.1.3 Work at Height Regulations 2005
- 1.1.1.4 BS7121 Parts 1 through 5 - Safe Use of Cranes CIRIA Stability of Cranes

Site specific health, safety, and welfare issues are to be covered by the project's construction management or their sub contractors' management

34 Record of all Present at the AP's Lift Plan Implementation

35 Confirmation of Induction to – and Acceptance of – this Lift Plan “I hereby sign to confirm that I have been inducted to this lift plan by either the AP or the crane supervisor as stated in BS7121 and LOLER 1998”

Crane Supervisors must ONLY be inducted onto this Lift Plan and Schedule of Common Lifts by the Appointed Person. The AP and Crane Supervisor can induct Slingers and Crane Operators onto this Lift Plan and Schedule of Common Lifts.

“By signing this lift plan, I confirm that I shall work strictly in accordance with and to the lift plan and Schedule of Common Lifts”

36 Confirmation of Induction to – and Acceptance of – this Lift Plan

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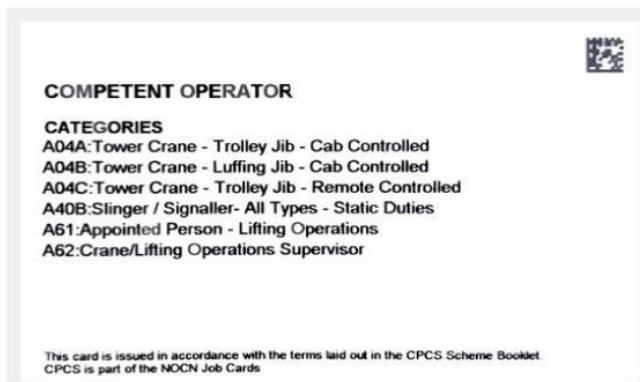
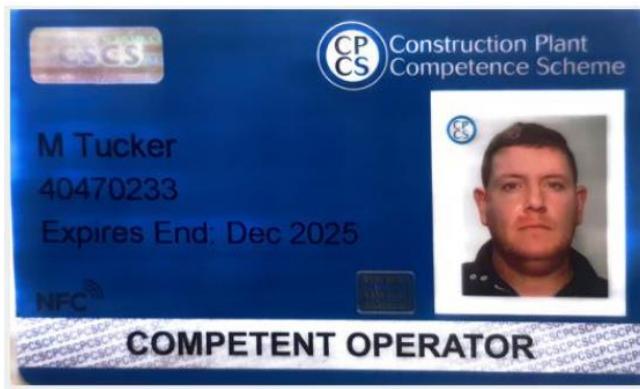
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“By signing this lift plan, I confirm that I shall work strictly in accordance with and to the lift plan and Schedule of Common Lifts”

39 Appendix 1. AP Credential



END OF DOCUMENT