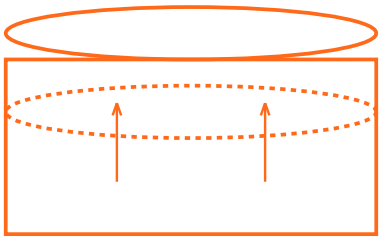
JMR LIFTING SOLUTIONS
Certified Heavy Lift Engineering

LIFT PLAN

LNG Storage Tank Roof Air-Raise

Plan number: LP-2026-009



CLIENT	[CLIENT CONFIDENTIAL]
LOCATION	[LOCATION CONFIDENTIAL]
REVISION	Rev 0 — SAMPLE
DATE	02 August 2026
PREPARED BY	Muthuraj Jeyabal, LEEA Certified Appointed Person
AP CERTIFICATE NO.	8234-13608-8667-27-1
REVIEWED BY	JMR Lifting Engineering
STANDARDS	BS 7121 · LOLER 1998 · ASME B30

01 Executive Summary & Scope

Pneumatic air-raise of the aluminium inner roof of an LNG storage tank, using controlled air pressure differential rather than a crane lift, with a backup crane on standby for emergency intervention only.

Key Parameters

Parameter	Value
Load weight (t)	**220 t**
Dimensions (L × W × H)	**82 m diameter**
Lift radius (m)	**N/A — vertical raise**
Lift height (m)	**42 m**
Duration (est.)	**3 hrs raise + 2 hrs lock-in**
Location	**LNG terminal**

Critical Risks

- Load overload beyond crane rated capacity at working radius
- Loss of control during dynamic/weather-sensitive lift phases
- Rigging failure due to incorrect sling angle or WLL selection
- Ground/foundation bearing failure under crane or outrigger loads

02 Load Data, Centre of Gravity & Dimensions

Aluminium dome inner roof assembly, raised from tank floor level to final roof position using air pressure.

Weight Breakdown

Component	Weight
Aluminium roof plate	185.0 t
Roof structural framing	28.0 t
Guidance/attachment hardware	4.0 t
Uncertainty allowance (1.4%)	3.0 t
Total	220.0 t

Centre of Gravity

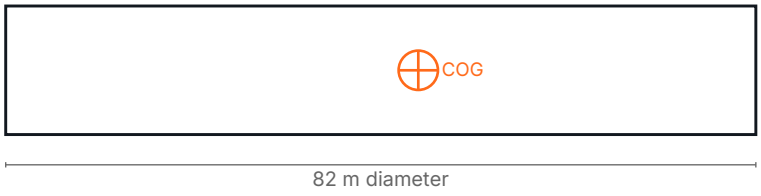
Parameter	Value
X-axis	**0.0 m from tank centreline (X)**
Y-axis	**0.0 m (Y)**
Z-axis	**1.8 m above roof apex datum (Z)**

Lift Points

N/A - pneumatic raise; roof guided by perimeter guidance system, not crane rigging

Dimensional Sketch

Simplified load outline with centre-of-gravity marker (not to scale):



03 Crane Selection & Configuration

Selected Crane: Liebherr LR 1400/2 (backup, emergency only)

Parameter	Value
Rated capacity	**400 t**
Boom length	**See configuration**
Configuration	**Standby crane - not used for primary lift method**
Working radius	**N/A**
Capacity at working radius	**See load chart notes**

Utilization Calculation

Not applicable - pneumatic air-raise method; no crane load chart utilization for primary lift.

Ground Bearing Pressure

Not applicable to air-raise method. Backup crane (if mobilized) ground bearing to be assessed per standard mobile crane siting procedure.

Standing / Pick Radius

Vertical lift/raise — no working radius applicable.

04 Load Chart & Utilization Calculation

Not applicable — this lift is executed by pneumatic air-raise method; no crane load chart governs the primary lift operation.

Dynamic Amplification Factor (DAF)

Not applicable to pneumatic air-raise method.

Total Lifted Load Including DAF

Not applicable - pneumatic air-raise method; no crane load chart utilization for primary lift.

Ground Pressure Calculation

Not applicable to air-raise method. Backup crane (if mobilized) ground bearing to be assessed per standard mobile crane siting procedure.

05 Rigging Configuration

Parameter	Value
Sling type	**N/A - no slings used in primary air-raise method**
Sling angle (min.)	**N/A**
Number of slings	**N/A**
WLL per sling	**N/A**
Shackle grade	**N/A**
Spreader / master link	**N/A**

Rigging Schematic (Summary)

Component	Specification
Hook / block	Rated to crane main hoist capacity, latch-equipped
Master link / spreader	N/A
Sling legs	N/A × N/A - no slings used in primary air-raise method
Shackles	N/A
Sling angle from horizontal	N/A

06 Rigging Load Calculations

Individual Sling Load

Formula: Sling load = (Load × DAF) ÷ (n × sin θ)

Not applicable - roof raised on air pressure differential of 300 Pa; backup crane rigging held on standby only.

Not applicable — no crane rigging loads for this lift method.

Safety Factor Basis

All wire rope slings are selected to a minimum design factor of 5:1 against minimum breaking load, in accordance with LEEA COPSULE guidance. All shackles are selected to a minimum design factor of 4:1. Working load limits (WLL) are marked and certificated per item.

07 Ground Bearing & Site Layout

Ground Bearing Pressure

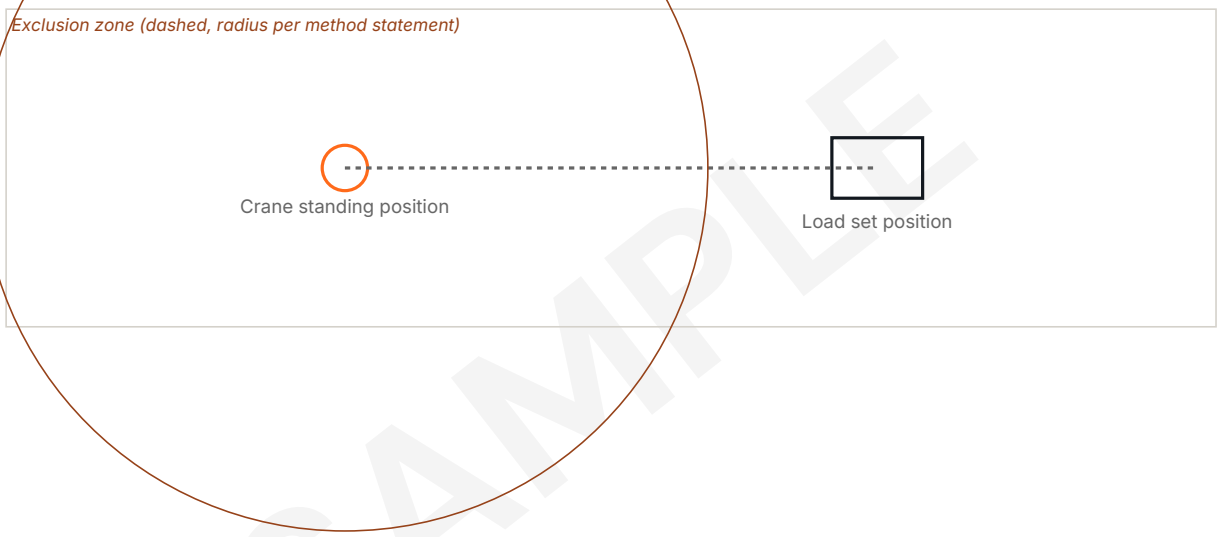
Not applicable to air-raise method. Backup crane (if mobilized) ground bearing to be assessed per standard mobile crane siting procedure.

Crane Pad / Matting

Backup crane standby pad, location per site crane matting plan

Site Plan (Schematic)

Simplified site layout showing crane standing position, load path, and exclusion zone (not to scale):



08 Risk Assessment (BS 7121 Format)

Risk scoring uses Likelihood (L) × Severity (S), each rated 1–5. Residual score after controls is shown in the right-hand columns.

Hazard	L	S	Score	Controls	L	S	Score
Overload beyond crane capacity	3	5	**15**	Load chart verified; utilization capped below 85%; independent AP check	1	5	**5**
Crane mechanical/structural failure	2	5	**10**	Pre-use inspection; current LOLER thorough examination certificate	1	5	**5**
Load drop during lift	2	5	**10**	Certified rigging, redundant sling legs, trial lift at 25% load	1	5	**5**
Adverse weather conditions	3	3	**9**	Weather forecast monitoring; defined go/no-go thresholds	1	3	**3**
Personnel struck by load/rigging	3	4	**12**	Exclusion zone enforced; banksman control; no personnel under suspended load	1	4	**4**
Ground/foundation failure	2	5	**10**	Ground bearing calculation verified; crane mats/pads sized to load	1	4	**4**
Sling/shackle failure	2	5	**10**	Certified rigging to 5:1 (sling) / 4:1 (shackle) design factor; pre-use inspection	1	5	**5**
Overhead obstruction contact	2	4	**8**	Route survey completed; spotter assigned; boom angle indicator monitored	1	3	**3**
Loss of air pressure control	3	5	**15**	Continuous pressure monitoring at 300 Pa differential; redundant blower units; emergency vent procedure	1	5	**5**
Roof guidance failure	2	4	**8**	Roof guidance system inspected pre-raise; backup crane on standby for emergency intervention	1	4	**4**

Risk score key: **1–6 Low** · **7–12 Medium** · **13–25 High** — all residual scores must be Low or Medium with documented additional controls before lift authorization.

09 Method Statement

1. Confirm current LOLER thorough examination certificates for crane(s), rigging, and lifting accessories.
2. Conduct toolbox talk with all lift personnel; confirm roles per Section 11.
3. Establish exclusion zone and barrier the lift area; brief banksman and signaller.
4. Position crane(s) on verified ground bearing / matting per Section 07; set outriggers (if mobile) to full extension.
5. Rig load per configuration in Section 05; attach taglines; conduct visual rigging inspection.
6. Perform trial lift: raise load approximately 300 mm, hold at 25% of test criteria for a minimum dwell to verify rigging geometry, crane response, and brake holding.
7. Confirm sling angles, load indicator readings, and COG behavior match plan before proceeding.
8. Execute main lift per pneumatic air-raise procedure
9. Travel/luff/slew load along planned path, maintaining radius and load chart compliance throughout.
10. Position load over set point; lower under controlled taglines to final bearing/foundation.
11. Confirm secure landing, release rigging tension gradually, and inspect for damage.
12. De-rig, remove accessories, and return crane to travel/stow configuration.
13. Conduct post-lift debrief and close out permit-to-work documentation.

10 Roles & Responsibilities

Role	Assignment
Appointed Person	Muthuraj Jeyabal, LEEA Certified Appointed Person (Cert. No. 8234-13608-8667-27-1) — overall lift planning responsibility
Lift Supervisor	[TBD — assigned at mobilization, LEEA/CPCS certified]
Crane Operator(s)	[Certified operator(s), current CPCS/NPORS or equivalent license]
Slinger / Signaller	[Certified slinger/signaller per LEEA/CPCS standard]
Banksman	[Certified banksman — controls exclusion zone and ground personnel]
Reviewed by	JMR Lifting Engineering

Contact

JMR Lifting Solutions — contact@jmrlifting.com

11 Approvals & References

Signature Block

Role	Name	Signature / Date
Appointed Person	Muthuraj Jeyabal, LEEA Certified Appointed Person	
Client Representative	[CLIENT CONFIDENTIAL]	
HSE Representative	[TBD]	
Client Project Manager	[CLIENT CONFIDENTIAL]	

References

- BS 7121-1:2016 — Code of practice for the safe use of cranes
- LOLER 1998 — Lifting Operations and Lifting Equipment Regulations (UK)
- ASME B30.5 — Mobile and Locomotive Cranes
- LEEA COPSULE — Code of Practice for the Safe Use of Lifting Equipment
- Crane manufacturer load chart (referenced Section 04/05)

This document is a SAMPLE lift plan produced for demonstration purposes only. It does not constitute an approved lift plan for any live lifting operation. Actual JMR Lifting Solutions project deliverables include site-specific surveys, certified equipment schedules, and a signed authorization prior to any lift.