

TENDER DOCUMENTATION
FOR THE REMOVAL OF
1 No. Passenger Service Lift - Pathology
1 No. Passenger Lift - Radiotherapy
&
THE SUPPLY, INSTALLATION AND COMMISSIONING
OF
1 No. Passenger Service Lift – Pathology
1 No. Passenger Lift – Radiotherapy

In CUH Hospital
Co. Cork
HSE SOUTH



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

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Date: 01/May/2026
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Revision: 3

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1 Introduction

1.1 Overview

S.E.E.C. Ltd have been appointed by the HSE South to compile and issue technical documentation for the replacement of an existing Pathology passenger service lift & Radiotherapy passenger lift currently fitted in Cork university Hospital, Wilton, Co. Cork.

The client is seeking competitive tender submissions for vertical transportation equipment on an existing premise, Cork University Hospital, Wilton, Co. Cork. This project is referred to, going forward, as CUH Pathology/Radiotherapy Replacement 2026.

S.E.E.C. Ltd have been instructed to compile and issue tender documentation for Specialist Lifts Contractors for the removal of the Existing Lift and the design, supply, installation, commissioning in accordance with this document for the following types of works in regard to vertical transportation equipment:

All Tenderers MUST price a suitable option for each lift to ensure the cabin dimensions and door dimensions are maximised.

All redundant existing lift equipment, inclusive of motor/hydraulic equipment is to be removed and environmentally correctly disposed of and will be within the remit of the successful Lift Contractor.

It should be noted that the lifting capacity for this replacement lifts is to be maximised to make best use of the available shaft space. Larger capacity lifts will be considered where feasible, and tenderers are expected to provide options accordingly. It is also desirable to maximise the lift car depths, particularly as the lifts will be used for the transport of wheelchair users and service equipment.

PW-CF6 Form Version 1.14 (Small Works Contract).

Excel Lift Pricing Schedule feeds into the QS Pricing documents.

NB Very Important Note!

The Excel Lift Pricing Schedule will be read in conjunction with this tender specification.

Lift contractors to confirm All line items on the Excel Lift Pricing Schedule with a response of Yes.

If the line item cannot be achieved the response should be 'No', in addition, please provide a reason for stating no.

Lift contractor's comments are required to save time in requesting further information and clarifications.

Price should not be a reason for No answer.

The main aim is match the new lift capacity with the existing, if possible, to ensure Radiotherapy patients and Pathology services can be accommodated.

1.2 Pathology

The replacement of 1 No. traction drive from above machine room lift Hospital consisting of:

1. Lift No.1 – 300 kg / 4-person Passenger Service Lift, 2 Stops

The supply, installation, and commissioning of a Motor Room top drive or Motor Room Less (MRL) consisting of:

1. Lift No.1 – Max kg / Max Persons, Passenger / Service Lift, 2 Stops.

As the exiting lift is driven from the above motor room it is envisaged that the existing motor room be cleared out of equipment and a Maintenance access panel be mounted at the top landing if an MRL option is provided, otherwise the existing equipment shall be removed and new equipment installed in the motor room.

1.3 Radiotherapy

The replacement of 1 No. Direct acting lift Hospital consisting of:

Lift No.2 – 600 kg / 8-person Passenger Lift, 2 Stops

The supply, installation, and commissioning of a Motor Room Less (MRL) consisting of:

Lift No.2 – Max kg / Max Persons, Passenger Lift, 2 Stops.

The existing lift is a direct drive hydraulic, and it is envisaged to replace this with an MRL solution. The existing motor room be cleared out of all electrical and hydraulic equipment and a Maintenance access panel be mounted at the top landing for an MRL solution.

1.4 Particulars

The successful Lift Contractor will be appointed as the Main Contractor and PSCS, this project will involve builders works as detailed below:

- Hoarding – Special attention is drawn to the Hoarding for live HSE facilities. See 2.3.
Solid & Dust proof up to 2400 mm height, lockable from the outside with a thumb lock on the inside. Hoarding will be compliant with infection control measures and include Blue sticky mats on all access landings, plastic barrier from ceiling to floor taped at both ends.
 - Dust Proof in line with HSE Infection Control Measures.
 - Blue Sticky Mats on all landings changed twice daily.
 - Hoardings to be sealed to walls and floors with mastic or other non-destructive solution.
 - Shoe covers worn on exiting the lift shaft.
 - HEPA Filtered Vacuum Cleaners used when drilling or other dust making activities performed inside the lift shaft.
 - Hoardings to be Fireproof/fire rated for 2 hours with pink fire plasterboard slab on both sides of the framing material for the hoarding. Plasterboard to be taped on all joints, including corners and ceiling.
Fire rated door to be fitted on each hoarding.
 - Hoardings to be Soundproof with minimum 50 mm acoustic protection under the pink fireproof plasterboard slab.
 - Corri-board Outer Skin placed on the landing side of the hoarding for easy cleaning and aesthetics. Corri-board joints to be taped without any perforations.
 - The outer skin access will consist of zip lock dust infection control barrier for access and egress on all landings.
 - Full shafts clean down after commissioning.
 - Brackets
 - Door headers
 - Electrical fittings
 - Any dust gathering surfaces.
 - Full landing clean down after hoarding removal.
- Compound & Security – CUH will provide a storage compound area.
- Security & responsibility for the area is within the remit of the successful lift contractor.
- Structural Door Openings – Landing Doors placed on the landing to maximise the lift shaft space and car depth. Maximum clear door width where feasible.
- Fireproofing - All structural shaft openings where required need to be fireproofed on completion of the lift works. Any exposed metal protruding from concrete either existing or from builders works in the lift shaft or machine room must be appropriately fireproofed to the same rating as the facility/building fire strategy requirements. All openings, joints, imperfections of fit in the fire rated walls enclosing the lift shaft are to be fire stopped or protected by sealing in accordance with Section 3.4 of TGD-B so that the fire resistance rating of the barrier is not impaired. Proprietary fire-stopping and sealing systems (including those designed for service penetrations) used are to achieve 60 minutes fire resistance when tested in accordance with BS 476-22, IS EN 1366-3:2009, IS EN 1366-4 2006 +A1 2010 and classified to IS EN 13501-2:2016.
- Lift landing doors are to achieve 120 minutes fire resistance rating when tested to EN 81-58:2018
- Making good around Landing door openings - Building fabric, inclusive of landing flooring to be made good on completion of installation. Landing tiles on the ground must not be damaged during the project.
- Type 2 full wrap around architraves for all landings – Installation of Interior use 441 rolled pattern stainless steel.

- Waste Disposal - All waste disposal to be included and when required the contractor shall allow for the cost of a skip. CUH facilities/skips or refuse bins not to be used for lift waste removal.
- The contractor to allow for the removal of the existing fixture and fixings within the lift shaft and lift plant motor room. There is a hatch available if motors are broken down. All lifting beams to be tested before use and to be included for in the tender.
- Rotating Parts - All rotating parts to be supplied with suitable guarding.
- Dust Control outside hoarding and prevention of dust release into the hospital environment during egress and access to hoardings and transport of goods or building rubble, inclusive blue sticky mats in front of hoarding entrance.
- Contractor is responsible for good housekeeping and prevention of dust and debris into the hospital environment and or compound and or routes from compound to hoarding access and or motor room access.

On completion of the works, the installation the final testing & commissioning will be managed and witnessed by a consulting engineer from S.E.E.C.

1.5 Project Supervisor Construction Stage (PSCS)

The successful Lift Contractor is to assume the role of PSCS and Main Contractor.

A direct appointed site contact person appointed by the successful Lift contractor must be full time on site during the course of the works.

On being awarded the contract the Lift Contractor shall immediately prepare and issue to the PSDP for review:

- PSCS competency form to be issued with tender package.
- Health & Safety Construction Plan
- Sub-contractors works envisaged or appointed
- Number of Contractor Staff on site envisaged.
- Contractor Project Management Team (Names and contact details)
- Assigned PSCS (Name and contact details)
- Covid-19 Risk Assessment & Method Statement
- Hygiene and Infection Control Risk Assessment & Method Statements
- Construction & Work Practise Method Statements for all elements of the works
- Construction & Work Practise Risk Assessments for all elements of the works
- Hoarding Plan
- Hoarding Drawings
- Plan for removal of redundant equipment. Transport routes etc.
- Site Compound and Storage requirements and drawings
- Programme detailing:
 - Site set-up
 - Hoarding installation with Drawings.
 - Removal of redundant equipment
 - Enabling/Builders works
 - Installation of new equipment
 - Testing & Commissioning
 - Handover including full documentation suite, training on equipment.

1.6 Project Supervisor Design Phase (PSDP)

CUH have appointed SEEC as PSDP. A Preliminary Health & Safety Plan is part of the tender documents. All Contractors must ensure that they have read and incorporated all details contained as part of any tender submission.

1.7 Tender Particulars

Lift Contractors are to use the attached Excel pricing template for each type of equipment they are quoting for and return this in Excel and PDF format with their tender submission.

The criteria for awarding a contract will not necessarily be determined by the lowest price. Factors such as delivery times, programme, experience, response times, reliability, quality and value etc. will also be assessed and will be taken in account for awarding this contract.

Attached to this document is a questionnaire and the Contractors are requested to complete this document and provide the relevant information. Failure to do so could lead to your exclusion from the selection process. Meetings will be arranged after the tender process to review a number of the completed tender returns. There is no obligation to the Client to invite all Contractors for a meeting.

We have advised the client that all Vertical Transportation equipment will need to comply and will be assessed accordingly with the Essential Health & Safety requirements of the applicable European Directives and in particular the European Directive 2014/33/EU in relation to Lifts.

Furthermore, all Vertical Transportation Equipment shall meet the requirements of the applicable National Health, Safety & Welfare at Work Acts and Regulations and where applicable the Local Regulations.

For the final assessment procedure to Vertical Transportation Equipment shall be assessed against European Harmonised Standards and in particular the EN81 series for Lifts.

1.8 Award Criteria

The criteria for awarding this contract to the successful lift contractor will be to pass all the Pass/Fail sections from 3-9. Then the section 2 – fulfilling the Performance Specification to maximise the dimensions of the lift car for the lift shaft and all the other specification requirements. Then section 1 the price of the equipment offered.

1.	Price MRL or Machine room. 2 landings, Max kg. Max door width.	70%
2.	Performance Specification Complying with performance specification on the Lift Pricing Schedule. For example - Achieving maximum mm clear door width required. Meeting the requirements of the performance specification.	30%
3.	Type approval of Lift Directive Equipment under surveillance of a valid European Notified Body (UK notified bodies are not accepted). Equipment supplied must have a conformity assessment procedure as defined in the Lift Directive and as transposed into S.I NO. 232 of 2017;	Pass / Fail
4.	Local Presence after installations – Enough staff to respond to CUH call outs / Quick Response times to call-outs (maintenance) as defined in chapter 3.2.2	Pass / Fail
5.	Measures for ensuring Quality. <i>Minimum Standard: Applicant Company must provide evidence of effective [internal or external] Quality Control procedures describing the technical facilities and measures used by the Applicant for studying, researching and ensuring quality including measures for ensuring quality both in the administration of the service and in the delivery of a high-quality end-product</i> <i>Note: ISO 9001 Quality management certification, ISO 14000 Environmental Management or other similar accreditation system is acceptable.</i>	Pass / Fail
6.	Experience working in Healthcare Facilities <i>Minimum Standard: Applicant Company must provide evidence and details of at least three [3] projects of similar scale, value and complexity as this project within the past five [5] years.</i> <i>A least one [1] of the projects must have been undertaken on a 'Live' operational Acute Hospital campus.</i>	Pass / Fail
7.	Medium Duty Motor 120 starts per Hour during regular operation. Designed for usage category 4 according to ISO 25745-2 Over 800,000 starts per year.	Pass / Fail
8.	During the warranty period, the lift contractor shall make full provision for and bear all costs associated with the mobile telecommunications service for the GSM unit, including the supply, installation, and ongoing service contract for the SIM card. The contractor shall also ensure that the GSM unit maintains adequate and reliable signal coverage at all times for its intended operation, and shall take all necessary measures, including the provision of signal boosters or alternative solutions, to achieve and maintain this requirement. The Auto dialler will be a generic non-proprietary unit; it will be easy to re-programme should this be necessary in the future. Open Protocol.	Pass / Fail
9.	Spare Parts Obsolescence – 20 years.	Pass / Fail
	Total Marks Available:	100%

1.9 Documentation to be submitted with the Tender Submission

The Lift Contractor shall submit with his tender return as a minimum:

- The attached (Microsoft Excel) Lift Pricing Schedule. This to be submitted in an Electronic Microsoft Excel Format and in PDF or Paper Format.
- The Lift Pricing Schedule Contains 5 No. Parts: All parts to be priced, including any associated builders works, electrical works to the main isolator.
 9. Questionnaire
 10. Lift Pricing Schedule, MRL – through car 630kg.
 11. Delivery Schedule, Design and Build.
 12. Declarations of Design Lifespan and Obsolescence
- Lift Pricing Schedule shall **NOT** be altered from its original Format.
- Any anomalies identified in the Lift Pricing Schedule need to be notified immediately for clarification via the **eTenders** correspondence system.
- The Lift Contractor shall submit **all** required supporting documents and appendices as required to meet requirements of the Suitability Assessment Process for **eTenders** submissions. Failure to supply this information may result in a non-compliant submission.

2 Preliminaries of Project

2.1 Scope of Works

The Scope of Works consists of the removal of an existing Lifts, installation of new lifts to include for the design, supply, installation, testing and commissioning in accordance with this document for the following types of vertical transportation equipment:

2.2 Schedule of Lift Equipment Works

2.2.1 Pathology

The replacement of 1 No. traction drive from above machine room lift Hospital consisting of:

Lift No.1 – 300 kg / 4-person Passenger Service Lift, 2 Stops

The supply, installation, and commissioning of a Motor Room top drive or Motor Room Less (MRL) consisting of:

Lift No.1 – Max kg / Max Persons, Passenger / Service Lift, 2 Stops.

As the exiting lift is driven from the above motor room it is envisaged that the existing motor room be cleared out of equipment and a Maintenance access panel be mounted at the top landing if an MRL option is provided, otherwise the existing equipment shall be removed and new equipment installed in the motor room.

2.2.2 Radiotherapy

The replacement of 1 No. Direct acting lift Hospital consisting of:

Lift No.2 – 600 kg / 8-person Passenger Lift, 2 Stops

The supply, installation, and commissioning of a Motor Room Less (MRL) consisting of:

Lift No.2 – Max kg / Max Persons, Passenger Lift, 2 Stops.

The existing lift is a direct drive hydraulic, and it is envisaged to replace this with an MRL solution. The existing motor room be cleared out of all electrical and hydraulic equipment and a Maintenance access panel be mounted at the top landing for an MRL solution.

2.2.3 Schedule of Builders Works

All works described herein indicate the performance requirements and design intent only. The Lift Contractor shall include within his tender submission for the development and completion of the design, including all necessary liaisons with other disciplines and statutory authorities.

Schedule of Builders Work in this document details in full the responsibilities of each discipline, but it envisaged that the Lift Contractor needs to include as a minimum and as part of his tender submission any cost associated with:

- Hoarding in accordance with HSE/CUH requirements and especially in relation to Infection/Dust Control. See 2.3 for full details.
- Scaffolding for removal or erecting lifts, if any.
- Removal and correct disposal of all redundant equipment in the motor room and lift shaft and landings.
- Lifting beams or points, tested, and marked with SWL, in the 2 No. shafts with motor room above, and testing and marking with SWL of the existing Lifting beams or lifting points.
- All electrical works required for the installation after the main isolator.
- Shaft Lighting & Emergency shaft lighting, Cabin lighting & Emergency Lighting where required.
- Integrating HID Swipe Card Readers into landing and cabin control stations. HID Swipe Card readers will be supplied and installed by the Lift Contractor as access is restricted for authorised staff.
- Pit ladders.
- All associated builders work.
- Modification or enlarging of landing structural door openings.
- Making good around landing entrances and landing floors.
- Off-loading of Vertical Transportation equipment on site.
- All temporary hoisting equipment.
- Provide services for connecting Telephone, CCTV, Smoke Detection, BMS, Access control, etc.
- Communication systems.
- Fireproofing.
- Provide all documentation and certification relating to the equipment.
- Provide for all statutory requirements in accordance with European, National and/or Local Legislation, Regulations & Standards.
- Lift Contractor can use CUH welfare facilities, i.e. toilet & canteen respecting CUH these facilities.

The details of the Vertical Transportation Equipment to be provided, are indicated in the Section Schedule of Equipment of this Specification.

Any disparity between this Specification and any other contract documents or drawings, is to be notified immediately for clarification via the eTenders correspondence system.

2.3 BREEAM (Building Research Establishment Environmental Assessment Method)

The new lifts are to be designed in accordance with the BREEAM standard. The Vertical Transportation system in the building, on completion, shall meet the requirements of this standard.

BREEAM includes several general sustainability categories for the assessment:

- Management
- Energy
- Health and wellbeing
- Transport
- Water
- Materials
- Waste
- Land use and ecology.
- Pollution

2.4 Hoardings

- Hoarding – Special attention is drawn to the Hoarding for live HSE facilities.
Solid & Dust proof up to 2400 mm height with a ceiling that has the same fireproofing as the walls. Pink fire board on top and under the ceiling. lockable from the outside with a thumb lock on the inside. Hoarding will be compliant with infection control measures and include Blue sticky mats on all access landings, plastic barrier from ceiling to floor taped at both ends.
 - Dust Proof in line with HSE Infection Control Measures.
 - Blue Sticky Mats on all landings. Hospital side. Renewed twice daily.
 - Hoardings to be sealed to walls and floors with mastic or other non-destructive solution.
 - Shoe covers worn on exiting the lift shaft.
 - HEPA Filtered Vacuum Cleaners used when drilling or other dust making activities performed inside the lift shaft.
 - Hoardings to be Fireproof with pink fire plasterboard slab on both sides of the hoarding. Plasterboard to be taped on all joints, including corners and ceiling.
Fire rated door to be fitted on each hoarding.
 - Hoardings to be Soundproof with minimum 50 mm acoustic protection under the pink fireproof plasterboard slab.
 - Corri-board Outer Skin placed on the landing side of the hoarding for easy cleaning and aesthetics. Corri-board joints to be taped without any perforations.
 - The outer skin access will consist of zip lock dust infection control barrier for access and egress on all landings.
 - Full shafts clean down after commissioning.
 - Brackets
 - Door headers
 - Electrical fittings
 - Any dust gathering surfaces.
 - Full landing clean down after hoarding removal.
- Drawings of Hoardings to be supplied with the project RAMS 3 weeks before site work start for review by CUH, PSDP and SEEC for comment.
- Refer to Preliminary H&S Plan for the suggested hoarding line drawings. It is the responsibility of the Lift contractor to provide all necessary hoardings for the works on each landing
- Control measures to be reviewed by Client Infection Control and PSDP for approval/comment.

2.5 Ordering Process

Ordering process to be confirmed by Client.

2.6 Variations

In principle there should be no variations, however if unforeseen issues cause the works to change from the intended design the following procedure outlined below must be followed by the lift contractor.

Should variations arise in the course of the project the Lift Contractor must notify the Project manager, QS, and Client in writing and bring up for discussion at the next meeting. Any variation must be approved by the Client, QS through SEEC prior to the works proceeding and materials being ordered.

Variations are not to proceed until the client and SEEC have reviewed and have issued approval in writing.

Any variation must be clearly itemised and broken down into the following items as a minimum:

- Lift Labour Costs, Hourly rates.
- Builders work Costs.
- Sub-contractor Costs
- Lift contractor's markup
- Bill of Materials and associated costs

2.7 Target Programme

The Target programme below is for installation of 2 lifts in sequenced program. Full Program to be issued by the successful contractor.

1	Tender submitted to eTenders	See eTenders ITT	Start	Finish
		1 week	TBC	
2	Lift Contractor surveys/Calculations/Tender Return/ Clarification back and forth with Lift Contractors	3 Weeks		
3	Evaluation / Recommendation Issued	2 Weeks		
	Award of Contract			
4	Drawing production and review.	4 Weeks		
5	Manufacturing period depending on contractor. Including delivery,	16 Weeks		
6	Removal of first Existing Lift	1 Week		
7	Installation of first lift	4 Weeks		
8	Testing and Commissioning,	1 Week		
9	Snagging	1 Week		TBC
10	Handover Lift 1	1 Week		
11	Removal of second Existing Lift	1 Week		
12	Installation of Second lift	4 Weeks		
13	Testing and Commissioning	1 Week		
14	Snagging	1 Week		
15	Project Completion and Handover	1 Week		

Dates to be reviewed after award of contractor.

2.8 Site Expectations

Existing environment is within a healthcare facility. It is envisaged that works can be conducted during normal working hours and should be priced accordingly.

Noisy works not to start before 09:00 am and must not go beyond 21:00pm at night.

Stoppages maybe requested if noisy works conflict with critical theatre surgeries for surgeons to concentrate fully on operations.

Welfare facilities are available on site subject to contractor ensuring that hospital rules and guidelines are followed. CUH can assign WC to contractors. Transport routes for deliveries as per tender Preliminary H&S Plan. Deliveries to the lift from the compound to be agreed during the kick off meeting. Lift contractor to include for all temporary protection to the existing building structure and finishes. Any damage caused to be made good at the lift contractor's expense.

The successful contractor will be responsible for the security and safe storage of any equipment, materials, tools, etc. on or off site, and the client will not be responsible or liable nor will guarantee the security of any equipment, materials, tools, etc. that are kept on or off site by the successful contractor.

2.9 Removal of Existing Lifts/Redundant lift equipment

As part of the Scope of Works the successful Lift Contractor the removal of the existing lift/redundant parts thereof is included.

Lifting beams to be tested before use as per statutory GA 1 requirements and to be included in the tender submission by the lift contractor.

If or when the successful Lift Contractor employs sub-contractors for the removal of the existing lifts then the successful Lift Contractor must employ a reputable and accredited company to conduct these works and has to demonstrate the experience, Risk Assessments & Method Statements to the clients appointed engineer prior to commencing the works.

All redundant components need to be removed from site by the successful Lift Contractor, and he will take full ownership of the redundant materials to be environmentally disposed of for recycling.

All redundant materials, components, oils & lubricants must be disposed of in accordance with the national legislation and the Guidelines of the Irish Environmental Protection Agency (EPA) and the successful lift contractor shall manage the waste disposal accordingly and maintain a register stating how and where these were disposed.

2.10 Practical Completion

The Lift Contractor shall complete the installation works before the date agreed for Practical Completion (as agreed by the Lift Contractor with the Clients representative and specified within the Clients programme of works).

Completion of the Vertical Transportation equipment is only considered if the equipment has received its Declaration of Conformity without any snag items including so-called builders' items.

If the Vertical Transportation Equipment installation works are accepted, SEEC will issue to the Client a Certificate of Practical Completion as a confirmation of completion of the works without snags.

2.11 Project and/or Account Management

The Lift Contractor undertakes to appoint a dedicated Project and/or Account Manager. The Lift Contractors Project and/or Account Manager will provide principal contacts for the Client, its design team, cost management team and contractor (whenever appropriate and agreed with the Client, the Lift Contractors Project and/or Account Manager may nominate other points of contact for specific areas of expertise but will at all times have overall responsibility). The Lift Contractors Project and/or Account manager will be responsible for coordinating all activities relating to his scope of works.

Site supervisor to be on site full time and also when deliveries are arriving, and when out of hours working is required. Organizational chart of proposed rip out/installation team to be submitted with the tender.

The Lift Contractor shall provide notice to the Client or his representative of any intention to change its Project and/or Account Manager or its management and/or communication structure.

The Client or his representative reserves the right to demand a change in the Lift Contractor's Project and/or Account Manager at any time.

2.12 Delivery Expectations

Due to lack of space in CUH campus the contractors compound needs to be coordinated with the lift contractor on appointment unless previously agreed with CUH.

2.13 Quality Assurance

The Lift Contractor shall state at the time of Tendering, details of registration with a recognised authority or other procedures adopted to ensure compliance with an approved quality assurance scheme and issue a copy of Notified Body certification and stating under which module of the Directive 2014/33/EU the Lift Contractor is accredited for.

2.14 Contractor's Design Warranty

The Lift Contractor will be required to enter into a Warranty with the Client in respect of the design of the contract works in accordance with the requirements of the contract documentation. Design responsibility of the entire scope of this contract is with the Lift Contractor for this project.

2.15 Design Life Span and Obsolescence of Equipment offered with this tender.

The equipment and parts offered shall be designed for 120 starts per hour and a life span of 20 years and for the passenger lifts based on a minimum of 800,000 starts per annum.

During this 20-year period obsolescence of parts or the equipment as a whole will not be accepted, and the supplier/installer will provide in writing, with his tender submission that parts will be retained for a period of ten (10) years after 20 years or if production of this equipment or parts is stopped past the 20-year period.

2.16 Items to be returned with tender.

The lift contractor shall complete all Tender Information Schedules within the specification and return them with the tender as part of a fully compliant bid. Lift specific schedules shall be copied and submitted for each group of lifts to provide full information of all equipment.

2.17 Site Provisions and Requirements

2.17.1 Packing and Delivery

All packaging materials and delivery charges shall be included. All plant and equipment shall be delivered with the Lift Contractors name on the outside of the packing, to facilitate identification.

All equipment and materials shall be delivered to site in accordance with the requirements of the construction programme and shall be stored on site in a manner providing protection against such transportation, handling, and weather damage and to facilitate removal for installation in accordance with the programme.

It shall be the Lift Contractor's responsibility to examine all materials and equipment, supplied under this Lift Contract, on delivery to site. The Lift Contractor shall replace, at its' own cost, any such material or equipment which is damaged or faulty.

2.17.2 Co-operation with Other Trades

The Lift Contractor shall co-operate with any other Contractors who may be working adjacent to, or in connection with the Works. In positions where construction work and other services are to be installed, adjacent to, or in the vicinity of the Lift Contract Works, the Lift Contractor shall co-operate in every respect with the necessary parties, to determine the most suitable sequences of working.

The lift contractor shall allow for in the tender - coordination with the onsite Security Contractor. The lift contractor to supply and install all of the Security Contractor requirements such as:

- CCTV, 2x power supply, 1x 75-ohm co-axial, 2x twisted pairs, 1X CAT7 and ran to client's location requirements.
- Fire I/O for primary and alternative recall ran to client's location requirements. Cable ran as per client requirements.
- Fire I/O for the Aspiration Unit feeding back to the fire panel. Cables ran as per client requirements. Installation, integration, and commissioning.
- BMS inputs and outputs. Lift contractor to link in with security and ran to client's location requirements.

2.17.3 Site Staff

Eight weeks prior to the commencement of lift works on site, the Lift Contractor shall, at the request of the Engineer, submit written details of the name, training, and experience of the proposed senior site representative. The Engineer, may, decide that the Lift Contractor provide an alternative representative, and the Lift Contractor shall comply with this requirement without delay or cost to the Lift Contract.

The Lift Contractors' staff shall wear overalls/workwear, at all times, incorporating the company name or logo, which shall be clearly visible at all times.

2.18 Health and Safety

The Lift Contractor shall take account of any relevant legislation regarding Safety, Health & Welfare, and shall provide all necessary guarding etc., to prevent harm coming to any responsible individual working within the confines of the machinery spaces, the lift well and adjacent areas.

The lift contractor shall also provide all necessary method statements and risk assessments as required by the Project Supervisor Design Phase Preliminary Health & Safety Plan.

Lift contractor will be appointed Project Supervisor Construction Stage (PSCS) for the project.

2.19 Programme of Works

The lift works shall start and be completed as required in the Main Contract Documents. The Lift Contractor shall make such labour available at all stages of the lift works, as necessary to permit the programme to be achieved.

The Lift Contractor shall immediately inform the Engineer of any delays caused by labour shortages, late delivery of materials and equipment, or the failure to meet the programme by any other Contractor on site, which may affect the lift works programme.

The Lift Contractor is required to complete the programmes in the schedules within this specification for design and site-based activities.

The replacement of the existing lifts is envisaged as a phased programme as at least one lift is required to be working at all times.

First lift must be reliably operational for at least 2 weeks before works begin on removal of the second lift.

2.20 Drawings

2.20.1 Tender Drawings

At the time of tendering, the Lift Contractor shall submit three copies of drawings or illustrated technical leaflets for the following:

- Lift machine, controller
- Doors/gates, operators and locking system.
- Car and landing control panels
- Car enclosure / finishes
- Car and landing signals
- Internal Elevations
- External Elevations

2.20.2 Project Drawings

Within four weeks, unless otherwise agreed, from the date of the acceptance of the Tender the Lift Contractor shall provide:

- Sets of General Arrangement Drawings
- Sets of Builders Work Drawings
 - Proposed hoardings.
 - Landing door openings.
 - Blocking up redundant openings.
 -

2.20.3 General Arrangement Drawings

The general arrangement drawing shall clearly indicate the location and type of all lift well and machine equipment, brackets, and fixings.

2.20.4 Builders Work Drawings

Separate builders work drawings shall be submitted, incorporating comprehensive plan drawings of the lift well, machinery spaces and lift entrances and full elevation details.

Any proposed alterations to the lift shaft must be assessed by a structural engineer and detailed drawings provided for review.

All builders' work shall be clearly identified, and the drawings shall incorporate a written schedule of builder's work required to be provided by others to ensure that necessary allowances can be made accordingly.

The builders work drawings shall include loading requirements for foundations, bases, lifting and supporting structures for plant or equipment, all holes in walls, floors and ceiling elements and any works external to the lift well and machinery spaces as required in this specification.

The heat output generated by any lift equipment shall be clearly identified by the Lift Contractor to ensure adequate ventilation is provided in machinery spaces, as necessary.

The loading and details of fixings required to any adjacent structure shall be clearly identified to enable comment or approval where necessary by the Structural Engineer.

Drawings must be provided for any structural alterations to the landing door openings.

Electrical supply requirements shall be clearly detailed on the machine room drawing or a separate schedule providing at least the following information:

- Full load running current.
- Maximum starting current.
- Required protective device and capacity.

Lift Dimensions: Dimensions to be checked by the successful Lift Contractor.
Lift shaft widths are not the same.

Radiotherapy & Pathology Lift Dimensions; all dimensions to be checked by the successful lift contractor.

2.20.5 Mechanical & Electrical Drawings

Drawings for all mechanical elements related to the aesthetic finishes, i.e. car body works, doors and architraves, pushes, indicators, and mounting plates etc. shall be submitted at suitable times during the design stages to enable review and comment accordingly.

Any drawings for item of plant or equipment produced or supplied by a sub-contract manufacturer or equipment supplier submitted for comment shall indicate principal dimensions, fixings, connections, and all other relevant details.

Where a manufacturer's original drawings are used, they shall be specific to the relevant lift works and all references to optional features, other machines of a range, etc., shall be deleted or the original drawings redrawn to comply with this clause.

All wiring diagrams shall indicate clearly that wiring which forms part of, or is connected to, the equipment as delivered.

2.20.6 Drawing Review

SEEC will review and comment on all project drawings prior to manufacture of any related equipment. On receipt of comments to any drawings, the Lift Contractor shall revise the drawings and provide three further sets clearly identifying any revisions for final comment.

Following incorporation of all comments on revised drawings, four complete sets shall be submitted to the Engineer.

Drawings will be subject to comment and shall be used for checking during the commissioning stages, that all equipment has been provided and fitted in accordance with the proposed design.

2.21 Works Tests, Inspections and Commissioning

2.21.1 Works Tests and Inspections

The Lift Contractor shall include costs and make arrangements for any of the following work's tests and inspections, in the manufacturer's works, as identified in the schedules:

- Examination of selected machined parts of the Vertical Transportation Equipment before assembly and of electrical component parts to check freedom from latent defect.
- Witnessing the commissioning tests, where applicable, on the safety gear, over runs, full load, 125% load, main drive motor, break, control equipment and current rating tests of the equipment.
- Inspection of Vertical Transportation Finishes mock-up and associated finishes.

2.21.2 Labels & Notices

All labels identifying the individual components and warning signage, or notices shall be supplied and fitted in accordance with European/National/Local legislation.

All notices, emergency release procedures, electric shock notices, warning labels and equipment identification labels shall be fitted and displayed. All electrical signage for the electrical equipment.

2.22 Compliance with Legislation, Regulations & Standards

Except where enhanced by this Specification and any other related documents submitted with the invitation to Tender, the equipment and installation shall conform to the requirements of all relevant Legislation, Regulations and Standards issued by recognised Standards and Legislative bodies for the location where the installation will take place.

This specification is based on the latest editions of the European and Irish Legislation, Regulations & Standards.

The relevant Legislation, Regulations and Standards shall include but are not limited to the following as applicable to the equipment specified:

- European Directive 2014/33/EU
- European Directive 2006/42/EC
- Safety, Health & Welfare at Work Act
- Safety, Health & Welfare at Work (General Application) Regulations
- Safety, Health & Welfare at Work (Construction) Regulations
- Building Control Act
- Building Regulations Part A – M
- Building Control (Amendment) Regulations
- TDG Part B
- TDG Part M
- ISO 4190-1
- ISO 4190-2
- ISO 14798
- ISO 18738
- ISO 25745-1
- ISO 25745-2
- ISO 25745-3
- I.S. EN81-20
- I.S. EN81-21
- I.S. EN81-28
- I.S. EN81-3(0)
- I.S. EN81-41
- I.S. EN81-50
- I.S. EN81-58
- I.S. EN81-70
- I.S. EN81-71
- I.S. EN81-72
- I.S. EN81-73
- I.S. EN81-76
- I.S. EN12015
- I.S. EN12016
- I.S. EN13015
- I.S. 3217
- I.S. 3218
- B.S. 5588-5

Where this Specification is more stringent than those Standards and Codes, the provisions of this Specification shall prevail.

The Lift Contractor shall bring any requirements imposed by this specification that creates a non-compliant situation with a recognised standard to the attention of the Engineer.

Reference to Legislation, Standards and Codes of Practice shall mean the edition current, at the time the lift installation has received its overall Declaration of Conformity. Certificates of compliance with the relevant Legislation & Standards shall be provided. Any subsequent changes in the relevant Legislation & Standards shall be brought to the attention of the Engineer.

2.23 Commissioning Tests on site

2.23.1 Witness Tests on Site

On completion, the Lift Contractor shall test and examine the whole installation to his own satisfaction.

After the Lift Contractor has satisfied himself that the installation meets the requirements, the final tests are to be witnessed by SEEC. All test documentation to be provided to SEEC for review.

This to establish that the Lift Contractor has met the requirements of this Specification and to proof compliance with the Essential Health & Safety Requirements of the relevant European Directive(s) and National Health & Safety Regulations.

For the assessment to comply with the Essential Health & Safety requirements of the European Directives and National Regulations the relevant International, European Harmonised & National Standards shall be adopted.

The results of the tests shall be recorded on a separate test and examination certificate for each lift in accordance with the relevant International, European & National Standards.

The Lift Contractor shall provide these certificates.

Notwithstanding the requirements of the relevant sections of International, European & National Standards, the witness tests shall include the following specific tests as a minimum:

- Motor current readings shall be taken and recorded in the up and down Direction with empty car, balanced load, and full load in the car.
- 125% Static Load Test for Lifts.
- Downward operating safety gears shall be tested under 100% load with the safety gear operated either by over speed or via a test groove provided on the governor for the purposes of verifying the correct operation of the safety gear and over speed assemblies as installed at contract speed.
- Manual activation of the governor will not satisfy the requirements of this specification.
- The Lift Contractor shall be deemed responsible for damage to equipment or property, occurring from this test and shall subsequently carry out all necessary remedial works at his own expense.
- Upward movement control equipment shall be tested with an empty lift car travelling upward in an over speed condition or via a test groove on an over speed governor if provided at contract speed.
- Car buffers shall be tested by running the lift car carrying 100% rated load, at contract speed onto the buffers. Counterweight buffers shall be tested by driving the empty car upward so that the counterweight strikes the buffers at contract speed.
-

2.23.2 Functional Tests

The operational functions of all Vertical Transportation Equipment shall be demonstrated to the Engineer including but not limited to:

- All push buttons, indicators and sounders, gongs etc.
- All key switches and functions controlled thereby.
- Special control features such as firefighting control, fire alarm recall, and emergency recall switches, out of service switches, Access control, and CCTV functions etc.
- In the case of there being two or more lifts operating under a group control arrangement, this facility together with any other special traffic handling features shall be demonstrated.

2.23.3 Test Certificates

At the request of the Engineer, the Lift Contractor shall make available, copies of any Manufacturers Test and Type Test Certificates.

2.23.4 Test Engineers and Equipment

All testing and commissioning shall be carried out by suitably qualified engineers, experienced in the work, and using suitable instruments. All instruments and test equipment shall be calibrated in accordance with the Lift Contractors Quality Assurances procedures and at the request of the Engineer, the Lift Contractor shall make available, copies of any Calibration Certificates for test equipment used during commissioning.

2.23.5 Placing on the Market (Putting into Service)

The Lift Contractor shall successfully complete the commissioning of the works, and rectify any defects or snags identified during commissioning, to the satisfaction of the Engineer, prior to putting the equipment into service.

Prior to any Vertical Transportation Equipment being put into service, the Lift Contractor shall clean the machinery spaces, lift wells and cars of all debris, and leave the complete installation in the state of cleanliness expected of a new product.

The Vertical Transportation Equipment when completed shall not be put into service prior to:

- Fully tested and commissioned in accordance with the relevant European Directives and subsequent European Harmonised Standards.
- An Initial Inspection by a competent person in accordance with regulation 30 of the Safety, Health & Welfare at Work (General Application) Regulations 2007 has been conducted.
- A Report of Thorough Examination has been issued and record being kept in accordance with regulation 52, 53 & 54 of the Safety, Health & Welfare at Work (General Application) Regulations 2007 by an Independent & Impartial Competent Person accredited by a National Accreditation Board in accordance with ISO/IEC 17020:2015 in relation to Lifts or Hoists, and.
- Declaration of Conformity by the installer has been issued in accordance with the applicable European Directive(s) highlighting all relevant Harmonised Standards that the Vertical Transportation installation was as assessed against and any deviations against these standards which have received a derogation from the installers Notified Body.
- Declarations of Conformity by the manufacturer of the Vertical Transportation equipment have been issued.
- Declarations of Conformity by the manufacturer (s) of the safety components have been issued.
- Completed Signed Test documentation has been provided.
- CE Marking displayed in the appropriate location (for lifts on the cabin operating panel) identifying the Notified Body number of which the installer is under surveillance of.

2.23.6 Operation and Maintenance Instruction

The Client may appoint representatives to undertake the operation and maintenance of the building services installation, including the lifts.

The Lift Contractor shall include for a minimum period of one (1) working day prior to Practical Completion, to instruct the Client's representative in the day to day running of the Vertical Transportation Equipment. The location and function of all items listed on the Record Schedules shall be explained. The controls systems, procedures for starting, isolation, emergency switching, and hand lowering / winding shall be comprehensively explained, and demonstrated to the Client's satisfaction.

Lift contractor to include for CUH Staff training in relation to Emergency Response for entrapment and release.

Lift contractor to include for CUH staff training for general lift operations.

3 Operation & Maintenance and Record Manuals

3.1 General

3.1.1 Language and Content

All diagrams, documentation and design data shall be in English, unless agreed otherwise, and shall contain the following sections:

3.1.2 Electronic Manuals

The Lift contractor shall provide copies of the O & M manuals in an electronic format. The proposed format of any electronic data shall be confirmed in the tender returns and agreed with the Engineer to suit the Client's requirements.

3.1.3 Operating & Maintenance Manual

The Lift Contractor shall supply two draft copies of an Operating and Maintenance Manual(s) for review.

After receiving comments, the Lift Contractor shall submit four copies of the Operating and Maintenance Manuals incorporating all revisions and corrections prior to the lift(s) being put into service.

The manual(s) shall be specifically produced for the installation. A collection of manufacturer's leaflets will not be acceptable unless they provide all the information as required by this specification.

The manual(s) shall be of loose-leaf 'A4' type with a plastic bound stiff cover and clearly printed titles on both the front cover and the spine.

The manual(s) shall incorporate separator sheets each containing a clearly labelled index tab to enable quick location of each section.

The O&M Manuals and Wiring diagrams to be stored in a suitable document holder on top of the car or control panel.

3.1.4 Index

The index shall be comprehensively written and shall be sufficiently detailed to ensure that any item can be correctly identified and its location in the manual found quickly and easily.

3.1.5 Introduction

The introduction shall include a concise description of the installed system and an overview of the intended method of operation and control of the lift.

3.1.6 Design Data

The design data shall be provided in tabular form and must include the manufacturer's lift identity number and details of contract load, speed, control, and levels served. Details of special control features must be included together with Test Sheet data on ride comfort levels, as required by the Specification.

3.1.7 Description of Operation

The Description of Operation shall include a full technical description of the operation of the installation and shall clearly explain all controls, indicators, and communication devices. A full description of all control features and operating and signalling controls shall be provided.

3.1.8 Schedule of Equipment

The Schedule of Equipment shall give full descriptions and manufacturer's part numbers of all equipment supplied within the works to ensure that each type can be positively identified. The Schedule shall cross reference to other

sections of the manual (i.e. the location of the relevant manufacturers' leaflets) to enable all the information on any particular item to be easily located.

3.1.9 Schedule of Recommended Maintenance

The Schedule of Recommended Maintenance shall give details of all statutory and recommended inspections for all equipment and clearly identify the scope and frequency of all other required inspections, adjustments, lubrication, and replacement of components supplied.

3.1.10 Risk Assessments

Risk assessments shall be provided for all service and maintenance operations in accordance with I.S EN 13015. Maintenance on Lifts and Escalators - Rules for Maintenance Instructions.

3.1.11 Spare Parts and Lubricants

A comprehensive list of spare parts and lubricants shall be provided and shall include the make, type and part number of all items and any special ordering requirements. The names and addresses of manufacturers and suppliers shall be provided.

3.1.12 Emergency Procedures

The Emergency Procedures shall be clearly detailed along with full details of call-out procedures that must be carried out in the event of a breakdown.

Concise instructions (with appropriate diagrams) of the emergency hand winding, or lowering of the lift, and arrangements for the release of trapped passengers shall be provided. It is essential that these procedures are formulated in such a way that the safety of the trapped passengers and those carrying out the procedures are maintained throughout.

3.1.13 Plant and Equipment Specifications

A complete list of all plant and equipment manufacturers shall be provided giving their addresses and telephone numbers along with the address and telephone number of local agents for imported equipment, identifying the items of equipment for which they were responsible.

3.1.14 Record Manual

After completion of all commissioning tests, the Lift Contractor shall supply two draft copies of the Record Manual incorporating all test certification and record drawings as detailed, for comment.

Within 2 weeks of receiving comments, the Lift Contractor shall submit four copies of the Record Manual incorporating all revisions and corrections.

The manual(s) shall be of loose-leaf 'A4' type with a plastic bound stiff cover, with clearly printed titles on both the front cover and the spine.

The manual(s) shall incorporate separator sheets each containing a clearly labelled index tab to enable quick location of each section.

3.1.15 As installed Drawings.

A complete set of as installed drawings of the lift system derived from the approved General Arrangement and Builders Work Drawings.

Drawings to be provided in CAD and PDF format.

The drawings shall indicate the as installed conditions and shall be clearly labelled "As Installed" in the title block.

3.1.16 Electric Circuit and Control Drawings

A complete set of all electrical circuit and control wiring diagrams of the installed system, including the position of all luminaires, alarms and socket outlets in the lift machinery spaces, well, pit and lift car.

The drawings shall indicate the as installed conditions incorporate any site modifications made during the installation period and shall be clearly labelled "As Installed" in the title block.

3.1.17 Test Reports & Certificates

Copies of all type test and factory test certificates for all items of equipment and also signed copies of the EN81-20 Test Certificates for the completed installations. Any hand-written certificates shall be produced with clear legible writing.

The Contractor shall provide copies of all Type Test Certificates, manufacturers' Test Certificates and rope, chain, hydraulic hose, emergency lighting Test Certificates, also the Safe Working Load Certificates for lifting beams and car top safety hooks as applicable to the equipment provided.

3.1.18 Designation Schedule

A Designation Schedule shall be provided which shall tabulate all codes and abbreviations used for controller components and define the individual component functions. All switches, relays and control system components shall be permanently labelled, and any codes or abbreviations used shall exactly match the associated wiring diagram and be identified within the Designation Schedule.

3.1.19 Manufacturer's Leaflets

The Lift Contractor shall provide a complete set of all manufacturers' data leaflets relevant to the equipment installed. Where these leaflets refer to more than one variation of the equipment, the supplied item must be identified in an unambiguous manner.

3.2 Maintenance

3.2.1 Maintenance during Defects Liability Period

The Lift Contractor shall include for fully comprehensive maintenance during the Defects Liability Period on all plant and equipment supplied under the Lift Contract.

This shall include for maintenance and an emergency call-out service for the whole of the installations for a period of 24 months from date that the lift(s) is put into service in compliance with The Lifts Regulations.

This shall include for regular examination and any adjustments, lubrication, cleaning, replacement of parts, etc., as necessary to suit the type of equipment installed and to ensure continuous, reliable operation.

3.2.2 Comprehensive Maintenance Schedules

The Lift Contractor shall complete the schedule within this specification for a maintenance contract covering the entire installation, for the periods identified in the schedule and shall include in the overall tender sum.

The maintenance Contract shall commence at the end of the Defects Liability Period and shall include comprehensive maintenance and emergency call-out services for the entire system.

The contract shall be based on a fully comprehensive contract, and the Lift Contractor shall submit a model contract with the tender and confirm separately, any items that are not covered under the proposed agreement.

It shall include monthly service visits for general adjustments, lubrication, cleaning, and replacement of worn or faulty parts as necessary to meet the requirements of the type of equipment installed.

As part of the maintenance contract, an annual report on each lift shall be submitted by the Lift Contractor detailing all visits to site, identifying call outs, breakdowns, service visits and any actions or work carried out on the systems.

All maintenance visits during the 24-month warranty period must be recorded in the maintenance log card. Log card must be provided with the lift during warranty period. 12 visits per annum – monthly visits.

Any reports on call outs to the lift contractor need to be communicated via email to CUH Maintenance department and SEEC immediately after each visit (within 24 hours) detailing the service call report. maintenance@CUH.ie & nikki@seec.ie

On receipt of any request for assistance, call out responsibilities are 365/per annum.

Entrapment 30 minutes

Standard Call 2 hours (Acute Hospitals)

3.3 Equipment Workmanship and Materials

3.3.1 General

The Lift Contractor shall permit the Engineer or a representative, free access to the Works during working hours and by agreement. Facilities are to be made available for inspection of materials, assemblies, method of manufacture and quality control of the process.

Unless otherwise described, all materials shall conform to the appropriate European and Irish specification. The Lift Contractor shall furnish the Engineer, upon request, with certificates or letters from the prime material manufacturers and suppliers proving that the materials to be used do in fact conform to such specifications and confirming that they approve the use of their materials. Such certificates and letters shall be incorporated into the Operation and Maintenance Manuals.

The Lift Contractor shall obtain the total quantity of each material from the same manufacture with proven experience of manufacture of similar materials. Where this is not possible, any alternative arrangements shall be agreed with the Engineer.

The Lift Contractor shall, upon request, submit a list of all materials proposed which are not specifically described in this specification. The Lift Contractor shall submit manufacturer's recommendations as relevant to this Sub-Contract.

3.3.2 Fixing Devices

The Lift Contractor shall allow for all necessary fixing devices for a minimum fixing requirement based on the existing structure, including framing, bearers, fillets and the like and all preparation in plugging and screwing or cutting for anchor bolts or for other fixing whatsoever necessary.

The Lift Contractor shall provide for an appropriate combination of all working tolerances in the elements of the Lift Contract Works as well as the design tolerances in the work of others and shall provide for all necessary adjustments to enable the Works to be fitted.

3.3.3 Fabrication

The material used in the fabrication shall be of a type to achieve the required performance and appearance.

Methods used in the fabrication shall be selected to achieve the specified appearance and performance. Methods used shall be based upon the use of suitable equipment and experienced operatives.

Methods statements shall contain control procedures to ensure compliance with the project requirements.

Control samples shall be produced to adequately demonstrate the standard of workmanship and finish required. Where appropriate range samples shall be established to assist in quality control procedures.

3.3.4 Accuracy and Compliance

The Lift Contractor shall fabricate and install all assemblies in accordance with agreed shop component and assembly drawings.

The Lift Contractor shall pre-assemble and carry out as great a proportion of the works as possible within a controlled factory environment.

3.3.5 Workmanship

The standard of workmanship for all the Lift Contract work shall be to relevant codes of practice, strictly in accordance with the agreed shop drawings. The Lift Contractor is deemed to be fully conversant with all relevant Irish Standards Specifications.

Workmanship for all constructions and components assemblies shall be of the highest standards in every respect. Work shall be true to detail with sharp, lean continuous profiles and surfaces straight and free from defects, dents, marks, cracks, indentations, distortions, waves, scratches or flaws or any nature impairing strength or appearance, fitted with proper joints and intersections and with specified finishes.

When assembled, any moving parts must move freely without binding.

All fixings that are visible to lift users shall be either countersunk or of a decorative nature unless otherwise shown on drawings, specified, or agreed.

Junctions of identical elements shall be mitred, unless otherwise shown on drawings, specified, or agreed.

No modification or adaptation of the agreed details shall be undertaken without permission from the Engineer.

The Lift Contractor shall not cut, drill, or otherwise alter the work of other trades or the lift works, to accommodate other trades, unless such work is clearly identified on the drawings.

Whenever such alteration is required, the Lift Contractor shall obtain the Engineers permission.

3.3.6 Appearance

The finished work is to be entirely free from loose material, chips, marks, or any imperfection visible to the naked eye. Localised making good will not be acceptable. Lift and associated builders work must be presented as new.

3.3.7 Firmness and Solidity

The entire system shall be sturdy, rigid, firm, and free of vibration, rattling, squeaking and other noises.

3.4 Materials

3.4.1 Castings, Extrusions or Profiles

All castings, extrusions or profiles are to be of adequate thickness and strength to meet the structural requirements and eliminate any risk of distortion in the finished surfaces. The thickness of such elements must be sufficient to ensure their complete rigidity in the lengths required in the final installation.

3.4.2 Sealant

The Lift Contractor shall satisfy himself that any form of sealant is compatible with the adjacent elements of construction in any one particular location. All excess sealants shall be properly cleaned from exposed surfaces.

Installed sealant shall provide a smooth continuous surface to the full width of the joint and shall be tooled flat.

Colours of sealant shall be agreed with the Engineer.

3.4.3 Glass

All glass shall be of sufficient thickness and laminated/toughened or annealed as appropriate to meet structural and statutory requirements. All glass must provide undistorted vision and reflection and be free from roller wave.

The location of any safety markings required on glazed panels shall be agreed with the Engineer. The markings if concealed by an agreed fixing method shall be demonstrated prior to such concealment and supporting documentation shall be provided and incorporated in the manuals to ensure compliance with all relevant codes can be confirmed.

All work shall be thoroughly cleaned before glazing, to ensure that frames and glass are free from dust, moisture, frost, oil, grease, or other foreign substances.

All glass is to be installed on site with sealant. Setting blocks, corner blocks and spacers shall be used as required to professionally install the glass and maintain the performance criteria.

All necessary protective measures shall be taken to prevent mechanical damage of glass, any damaging splashes or weld spatter etc.

4 Safety, Health & Welfare and Design Management

4.1 Safety, Health & Welfare

Provide for all costs incurred by complying with and implementing statutory obligations in respect of National Safety, Health, and Welfare Regulations, including any National Construction Design & Management Regulations appertaining to all personnel (including those employed by nominated sub-contractors) whose duties requires them to be on the site.

Proof of appropriate mandatory Safety Awareness Training, for assessment and approval of construction site management, must be carried and/or available for all personnel that intends to visit or work on the construction site.

4.2 Safeguarding, Protecting & Cleaning the Works

Safeguard the Works, materials and plant against damage, theft, or vandalism, including all necessary guarding and lighting for the security of the Works and the protection of the public.

Provide for protecting and covering all fixed or unfixed items of Vertical Transportation Equipment throughout the duration of the Works, until hand-over. Any equipment, which has become tarnished, rusty, degraded, or damaged in any way whatsoever, will not be accepted and shall be replaced at the Lift Contractor's cost.

When offered for acceptance to the Client, all fixtures and finishes of the lift, inclusive of the lift car interior and landing equipment, shall be presented in a clean and pristine condition.

Provide for removing all rubbish from site in accordance with local/national environmental requirements and best practice. Rubbish is to be removed as it accumulates and at completion, including the removal of all temporary works associated with the provision of plant, signboards, temporary roads, temporary hoarding, and temporary buildings. Any disruption as a result of the foregoing shall be made good and all packing cases and packing material shall be removed from site immediately the equipment has been unpacked. Upon completion of the works, the site shall be fully reinstated to its original condition.

Dust protection in and outside the hoarding to be incorporated. Transport of redundant builders' materials (rubble) must be transported with dust protection. Skips in the compound need to be covered with an appropriate cover to prevent release of dust into the environment.

Adequate provision shall be made to protect the decorative finish to floors, walls and ceilings, and areas adjacent to the works from damage, accidental or otherwise, which could be occasioned during the course of the works. Any damage, which does occur, must be reinstated to the satisfaction of the Engineer.

1 set of barriers are to be supplied with each lift and escalator supplied and left on site for maintenance going forward. The barrier provided should comply with EN13015 – Maintenance Instruction for Lifts & Escalators.

4.3 Protection of Underground Services & Overhead Lines

Protect, uphold, and maintain all underground services and overhead lines during the execution of the works. The Lift Contractor shall safeguard all reference points, which indicate the presence of an underground service. The Lift Contractor will be liable for any damage due to any cause within his or his sub-contractor's control, which is occasioned to any service or marker and is to pay any charge for making good.

4.4 Scaffolding & Crash Barriers

The Lift Contractor shall provide all necessary temporary scaffolding for the proper execution and completion of the works, this scaffolding to comply with all statutory or other requirements. All scaffolding shall be installed by an

authorised person and shall be inspected and tagged. A register shall be maintained on site. Unauthorised persons shall not be permitted to carry out adaptations or alterations. If crash barriers are required, they are to be supplied by the Lift contractor.

4.5 Welding and Cutting

Should the Lift Contractor have a requirement to use either oxyacetylene or electrical welding equipment on site, he must first seek the permission of the Site Foreman who will not unreasonably withhold such permission. Only employees of sub-contractors who have been professionally trained in the use of such equipment shall be allowed to use the equipment on the Lift Contractor's behalf. The Lift Contractor is to ensure that proper safety precautions in full compliance with good practice and statutory requirements are maintained in force, for the duration of the use of the equipment.

4.6 Mobile Telephone and Portable electronic Equipment

Mobile telephones and portable electronic equipment are generally not to be used on site. The site manager may, at his own discretion, identify an area and designate it for the use of mobile phones. The area will be situated away from vehicular and pedestrian traffic and away from areas of work.

4.7 Step Ladder Policy

Step ladders are generally not to be used on any site; these should be a last resort only where absolutely necessary. Where the appropriate access scaffold, MEWP or podium step cannot be utilised and step ladders are believed to be required, the use of these must be approved by the relevant site manager who shall monitor usage.

4.8 Plant & Tools

- The Lift Contractor must provide all plant, tackle crange and tools necessary for the proper execution of the Works.
- Take any necessary precautions to avoid annoyance by use of mechanical plant and vehicles and to ensure that silencers are fitted where appropriate.
- Ensure that such plant is maintained at all times in good condition suitable to the use for which it is to be employed and ensure compliance with good practice and any legislation or statute applicable to it.
- Certificates of inspections must be promptly produced when so requested by duly authorised personnel.

4.9 Discipline

The Lift Contractor shall ensure at all times that his employees, whether for Installation Works or Service work, shall act in a fully responsible manner when on the Purchaser's premises.

Each of the Lift Contractor's employees, who are required by the nature of their duties to visit the Purchaser's premises, will be expected to carry identification which must be produced on request to duly authorised representatives of the Purchaser.

The Purchaser reserves the right to reject any of the Lift Contractor's employees if their actions are considered to be disruptive or detrimental to the operation of the Purchaser's premises or the progress of the Works.

4.10 Area of Operations

Provide for taking reasonable precautions to prevent workers, including those employed by sub-contractors, from trespassing on adjoining Purchaser's property or any part of the premises that are not affected by the works.

4.11 Personal Protective Equipment

The Lift Contractor will issue to all employees and sub-contractors Personal Protective Equipment comprising of overalls bearing the company name or logo, hard hat, safety footwear, eye, and ear protection as a minimum. All lift employees will be instructed in the safe use of all PPE issued including harness if required. Site rules will apply regarding PPE and must be adhered to.

4.12 Portable Appliance Testing

All portable tools and appliances brought onto site must bear a current label indicating they have undergone testing in compliance with National Regulations.

4.13 Staff Instructions

Allow for demonstrating and instructing the operating and emergency procedures relating to the running of the lift installation to Purchaser's appointed staff. Furnish certificates of competence to the staff that have received such instruction.

4.14 Statutory Authorities

The Lift Contractor shall include the costs and time scale within the contract and to seek and gain any necessary Statutory Approvals for the works, including but not limited to Building Control, District Surveyor, Fire Officer, and Planning, where applicable.

4.15 Site Meetings

The Lift Contractor shall allow for attendance at weekly site meetings during the installation of the equipment on site. The lift contractor shall, when appointed, attend the first site meeting, and agree program dates, inform their sub-contractors of the lift requirements, and shall issue lift construction drawings including drawings showing the position of shaft lighting, power and telephone termination, ventilation, and scaffolding. The Lift contractor shall inform stakeholders on regular basis if there any changes in the program. Two weeks prior to the agreed start date for the installation of the lifts at a mutually agreed suitable time with the Project manager, the lift contractor shall carry out a site survey and attend that same week the site meeting. During installation, the Lift contractor shall attend site meetings on a two-weekly basis.

4.16 Storage

All Lifts, units are to be ordered per project. The order will be placed at a time to meet the required site programme and agreed start dates. If for whatever reason the units are delivered before the required date on site, the storage and cost of same will rest with the Lift Contractor/Installer. Compound to be agreed with CUH.

4.17 Site specific Risk Assessments

Design Risk Assessments are provided as part of this tender document. The successful contractor will be required to provide for each project, site specific risk assessments along with site specific method statements for review.

Typical design risks detailed in section below for reference.



shanderry elevator & escalator consultants ltd

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LIFT SPECIFICATION RISK DOCUMENTATION		Document No. LSRD
Cork University Hospital, Cork.		NOTE: The hazards identified should not be considered to be an exhaustive list. You are also advised to refer to EN81-80:2003, for significant hazards associated with existing lift installations and implement appropriate control measures. This document is intended as a reminder of the possible consequences of certain activities/actions and is not a reflection on your skill and experience. If you identify any other potential hazards, please ensure the master document is suitably amended.
Lift Replacement Project 2026: CUH		
Reviewed by Adrian Goodings, April 2026.		

No:	Activity/Location Materials/Tools etc (Cause/Trigger)	Hazards Identified - (Effect)	S	F	Initial Risk Rating (S x F)	Persons at Risk	Control Measures/Corrective Actions	S	F	Final Risk Rating (S x F)	Residual Risk
G1	Equipment Remains Unexpectedly Live	Electric Shock due to: - Faulty switchgear - Poor insulation or earthing - Inadequate switch marking - Live interconnected wiring - Car lighting or other high voltage equipment in controller - Charge remaining on DC link capacitors on VVF drives. - Equipment not PAT tested. - No rubber mats - No main switch locks off facility - Missing or broken covers - Tripping hazards - Inadequate lighting	4	4	16 =VH	E CO O	Motor room to be designed to allow adequate access for working in accordance with Electricity at Work Regulations and be well lit and free of tripping hazards. Lift Contractor to ensure all staff are adequately trained in safe working practices. All portable appliances to be tested and marked with valid PAT certification. Lift Contractor to provide lock-off facilities to main switches and rubber mats to BS921 at front and rear of controllers. Wherever practical, inspection of electrical systems should be carried out only after the equipment has been isolated from the power supply. When appropriate, to safeguard accidental reconnection by others, the main supply must be “locked-off” and “tagged out” to clearly indicate that work is in progress. All readily accessible live conductors must be covered by an insulating material, e.g. rubber shrouds, or be positioned so they are safe. All equipment must be properly earthed. All doors to control cabinets must be closed and secured after use. A “treatment for electric shock” notice should be displayed in appropriate locations, as recommended by the Guidance to the Electricity at Work Regulations.	4	1	4 = L	Acceptable risk
Risk Rating Criteria											
SEVERITY (S)					FREQUENCY (F)						
1 Negligible		2 Minor Injury			1 Impossible			2 Improbable		3 Remote	
3 Serious Injury		4 Major Injury			4 Occasional			5 Probable		6 Frequent	
Risk Rating Multiples: 1 - 4 LOW = Acceptable risk; 5 - 9 MEDIUM = Investigate and where practical reduce the risk; 10 – 14 HIGH = Action must be taken to reduce the risk; 15 – 24 VERY HIGH = RISK IS TOO HIGH TO START WORK OR CONTINUE. WORK MUST STOP											
Persons at Risk		Public P	Client CL		Employee E		Contractors CO		Visitors V		Others O

No:	Activity/Location Materials/Tools etc (Cause/Trigger)	Hazards Identified - (Effect)	S	F	Initial Risk Rating (S x F)	Persons at Risk	Control Measures/Corrective Actions	S	F	Final Risk Rating (S x F)	Residual Risk
G2	Manual Handling of Equipment	Injury due to: - Items heavier than they appear - Incorrect lifting method - Lack of mechanical handling equipment - Lack of assistance for heavy load - Lack of protective footwear - Sharp edges	2	4	8 = M	E CO	All items to be marked with their weight. Lift Contractor to provide mechanical handling equipment to move items which cannot be safely man handled. Safety footwear to EN ISO 20345 and protective Kevlar or rigger gloves must be worn.	2	2	4 = L	Acceptable Risk
G3	Use of Percussion Drill/Angle Grinder or Hand Tools	Damage to hearing by percussion drilling or accident while using angle grinder/hand tools.	3	5	15 = VH	E CO V O	Lift Contractor to observe Principal Contractors disciplines for noisy works and ensure full compliance with the Control of Noise at Work Regulations 2005. Non-percussive drills should be used wherever practical to reduce the risks from noise and vibration. Lift Contractor to ensure all staff using or working near percussion drilling equipment/angle grinders etc. are equipped with suitable ear defenders/protective goggles and that they use protective equipment and have been instructed on their correct use. All portable appliances to be tested and marked with valid PAT certification. Unless battery powered or hand tools are employed, a residual current earth leakage device (RCD) designed to EN 61008-1 must be used.	3	2	6 = M	Acceptable Risk
G4	Use of Mineral Oil	Risk of illness from contact with mineral oils	3	3	9 = M	E CO	Consultant to specify low risk or bio-degradable oils where available. Lift Contractor to provide COSHH data sheets for any substances involved. The area should be well ventilated, and PPE should include the use of disposable overalls	3	1	4 = L	Acceptable Risk

G5	Use of Welding/Grinding Equipment	Danger of fire due to dry grinding or welding on site	3	4	12 = H	P CL E CO V O	Principal Contractor to establish regime of Hot Works including permits. Lift Contractor to ensure site staff are aware of procedures and work to them. Lift Contractor to provide all necessary PPE, safety, and fire precautions, certified as necessary and ensure they are maintained throughout the Hot Work process. As a minimum, fire extinguishers must be readily available, and members of the public and other non-essential staff excluded from the agreed work area. If gas welding equipment is used it must be inspected prior to use for damage to valves, hoses and for leaks and must not be used if defective. The work area must be well ventilated, and any smoke detectors temporarily disarmed.	3	1	3 = L	Acceptable Risk
G6	Use of Paint Spraying Equipment	Danger of inhalation of fumes from site spraying or painting	3	3	9 = M	CL E CO	Wherever practical, off-site application of paint specified by consultant. Otherwise, Lift Contractor must use low fume materials where available and provide COSHH data on all materials used. Lift Contractor to provide PPE and any necessary protection and extraction necessary to comply with the COSHH Regulations.	3	1	3 = L	Acceptable Risk
G7	Lift Car to be Delivered and Installed in One Section	Injury due to: • Incorrect lifting method • Inadequate mechanical handling equipment • Failure of mechanical handling equipment • Lack of assistance for heavy load • Lack of protective footwear • Curiosity of members of the public	4	3	12 = H	P CL E CO V O	Design Team to provide adequate information including restricted heights, widths, and floor loadings, to allow Contractor to prepare a method statement and risk assessment for the task. Design Team to check method statement and risk assessment. As a minimum, the unloading area and access route must not be accessible to the public and all operatives are to be trained in manual handling and rigging of loads. Contractor to ensure site staff are aware of safe working documentation and work to it. Contractor to ensure site staff are provided with all necessary safety equipment, plant and tackles with test certificates as required and are instructed on their use. Principal Contractor to ensure other works are scheduled to provide adequate free access to Contractor during delivery	4	1	4 = L	The hoist/crane or slings could fail. Equipment to have the relevant safety documentation.

G8	Delivery/Removal of Lift Equipment	Danger of tripping or being struck by equipment being removed or delivered to site.	3	4	12 = H	P C L E C O V O	Contractor to provide temporary barrier protection and notices on agreed access route for deliveries. The access route must not be accessible to the public. Any floor protection to be taped in place. All deliveries to be co-ordinated with the Engineer/Purchaser.	3	2	6 = M	Acceptable Risk
G9	Possible Asbestos Contamination Within the Lift Area	Health risk due to inhalation of asbestos fibres from: • Brake linings • Contactor arc shields • Door insulation • Pipework/ductwork lagging • Machine room or shaft panelling/wall cladding	3	4	12 = H	E C O	The owner (or 'Duty Holder') shall furnish a copy of the Asbestos Register called for by the Control of Asbestos at Work Regulations 2002. Contractor to arrange specialist analysis, identification and recommended action then submit a report to Design Team. Contractor to arrange recommended action in accordance with specialist report. Any removal & disposal shall be carried out by a registered Contractor fully in accordance with the Health & Safety at Work Act and all relevant Health & Safety Executive Guidance Notes.	3	2	6 = M	Acceptable Risk
G10	Installation of Mirrors or Glass Doors/Decorative Panels	Injury from broken glass	3	3	9 = M	E C O	Design team to specify laminated glass and mirrors with safety backing. Protective gloves to be worn when handling glazed panels.	3	2	6 = M	Acceptable Risk
G11	High Voltages on Auxiliary Lift Equipment Termination Points.	Danger of electric shock	5	3	15 = VH	E C O	Lift Contractor designer to ensure all auxiliary wiring within the lift machine room, lift shafts and lift car are of a maximum 55 volts where practically possible. (PD6519-1:1995 & IEC 60479-1:1994 refer). All connections and enclosures where higher voltages are present are to be identified with appropriate signage.	5	1	5 = L	Acceptable Risk

G12	Alterations to Existing Electrical Supplies	Danger of electric shock	5	3	15 = VH	E C O	Lift Contractor to issue Method Statement and Risk Assessment on working procedure on existing electrical supplies that require alteration during the scope of the works. If the existing supplies cannot be identified and isolated, then works are not to proceed and must be reported to the Engineer and site contact.	5	1	5 = L	Acceptable Risk
G13	Chemical and biological contaminants	Danger of exposure to Chemical and Biological contaminants from dust in lift shafts, pits, and motor room areas.	4	3	12 = H	E C O V O	Lift Contractor to issue Method Statement and Risk Assessment on working procedure on existing electrical supplies that require alteration during the scope of the works. Contractor to provide infection control measures to mitigate the chances of contaminated dust being transferred from lift areas to areas accessible to the public, patients, and staff. Clean as you go policy to be implemented.	4	1	4 = L	Acceptable Risk
G14	Aspergillosis / Dust control	Danger of exposure to venerable patients in health care facilities.	4	4	16 = H	P C L E C O V O	See Aspergillosis / Dust control / Infection control measures in specification 2.3	4	1	4 = L	Acceptable Risk

No:	Activity/Location Materials/Tools etc (Cause/Trigger)	Hazards Identified - (Effect)	S	F	Initial Risk Rating (S x F)	Persons at Risk	Control Measures/Corrective Actions	S	F	Final Risk Rating (S x F)	Residual Risk
LS1	Shaft Access During Lift Installation	Danger of falling down lift shaft during construction and installation of lift.	5	3	15 = H	P C L E C O V O	Principal Contractor to protect entrance openings to lift shaft so there is no risk of falling. Lift Contractor to provide method statement with safe system of working. Lift Contractor to ensure that all staff have adequate safety equipment and are instructed for its use and that they must ensure their activities do not endanger others.	5	1	5 = M	Acceptable Risk
LS2	Working on Car Top - Limited Headroom	Danger of Engineer striking head on slab over lift shaft whilst working on car top.	2	4	8 = M	E C O	The headroom must be designed to meet the requirements of EN81 so there is headroom above the lift car to provide a space sufficient to accommodate persons travelling on top of the lift. Limit switches in compliance with BS7255 must be installed to prevent movement of the lift car beyond a defined point to create this safe space. Suitable danger notices to be provided on car top by Lift Contractor.	2	2	4 = L	Limit switch could fail to stop the lift
LS2A	Working on Car Top - Headroom Not Compliant with EN81	Risk of Engineer being crushed whilst working on car top.	5	4	20= VH	E C O	Lift Contractor to develop a safe system of working taking into account the existing constraints and then seek approval of his Notified Body for this deviation from the standard. As a minimum, electrically interlocked props and limit switches must prevent movement of the lift car beyond a defined point to create the safe space required by EN81 & BS7255. Travel in the up direction must not be attempted unless it is essential. Travel speed upwards after top landing door is reduced speed.	5	1	5 = M	Acceptable Risk

LS3	Working in the Lift Pit	Danger of Engineer being crushed below the descending car whilst working in pit.	4	4	16=VH	E CO	Pit depth and position of stop switches to be in accordance with EN81. Consultant to specify provision of guide clamps or props in pit. Lift Contractor to provide clamps or props along with notice instructing on their use. Prior to entering pit, verify the correct operation of the landing locks and the pit emergency stop switch. Use props on hydraulic units and do not go under a traction unit that has a load in the car.	4	2	8 = M	Pit stop switch may subsequently fail
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No:	Activity/Location Materials/Tools etc (Cause/Trigger)	Hazards Identified - (Effect)	S	F	Initial Risk Rating (S x F)	Persons at Risk	Control Measures/Corrective Actions	S	F	Final Risk Rating (S x F)	Residual Risk
LS3A	Working in the Lift Pit – Pit Depth Not Compliant with EN81	Danger of Engineer being crushed whilst working in pit due to existing pit depth not being compliant with EN81.	4	5	20=VH	E CO	Consultant to specify provision of guide clamps or props in pit. Lift Contractor to provide clamps or props along with notice instructing on their use. Prior to entering pit, verify the correct operation of the pit emergency stop switch. Use props on hydraulic units and do not go under a traction unit that has a load in the car. Lift Contractor to develop a safe system of working taking into account the existing constraints and then seek approval of his Notified Body for this deviation from the standard. A "Permit to Work" system must be operated in the interim period.	4	2	8 = M	Permit to work system ineffective
LS4	Working Below Suspended Pit	Danger of Engineer being crushed whilst working below suspended pit	4	3	12 = H	E CO	The building structure must be designed to comply with current Regulations and accommodate the loads resulting from actuation of safety gears and/or buffers. A counterweight safety gear must be provided but if this is impractical the structure must incorporate steel or concrete piers beneath the counterweight buffers down to terra firma to withstand the loads imposed by the free-falling counterweight. Contractor to check and verify as part of his commissioning tests.	4	1	4 = L	Acceptable Risk

LS5	Working on Car Top	Danger of falling from car top during maintenance or inspection	4	4	16=VH	E CO	Design Team to include in car design for safety barriers and harness anchor point. Contractor to provide suitable harness to all staff working on lift, with instructions to their use. Contractor to provide suitable notices on car top. Health & Safety file and O&M Manuals to contain information and warnings.	4	2	8 = M	Harness may not be worn
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No:	Activity/Location Materials/Tools etc (Cause/Trigger)	Hazards Identified - (Effect)	S	F	Initial Risk Rating (S x F)	Persons at Risk	Control Measures/Corrective Actions	S	F	Final Risk Rating (S x F)	Residual Risk
LS6	Working on Lift Landing	Danger of falling down existing shaft from landings during works.	4	4	16=VH	E CO	Contractor to provide lockable hoarding to each entrance where the doors have been removed in accordance with the Designers specification, taking due care to avoid restricting access through building, means of escape, etc. Hoardings to be fitted with suitable notices warning of risks. Hoardings to be kept locked. Contractor to operate a "Permit to Work" system, ensuring all staff work to them and are aware of risks.	4	2	8 = M	Unauthorized persons may enter while hoardings are open
MR1	Working in Machinery Area	Danger of Engineer having inadequate space for safe access of equipment.	3	3	9 = M	E CO	The machine room area, height, access, and layout of equipment to be in accordance with EN81, Health & Safety at Work Act and the Electricity at Work Regulations.	3	1	3 = L	Acceptable Risk
MR1A	Working in Existing Machinery Area	Danger of Engineer having inadequate space for safe access of equipment.	3	4	12 = H	E CO	Since the machine room is existing, the Lift Contractor shall select and lay out equipment to achieve the clearances recommended in EN81 and ensure that the mandatory provisions of The Health & Safety at Work Act and the Electricity at Work Act are achieved.	3	2	6 = M	It may not be possible to be fully compliant due to space restrictions.

MR2	Working in Machinery Area	Danger of injury by unguarded machinery.	3	3	9 = M	E CO	Motor room and lift shaft to be kept locked. Lift Contractor to paint all moving parts safety yellow and provide guarding in accordance with Machinery Directive and PUWER Regulations. A remote gear isolation switch should be fitted to act as an emergency stop whilst working near unguarded sheaves or ropes.	3	1	1 = L	Guarding could be inadequate or have been removed
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No:	Activity/Location Materials/Tools etc (Cause/Trigger)	Hazards Identified - (Effect)	S	F	Initial Risk Rating (S x F)	Persons at Risk	Control Measures/Corrective Actions	S	F	Final Risk Rating (S x F)	Residual Risk
MR3	Working in Machinery Area	Danger of injury to Contractor's staff due to inadequate lifting facilities. See also item G7	4	3	12 = H	E CO	Lifting beam requirements to be shown by Lift Contractor in his design drawings. Structural Engineer to design fixings to suit. Suitable lifting beams to be provided in head of shaft by Principal Contractor. Beam to be tested and marked with its SWL. Certificates to be kept in site records.	4	1	4 = L	Acceptable Risk
MR4	Entering or Leaving Hydraulic Machine Room	Danger of tripping over bund wall to pump room door.	2	4	8 = M	E CO	Bund wall to be marked using suitable hazard warnings by Principal Contractor.	2	2	4 = L	Acceptable Risk
MR5	Working in Machinery Area	Danger of falling from raised machine room plinth	3	4	12 = H	E CO	Design team to specify supply and installation of adequate cat ladders and guard rails to comply with current Regulations. Contractor to ensure these are fitted as part of his commissioning tests.	3	2	6 = M	Acceptable Risk
MR6	Working in Machinery Area	Danger of moving equipment in multiple motor room	3	4	12 = H	E CO	Contractor to install suitable fixed barriers around all retained components in motor room. Carry out Risk Assessments and establish a safe method of working.	3	1	3 = L	Acceptable Risk

Risk Rating Criteria						
SEVERITY (S)		FREQUENCY (F)				
1 Negligible	2 Minor Injury	1 Impossible	2 Improbable	3 Remote		
3 Serious Injury	4 Major Injury	4 Occasional	5 Probable	6 Frequent		
Risk Rating Multiples: 1 - 4 LOW = Acceptable risk; 5 – 9 MEDIUM = Investigate and where practical reduce the risk; 10 – 14 HIGH = Action must be taken to reduce the risk; 15 – 24 VERY HIGH = RISK IS TOO HIGH TO START WORK OR CONTINUE. WORK MUST STOP						
Persons at Risk	Public P	Client CL	Employee E	Contractors CO	Visitors V	Others O

5 Schedule of Builders work and Disciplines

5.1 Builders and associated Electrical work Requirements

Abbreviations:

Client	CT
Main Contractor	LC
Electrical Contractor	LC
Lift Contractor	LC
Structural Engineer	LC
CCTV Contractor	LC
Mechanical and Electrical Consultant	LC

The following works shall consist of the information and construction of new or existing shafts, pits, steel beams and entrances, in accordance with the recommendations defined in Harmonised Standard EN81 -Safety Rules for the construction and installation of Lifts-, National Regulations and Standards and Client Specification.

	Description	Remit
1.	Calculations with regards to the building structure lift shaft and pit in conjunction with Structural Engineer.	N/A, Existing shaft
2.	The formation of each lift shaft and pit which are to be dry and free from dust, with safe access as required to comply with the Welfare, Health & Safety regulations. The existing pit dimensions are to be retained for the new lift installations. No concrete poured to build up.	Existing shaft LC
	Lift Shaft Existing	
3.	Provision of safe and adequate access to the lift well.	LC
	Supplying and fixing steel surrounds where required.	LC
	Supplying and fixing sill support members where required.	LC
	Thoroughly cleaned, prepared and painted.	LC
	Any exposed metal protruding from any concrete structure in the lift shaft or machine room such as lintels, ring beams, headers, or sills must be appropriately fireproofed to the same rating as the facility/building fire strategy requirements.	LC
	Asbestos in the lift shaft, landings or machine rooms – Survey Reports to follow, any requirements to remove detected asbestos will be conducted using Specialist Asbestos Handling Contractors.	C
	Guarding of openings and other measure necessary to ensure safety and convenience of personnel within the building and in particular lift personnel.	LC
	Provision of temporary protection (over and above the additional protective skin) of finished lift equipment on landings, surrounds, surfaces, finishes and access routes and if necessary, in the car.	LC
	Off-Loading and storage in a protected area of lift materials and equipment.	LC
4.	Supplying and fixing of scaffolding, planks and ladders if required for the erection, construction or amendment of the shaft(s) or door openings only.	LC

	Scaffolding for the erection of lift equipment and associated cost will be in the remit of the lift contractor.	LC
5.	Each lift pit and shaft to be formed to withstand the structural loadings as indicated on Lift Contractors drawings. The existing pit dimensions are to be retained for the new lift installations. No concrete poured to build up.	Existing LC
	Removal of existing concrete if any.	LC
	The pit shall be thoroughly cleaned and watertight. The pit shall be thoroughly cleaned and sealed/painted and sealed with an anti-slip oil resistant paint/ emulsion compound X 2 coats.	LC
	The pit refuge space must be permanently marked on the pit floor. Inspection Controls to be reachable 300 mm from the pit safety refuge space. Shaft to be prepared and painted white with 1 coat of white paint.	LC
6.	Adequate smoke vents to be fitted at the top of each lift shaft with suitable grille providing outlet to the atmosphere and might be required to be fireproofed depending on National or Local Regulations and in accordance with M&E consultant's or LC specification.	LC
	The lift shaft shall be maintained at a temperature between +5°C and +40°. Provide natural ventilation through lift shaft ceiling. Route to be scoped. Heating and cooling methods shall take into account the minimum operation temperature and the heat output of the Lift equipment. As per 6.13.2	LC
	Machine Room Ventilation	LC
	LC to provide lift ventilation requirements to Client. Approx. 1% of floor area. Ventilation to route to be scoped during lift contractor survey.	LC
	LC to provide, additional fire sealing required in addition to the lift landing door fire-rating provided in compliance with I.S. EN81-58. Landing Door surrounds to be fireproofed with fire stop protection and sealed in place with fireproof mastic. Any holes drilled through the lift shaft to be fireproofed. Any existing holes through the lift shaft to be fireproofed. Any exposed metal protruding from structural works in the lift shaft shall be fireproofed as required to the same standard as the surrounding area.	LC
7.	Lift Contractor is to satisfy themselves that shaft is designed to carry loadings as per lift load requirements. Any alterations to structural door openings must be assessed by structural engineers. Drawings must be provided for review by the design team. Collateral warranties required for any structural works.	LC
	Pull test prior to installation to ensure that the shaft as constructed will hold the fixings.	LC
8.	Supply, fit and test and Lifting beams or Lifting eyes, and marked for a safe working load at the top of the shaft to be provided by Lift contractor	LC

	Existing lifting points. If these need to be tested for a SWL, then this will be in the remit of the Lift Contractor.	LC
	Lift contractor to provide construction drawings detailing position and loadings of lifting beams or eyes.	LC
	Structural Engineers to ensure that lifting beams and shaft is designed to carry the loadings as indicated on the lift contractor's drawings for Lift(s)	LC
9.	Structural Landing door openings to be widened where necessary on each landing in accordance to lift contractor's drawings. The landing areas may require concrete to be removed to allow for door openings. To be assessed during lift contractor survey. Structural engineer to ensure any proposed works are structural sound. If Metal lintels are used, they need to be fireproofed as per the facility fire strategy requirements.	LC
	Contractor to be aware that recesses at floor level might be required if the lift landing doors are to be positioned on the landing. Landing sill may need to be reformed – to be scoped by lift contractor. Doors to be fireproofed to the same standard as the facility fire strategy requirements.	LC
	Lift contractor to provide construction drawings prior to start construction.	LC
10.	Build up any redundant door openings with appropriate materials.	LC
	Make good/fireproof around redundant cable holes through the lift shaft for landing buttons and landing indicators. Except for ventilation openings.	LC
	Make good / build up around the landing entrance including sill and header as required of the lift contractor and architect's detail.	LC
11.	Grout in lift landing doorsills and finish floor up to these materials. Floor tile must not be damaged.	LC
12.	Contractor to provide pockets and cut outs on landings to facilitate push buttons, signal fixtures and control cabinets in accordance with standard detail. Lift contractor's construction drawings to reflect this.	LC
	Contractor to make good after fixtures are fitted.	LC
	Lift contractor to ensure any concrete beams or concrete protruding into the travel path of the lift is shaved back flush to allow the lift car to fit into the lift shaft.	LC
13.	Pit floor to be prepared and sealed with an anti-slip oil proof treatment X 2 coats. Safety Refuge Space to be permanently marked out on the Pit Floor.	LC
14.	Lift Contractor, if or when required, to supply non-removable, electrical interlocked Pit Props to be provided at each guide rail.	LC
15.	Lift Contractor to provide and install pit ladder. Ladder to be electrically interlocked or fixed to the shaft wall.	LC

	Electrical	
16.	Lift contractor to provide temporary lighting and power supply cables if required for electrical tools to use during the erection of each lift. Provide temporary 230 volts power supply for welding equipment adjacent to lift well for use during erection of each lift if required. Power from Machine room above lift shaft.	LC
17.	Supply and fit Access Card Reader for the lift car. A card reader compatible with the hospitals existing ACT system is to be installed in the lift car. This lift is for Radiotherapy staff and card readers to be fitted as per CUH requirements.	LC
18.	Check existing power supply 415 volts, 3-phase, Neutral and Earth, 50 Hz permanent power in a suitable isolator at a position at top of shaft as indicated on lift contractor's electrical drawings. Run new cable if required.	LC
	Electrical Load rating to be provided by Lift contractor.	LC
	Provide separate 220 volts, 1 phase and Neutral and Earth, 50 Hz permanent power in a suitable isolator at a position to be confirmed as indicated on lift contractor's electrical drawings.	LC
19.	Lift contractor to provide shaft lighting in accordance with EN81. The lighting should be switchable at top of shaft, lift pit and control panel.	LC
	Lift contractor to provide shaft Emergency lighting in the event main power is disrupted.	LC
20.	Lift contractor to provide car lighting with a light level of a minimum of 100 lux and in accordance with EN81, switchable in control panel.	LC
	Lift contractor to provide lift car Emergency lighting in the event main power is disrupted.	LC
	Telephone, to be confirmed.	
21.	During the warranty period, the lift contractor shall make full provision for and bear all costs associated with the mobile telecommunications service for the GSM unit, including the supply, installation, and ongoing service contract for the SIM card. The contractor shall also ensure that the GSM unit maintains adequate and reliable signal coverage at all times for its intended operation, and shall take all necessary measures, including the provision of signal boosters or alternative solutions, to achieve and maintain this requirement.	LC
	The Auto dialler will be a generic non-proprietary unit; it will be easy to re-programme should this be necessary in the future. Open Protocol.	
	Lift contractor to facilitate Electrical Contractor to fit socket and wiring at top of shaft and to provide drawings showing location of socket. Open protocol automatic calling device to be installed.	LC

22.	Client to provide telephone number or numbers for the Lift contractor to programme to.	C
23.	Lift contractor to provide reliable communication systems in cabin, control panel including shaft wiring, on top of car, and in lift pit.	LC
	Evacuation Lifts	
24.	N/A	
	N/A	
	Fire Alarm & Aspiration Unit/Smoke Detection	
25.	Lift Contractor to provide Fire Signal Cable to be connected to a normally open or normally closed contact I/O in lift control panel. Lift Contractor to run suitable wire and connect all Fire Signal Cable I/O in shaft and into Lift control panel and fire control panels.	LC
26.	BMS inputs and outputs, to link in with security and ran to client requirements.	LC
27.	Fire Alarm Interface & smoke detection Aspiration Unit as per I.S. 3218 (6.10.5.10 a or b), (i.e. detectors at openings from risers). Remote fire detection (e.g. aspirating) shall be used for the protection of vertical shafts where access for installation or maintenance presents hazards to personnel. All cables ran and wired for smoke detection device to client's requirements. The new Lifts must be connected to the existing BMS System. BMS panel location to be advised on successful appointment.	LC
	General	
28.	Lift Contractor shall identify all electrical circuits, including CCTV and telephone with a suitable permanent label.	LC
29.	Lift Contractor to provide suitable protection around landing door openings to prevent falling from heights, including kick boards at floor level to prevent debris falling into the shaft.	LC
30.	Lift contractor to provide a dry suitable, illuminated temporary storage area protected from theft for lift equipment and work man tools in the vicinity of the lift shaft.	LC
31.	Lift contractor is responsible for off-loading materials on site. If a crane or forklifts are required for off-loading, then this is in the remit of the lift contractor. It is the lift contractor's responsibility that equipment will be stored safe, is protected from accidental damage, and will not endanger any other trades on site. NB: CUH Storage available on site to be agreed.	LC
32.	Lift Contractor to liaise with Client in relation to Welfare facilities.	LC
33.	If scaffolding is required for the installation of the lift equipment, then this is to be provided by the lift contractor. Scaffolding used will be installed and maintained in accordance with Health & Safety Regulations.	LC
34.	Carrying out the role of PSCS specified in the Safety, Health & Welfare at Work Construction Regulations.	LC

35.	Redundant or obsolete lift equipment and packaging from new lift equipment shall be removed from site by the Lift Contractor in accordance with national legislation in relation to the correct disposal of waste and hazardous waste.	LC
36.	Removal of redundant machinery from the machine room.	LC
37.	Dust Sealed Hoarding – see specification 2.3 for full requirements. - Infection Control as per HSE requirements. - Fireproof 60 mins. - Sound Proofed - Corri board Outer Skin with zip lock door. Drawings.	LC
	-	

6 Technical Specification

6.1 General

The structural element of works, comprising the construction of the lifting beams, well, pit and structural door openings are not necessarily within the remit of the lift contractor. It is within the remit of the Lift Contractor to ascertain that all structural elements meet the requirements of the lift design and Essential Health & Safety requirements of the relevant European Directives.

The Lift Contractor shall obtain written confirmation that Lifting Beams, Motor, Lift shaft and Lift Pit are designed and constructed in accordance with the requirements of the Lift design. The Lift Contractor shall record this with the Final Declaration of Conformity the Lift Contractor issues on completion and prior to putting the lift in service or placing on the market.

6.2 Accessibility

The lift machinery, ropes, sheaves, and other equipment in the machinery spaces are to be arranged to be accessible to facilitate safe inspection and maintenance.

6.3 Painting of Exposed Vertical Transportation Equipment

With the exception only of self-finished surfaces and elements otherwise specified the whole of the vertical transportation equipment shall be painted one coat in the factory after full and proper surface preparation including priming. Any damaged surfaces shall be made good on site to the satisfaction of the Engineer.

All steelwork provided by the Lift Contractor, shall be de-rusted, treated with rust inhibitor, primed, and painted.

The lift shaft is to be thoroughly cleaned, prepared and then painted with 3 X coats of white paint.

The pit is to be thoroughly cleaned, prepared and then painted with 3 X coats of a rubber compound to ensure any future oil spillages can be easily cleaned.

6.4 Ride Comfort, Noise and Vibration Passenger Lifts

6.4.1 General

It is a requirement that the specified levels of vibration and noise are achieved, for all passenger lifts. If the levels of the various noise and vibration measurements are not in accordance with the specified levels, the lift installation will be deemed to be non-compliant with the Specification and may be rejected.

6.4.2 Acceleration/Deceleration Restrictions

Lift Speed (m/s)	Maximum Acceleration (m/s ²)	Maximum Jerk (m/s ³)	Maximum Lateral Vibration (mg)	Maximum Vertical Vibration (mg)	Max. Noise in car (dBA)
0.1 - 1.6	1.2	1.4	6	15	49

6.4.3 Measuring Instruments and Results

The measurements shall be made with a ride comfort analyser that can store measurements electronically for analysis at a later date, for comparison purposes. The lift subcontractor shall provide the necessary measuring equipment.

6.4.4 Noise Levels on Lift Lobbies

Lift noise, when measured at 1.5m from the floor and 1m from the door face with the doors closed, shall not exceed 50dB(A) at any time during the life cycle.

6.4.5 Lift Vibration

Vibration measurements shall be taken at the centre of the car, on the floor, in three mutually perpendicular axes corresponding to vertical vibration and lateral quaking. Measurements shall be made of vibration levels in each direction over the following cycles:

- Test cycle simulation for 2 hours running time.
- One full cycle from the bottom of the building to the top.
- One full cycle from the top of the building to the bottom.
- One full cycle over a single floor journey.
- Any short floor journeys shall be measured to identify that the correct speed profiles are being achieved.

A cycle is defined as the period from when the doors start to close at one level, to when the doors have fully opened at the final level.

The vibration levels shall not exceed the values indicated in the performance table.

6.4.6 Noise Levels in Lift Cars

Noise levels in the car under acceleration, deceleration and at maximum car velocity in the cycle shall not exceed the values indicated in the performance table when measured with any mechanical ventilation devices switched 'OFF'. Readings shall also be checked with these devices switched 'ON'.

6.5 Electric Lift Drive

6.5.1 General

Unless previously agreed with the Design Team or its representative, the control system shall provide fully closed loop feedback for speed control by way of an encoder device mounted directly on the high-speed well of the drive motor or similar agreed method.

6.5.2 Harmonic Spectrum Data

At the request of the Design Team or its representative the Lift Contractor shall, provide harmonic spectrum data relating to each phase of the supply to the drive motor:

- When a lift car is accelerating in either direction with full contract load.
- When a lift car is accelerating in either direction empty.
- During levelling operations.
- Harmonic filters are to be supplied on each lift machine.

6.6 Power Supply for the Lift

The power rating and fuse rating is particular to the lift design and lift manufacturer and shall meet the requirements of the National Regulations and especially the requirements of the latest version of I.S. 10101.

Generic data can be made available in relation to power and fuse ratings for design purposes and the supply cable should be as a minimum allow for 415V, 50Hz, 3-phase + neutral + earth terminated at the top of the Lift Well with a suitable, lockable isolator.

6.7 Electric Supply Company

The Lift Contractor shall be responsible for ensuring that all starting equipment supplied, is in accordance with any special requirements of the Electricity Supply Company regulations, with particular regard to limitations on starting currents etc.

6.8 Energy Saving Functions

For lifts, the following energy-efficient features shall be included:

- The lift should switch to stand-by mode during off-peak periods.
- Cabin lighting and user displays should switch off when the lift has been idle for a prescribed length of time.
- The lift cabin uses energy-efficient lighting and display lighting.
- The lift is fitted and operates with a VVVF drive. (Variable-speed, variable-voltage, variable-frequency).
- The lift has a regenerative drive unit so that any energy generated by a traction lift (due to running up loaded to less than the counterbalancing ratio or running downloaded to more than the counter balancing

6.9 UPS and Battery Drive Systems

6.9.1 Batteries

All batteries shall be of a Nickel metal hydride (NiMH) or Lithium Ion (Li-ion) type and of a compact design. Batteries containing lead or Cadmium shall not be used.

Standby batteries shall be provided for power outages, alarm sounders, car lighting, remote monitoring system, communication devices and powered ventilation equipment, allowing for the following standby times in the event of power failure.

- Automatic Emergency Battery Drive to run the lift in case of power outage, load independent, to the main exit landing where after it will be disable itself for further usage until normal or generator power is restored.
- The Lift will park at the main exit landing with the doors open.
- Alarm sounders continuous operation of all sounders 1-hour.
- Emergency lighting (Car and well) 3 hours continuous illumination
- Communication devices 3 hours
- Ventilation equipment 1 hour
- Remote monitoring system data 100 hours
- Remote monitoring real-time clock 21 days

The alarm sounders shall have a dedicated standby battery, independent of any other battery-backed systems, which shall support all linked sounders operating continuously for the specified duration.

Other battery-backed units that share a common battery shall be capable of operating for the specified periods, assuming concurrent operation of all supported equipment.

6.9.2 Emergency Battery Drive for Lifts with a Normal and Alternative Power Supply

A load independent battery-operated drive system in case of a power failure shall be provided. The Battery-Operated Drive system shall be capable, independent of load, to run the lift to nearest landing in case of a power failure. Special electrical protection to be included so the facilities generator does not spike the lift battery pack system on switchover.

On arriving at the landing, the door shall be opened to release any passengers that might be in the lift cabin. The lift shall thereafter be disabled for use until the permanent or alternative power returns and park with the doors open.

6.9.3 Emergency Battery Drive for Lifts without an Alternative Power Supply

A load independent battery-operated drive system in case of a power failure shall be provided. The Battery-Operated Drive system shall be capable, independent of load, to run the lift to the main exit landing in case of a power failure and/or fire alarm. On arriving at the main exit landing the door shall be opened to release any passengers that might be in the lift cabin. The lift shall thereafter be disabled for use until the permanent power returns and park with the doors open.

6.9.4 Battery Chargers

Automatic battery chargers shall be provided, which shall be suitable for trickle charging all standby and UPS batteries.

6.10 Lighting, Emergency Lighting and Sockets

6.10.1 Machinery Space Lighting and Power

A single-phase supply, terminating in a single pole switch fuse located in the machinery space(s) shall be provided for each car lighting circuit, taken from the local distribution board.

Machinery space lighting shall incorporate emergency lighting to serve any control panels, drive machines or other serviceable equipment.

Luminaires shall be positioned to provide a minimum luminance of 200 Lux.

A twin 13 amp switched socket outlet with integral RCD protection shall be installed for each lift in the machinery space(s) and in each lift pit, fed from the local distribution board.

6.10.2 Lift Well Lighting

The Lift Contractor shall provide permanent lift-well lighting with three-way switching, (two-way plus intermediate) switched from the machinery space, the lift pit and from on top of the lift car.

A clearly labelled switch for operating the lift well lighting shall be provided in an easily accessible location adjacent to any pit access ladders.

Where removable pit ladders are used, the well lighting switch shall be located in the well, adjacent to the lowest landing entrance door.

If a separate pit access door is provided, an additional well lighting switch shall be fitted adjacent to the access door such that it can be activated prior to or immediately on entry to the pit.

All well lighting switches shall incorporate a neon indicator that operates when the switch is in the off position to facilitate location of the switch in darkness.

Luminaires shall be positioned to provide a minimum luminance of 50 Lux when measured at 1m above any point on the lift car roof with the car top lighting switched off. This level of lighting shall be available for the full travel of the lift car.

In the lift well, the top and bottom luminaire plus every alternate luminaire in the well shall have a self-contained emergency battery pack.

A full shaft length LED lighting strip if offered will be considered, if offered, provided it meets the required light levels and emergency light requirements as described above and to be demonstrated during witness testing.

6.10.3 Lift Pit Lighting

Luminaires shall be positioned to provide a minimum luminance of 100 Lux when measured at 1m above any point on the pit floor. If LED strip is used a full loop on all four walls in the pit at a height of 500 mm.

6.10.4 Cabin Lighting

Interior lighting shall be by at least two lamps, suitably enclosed, each operated from independent control gear. The illumination at any point on the floor shall be not less than 100 lux using recessed LED tube lights, IP 54 rated, (colour temperature $\pm$ 5500K) installed in the ceiling of the car. A minimum of 100 lux light levels at any point on floor level is required. The lighting fixtures shall be easily accessible for replacement of tube lights.

All lighting shall be indirect or diffused to prevent sensory discomfort for a person lying on a trolley or bed. Lighting to switch off after 15 seconds when not in use and turns on when lift is called.

The design of light fittings shall be in accordance with the schedules and agreed with the Design Team or its representative.

6.10.4.1 Cabin emergency lighting

Emergency lighting shall be provided for the cabin and shall automatically initiate when the main power fails. Emergency lighting must be positioned in the ceiling.

Emergency lights must last greater than 3 hours full ceiling lights and a key operated test switch should be provided in the car Control Operating Panel.

Control panel back light is not considered emergency lighting.

Emergency lighting must demonstrate to HSE nominated persons during testing.

6.10.5 Landing Light Levels

Light levels in front of the lift doors shall be a minimum of 50 Lux at floor level. This is the remit of the lift contractor to ensure compliance and to be included in the tender sum.

6.11 Communication and alarm Devices

6.11.1 Emergency Alarm Devices

An emergency signal shall be provided, which shall be powered by a dedicated standby battery not used for any other purpose.

While the alarm button is pressed, the button shall illuminate, and a reassurance sounder fitted on the lift car shall be clearly audible from within the lift car, to indicate that the emergency signal is functioning.

A secondary alarm sounder shall be fitted within the lift well at the main entrance level.

The volume of the sounders shall be adjustable.

The alarm system shall be capable of being extended to a central alarm panel and a volt-free contact with suitable terminals shall be provided for this purpose in the machinery space.

6.11.2 Auto Dialler, GSM, and Telephone Connection

An emergency call system in the lift cabin, on top of cabin and in the lift, pit is required meeting all conditions of the EN81 and EN81-28. Microphones and Speakers shall be fitted in the lift cabin and on top of the lift cabin and in the lift pit. The communication system shall be audible and clear.

The 'hands free' system shall be activated by a dedicated blue telephone push (not the alarm push) incorporating the legend for intercom or telephone in accordance with EN81-28. Continuous activation of the telephone push for a nominal period of 3 seconds shall initiate automatic, sequential dialling to a minimum of three numbers.

The system is to be fully compatible with the building telephone system.

Telephone buttons, speakers, and microphones shall be located in the car-operating panel, on the car top, in the lift pit, in the machinery spaces where access for normal maintenance of the installation is required.

Buttons located on the underside of the lift car will not be accepted as provision for the emergency communication link from the lift pit.

A suitable notice shall be engraved in the car informing passengers how the emergency alarm is operated. The wording, size and location of the notice shall be agreed with the client and representatives.

The length of time the alarm button is to be pressed to activate the alarm must be indicated on the instruction plate.

The Lift Contractor shall provide all wiring from the telephone to a connection terminal, including a travelling cable with a termination point in the lift machinery space.

The system shall be fitted with a GSM Module unit and shall be capable of a permanent connection to the PSTN network.

During the warranty period, the lift contractor shall make full provision for and bear all costs associated with the mobile telecommunications service for the GSM unit, including the supply, installation, and ongoing service contract

for the SIM card. The contractor shall also ensure that the GSM unit maintains adequate and reliable signal coverage at all times for its intended operation, and shall take all necessary measures, including the provision of signal boosters or alternative solutions, to achieve and maintain this requirement.

The lift contractor shall also include for all costs associated in connecting the permanent telephone line if and when available, to the auto dialler in each lift.

The Auto dialler will be a generic non-proprietary unit; it will be easy to re-programme should this be necessary in the future. Open Protocol.

6.11.3 Engineers Communication System

An engineer's communication system shall be fitted to allow communication between lift cabin, car top and lift pit.

The communication system shall be audible and clear on all positions.

6.12 Machine Area

6.12.1 Machinery Space Lighting and Power

A single-phase supply, terminating in a single-pole switch fuse located in the machinery space(s) shall be provided for each car lighting circuit, taken from the local distribution board.

Machinery space lighting shall incorporate emergency lighting to serve any control panels, drive machines or other serviceable equipment.

A twin 13 amp switched socket outlet with integral RCD protection shall be installed for each lift in the machinery space(s) and in each lift pit, fed from the local distribution board.

6.12.2 Machinery Space Heating and Ventilation

Thermostatically controlled electrical heating and cooling equipment and adequate ventilation shall be provided in the machinery space(s) as required to maintain an ambient temperature between 15°C and 35°C.

The installation shall also provide for any other limiting temperature and humidity requirements that are associated with equipment and supplied by the Lift Contractor.

The ventilation opening to the outside of the building shall be shielded with a louver or suitable outlet to prevent ingress of water. A bird mesh shall be fitted. The ventilation opening shall be adequately protected against adverse wind conditions. The ventilation shall be provided through the machine room wall and not through the roof.

Lift contractors need to include for all associated costs for ventilation for the operation of the lift equipment in the machine room.

6.13 Lift Shaft Area

6.13.1 Lift Well Fascia

Shaft Facia shall be supplied by the Lift Contractor between door sill and door header over the full height of the well in between landings. The well facia shall be galvanised mild steel of min 1.5mm with support brackets every metre. If the distance between door sill and door header is <2m but >1m then an intermediate support bracket shall be fitted.

6.13.2 Lift Well Ventilation

As per Local or National requirements. In the absence of any national or local requirements a minimum 1% of the floor area is recommended and is depending on Fire strategy and taking consideration the exhaust fumes of vehicles.

The well ventilation shall be venting to the outside environment. The ventilation opening to the outside of the building shall be shielded with a louver or suitable outlet to prevent ingress of water. A bird mesh shall be fitted. The ventilation opening shall be adequately protected against adverse wind conditions. Lift contractors needs to include for all associated costs for ventilation for the operation of the lift equipment.

6.13.3 Lift Well Division Screens

If there is no dividing wall between the individual lift shafts, then Trimmer beams and Dividing mesh shall be provided over full height of shaft.

Trimmer beams to be supplied & fitted to lift contractor's specification.

Dividing mesh to comply with EN ISO13857:2008 but shall not exceed a mesh gauge of 35mm fitted over the full height of the shaft.

6.14 Wiring Conduit and Trunking

6.14.1 General

The Lift Contractors' installation shall commence at the switch disconnect in the lift machinery space or other agreed location.

If the switch disconnect is located in a separate room (as might occur with a machine room less lift) then this room shall only be accessible to authorised persons and shall be locked and labelled in accordance with EN81-20/50 or other relevant National, Regional or Local codes, standards, or legislation.

The Lift Contractor shall include for all conduit, trunking, cabling and wiring necessary for a complete installation comprising of all the equipment provided within the lift installation in accordance with this specification.

6.14.2 Wiring

Unless otherwise agreed all cables other than travelling cables shall be enclosed in conduit and/or trunking.

All cables drawn into conduit or placed in trunking shall be insulated with copper conductors.

Positive fixing of cable ends shall be ensured by purpose-made clamps or pinch type terminals or using crimped cable tags or other equally suitable termination devices.

All cables from the controller, including travelling cables, shall be of the low smoke and fume halogen free (LSF) type.

The wiring for mains voltage shall be of the low smoke and fume halogen free (LSF) type in phase colours, utilising either, self-coloured cable, or appropriately coloured ferrules. The colour coding shall be as follows:

- Phase connections – brown, grey, black
- Neutral connections – blue
- Earth connections – green/yellow.

Travelling cables shall be properly supported at each end using clamps, so that the cores are not under strain at the terminals.

Travelling cables shall include at least 10% spare cores and the requisite number of earth cores. All spare cores shall be terminated in terminal blocks at each end, which shall be clearly marked "SPARE".

6.14.3 Conduit and Trunking

The installation of conduit shall be in accordance with the following requirements:

Where the protective coating has been damaged or removed, it shall be made good with two coats of zinc rich anti-corrosion paint as the work proceeds.

Flexible conduit shall be used only for connections to equipment subject to vibration or on equipment that will need to be positioned during running adjustments, and the end adapters shall positively grip the flexible conduit. The length of flexible conduit shall be kept to a minimum and shall not exceed 240mm without prior permission from the Design Team or its representative.

Surface mounted trunking shall be run truly horizontal or vertical. Where these requirements cannot be met, trunking shall run parallel to the building lines. Manufacturer's standard fittings shall be used for bends, angles, offsets, crossovers and other non-standard runs or connections.

The practice of cutting and bending trunking to form flanges and attachments will not be permitted.

Where trunking passes through walls, floors and ceilings, non-combustible, non-metallic fire barriers shall be installed in the trunking.

Connections to termination boxes, switchgear and distribution boards shall be made with flanged units.

To relieve cables of strain in long vertical runs, internal cable supports shall be provided at no greater than 3m intervals.

All metal frames, conduit, trunking, metal boxes, door operators and such other parts of the installation as may be necessary for safety, shall be bonded to the earth system with clips of an approved pattern.

Preferably no trunking, conduit or ducts shall run across any machinery space floors.

In the event that floor mounted containment cannot be avoided and is agreed in advance with the Design Team or its representative, it shall be fully protected with ramped covers to eliminate tripping hazards and shall be marked with yellow/black markings to identify any floor level changes.

6.15 Pit Area

6.15.1 Emergency Stopping devices

Emergency stopping devices (Emergency Stop Switches) shall be provided, of a mushroom head design. Toggle or rocker type switches will not be accepted.

These stopping devices shall be positioned approximately 1,100 – 1,300mm above floor level and adjacent to the entrance door of the lowest floor served, such that it can be operated before inspection personnel enter the pit.

Where the configuration of the lift provides for more than a single entrance at the bottom floor served, stopping devices shall be provided adjacent to each landing entrance.

If the stopping device is more than 2,000mm above the pit floor, an additional stopping device shall be fitted at low level.

All stopping devices shall be clearly and permanently labelled run/stop.

Inspection controls will not be accepted as emergency stop for pit entrance.

6.15.2 Socket Outlets

A socket outlet controlled by a local or integral RCD shall be provided in each lift pit.

6.15.3 Alarm Sounder

An alarm sounder shall be fitted in the lift well, activated by the alarm button and shall give 78dB (A) of sound level. The position of the sounder shall be at the halfway point in the well and connected to the emergency battery system.

6.15.4 Pit Stop Switch and Communication Device

One or more pits stop switches shall be fitted that can be operated from landing level and should be situated at 1m above the landing level and 1.5m from pit floor level.

A pit communication device shall be fitted in the pit in accordance with EN81-20/50. The emergency call button shall be reachable from pit floor and speaker, and microphone shall be integrated in the call button unit.

6.15.5 Pit Buffers

Pit Buffers to be fitted in accordance with manufacturer's requirements and shall fully comply with the requirements of EN81-20/50 and the EU-Type approved model lift.

Lift up to a speed of 1.0 m/s can be supplied with Energy-dissipating buffers.

For lifts exceeding a speed of 1.0m/s shall be fitted with Energy-accumulating buffers.

Buffers under the cabin and counterweight shall have a solid pier onto the pit floor.

6.15.6 Pit Access Ladders

6.15.6.1 General

In the absence of a dedicated pit access door a pit ladder shall be provided in accordance with EN81-20:2014 Annex F, to allow for safe and easy access to each lift pit with handrails extending to a minimum of 1100mm above the pit access level.

6.15.6.2 Fixed Pit Ladders

All ladders shall preferably be permanently fixed within the lift well in a position that is easily visible and accessible from the pit access level.

6.15.6.3 Removable Pit Ladders

In the event that the door configuration does not enable a permanent ladder to be easily reached from the landing, or where a permanent ladder cannot physically be accommodated, a removable ladder shall be provided.

Removable ladders shall be aluminium and shall be stored in a location agreed with the Design Team or its representative.

A permanent notice shall be provided in a prominent position in the lift pit indicating where the ladder is stored.

Where a removable ladder is stored within the lift well or on the lift car, a safety switch shall be supplied to isolate the lift car whilst the ladder is removed from the stored position.

Suitable provision shall be made to securely hold any removable pit ladder in the correct, stored position to ensure it cannot become dislodged by accident. If the ladder is not hung against the shaft wall the ladder must have minimum 2 points for securing it ensuring it cannot pivot or be picked up by trailing cables.

6.15.7 Maintenance Barriers.

A maintenance barrier shall be provided for each unit. The storage of any barrier shall not encroach on any safety space in the pit or on top of the lift car.

6.16 Guides and Suspension Assembly

6.16.1 General

The car and counterweight guides shall be so jointed and fixed to their brackets that they do not deflect by more than 1.0mm under normal operating conditions.

6.16.2 Design

Detailed calculations in accordance with EN81-50 shall be submitted if requested by the Design Team or its representative, verifying the design deflections and stresses of the selected guide rails.

6.16.3 Fixings

Wood or fibre blocks or plugs shall not be used for securing guide brackets to the structure.

6.16.4 Guide Rail Construction

Unless otherwise agreed with the Design Team or its representative, all car and counterweight guides shall be machined, undercut tee section, with tongue and groove plated joints and shall be provided with steel bases.

If lubricated guide rails are used, removable oil drip trays shall be provided to facilitate easy emptying of excess oil. The collection of lubricant within a buffer support channel will not be accepted.

6.16.5 Guide Fixing Pitches

The fixing pitch between guide brackets shall be arranged to restrict the designed deflection below the maximum specified. If due to limitations on the guide fixing pitches caused by construction or structural constraints, this maximum deflection cannot be achieved, suitable guide rail backing shall be provided to achieve the deflection criteria accordingly.

A minimum of 4 No. "T" section machined steel guide rails shall be provided and installed complete with purpose designed brackets, bolts, and fixings. Car guide rails shall be plumbed and aligned with each other and "tram lining" will not be allowed. The guide rail system, inclusive of brackets and fixings, shall be designed to suit the configuration of the lift cabin and lift well. Vertical pitch of fixings and size of guide rails selected shall be designed to accommodate the maximum loading that may be imposed on it at any time, without deflection of the guide rails/flanges and/or guide shoes.

The guide rails, fixings and pitches of fixings shall be designed to achieve the deflection criteria detailed in EN81-20/50 and the necessary proof calculations shall be made available at the client's design team request.

A so-called ruck sack arrangement will not be acceptable.

6.16.6 Guide Rail Selection

Guides shall be selected based on the following table

GUIDE RAILS				
LIFT SPEED (m/s)	<=1.6	1.61-3.4	3.5 - 7.9	8.00 +
Car Type *	3 Star	4 Star	5 Star	5 Star
Cwt Type *	3 Star	3 Star	4 Star	5 Star

* The guide type specified is based on rails manufactured by Savera. Alternative manufacturers may be offered subject to maintenance of manufacturing tolerances and guide rail characteristics in accordance with the Savera guide rails as reproduced in Table 2.

6.16.7 Guide Rail Manufacturing Standards

GUIDE RAILS			
Tolerances:	3 STAR	4 STAR	5 STAR
Max f/a	0.0010	0.0004	0.00003

Max f/5m	1.5mm	1mm	0.5mm
Max f/1m	0.3mm	0.2mm	0.15mm
Cantering	0.08	0.05	0.03
Guide Height	0.08	0.05	0.03
Parallelism base	0.10	0.10	0.05
Maximum chute	0.09	0.09	0.06
Roughness	1.6µ max Long 3.2µ max Trans	1.6µ max Long 3.2µ max Trans	1.6µ max Long 3.2µ max Trans
LENGTH (m)	5	5	5
FISHPLATE TYPE	Standard	Full section modulus	Full section modulus

6.17 Guarding and Screening

6.17.1 Well Screening construction

Unless specified or agreed otherwise, well screening shall be manufactured from 10 SWG x 25mm steel weld mesh securely welded within a rigid angle frame.

Screens shall not be used to support trunking, conduits, or any ancillary lift equipment in the well.

6.17.2 Well Dividing Screens

Unless agreed otherwise, when two or more lifts are installed in a common lift well, a full height rigid steel mesh screen shall be provided and fixed by the Lift Contractor.

6.17.3 Void Screen

Where the layout of lift well equipment produces void(s) with plan dimensions in excess of 350mm deep x 500mm wide, adjacent to an area accessible by authorised personnel during routine inspection and maintenance, a safety screen shall be provided for the full height and width of any such void.

6.17.4 Counterweight Screens

Counterweight screens shall be in full compliance of the requirements of EN81-20/50.

6.17.5 Landing Fascia Plates and Aprons

Imperforate fascia plates shall be provided between the undersides of each track or sill and the top of the landing door supporting frame below. A ramped apron shall be provided below the lowest track or sill.

All fixings shall be countersunk with no projection into the running clearance between the car and landing sills.

As a minimum, these panels shall extend for the full width of the landing sill or gate track header and on side opening doors or gates the panels shall extend a minimum of 100mm past the clear opening line on the slam post side.

6.17.6 Well Fascia

Regardless of lift cabin door lock. Well Fascia shall be supplied by the Lift Contractor between door sill and door header over the full height of the well in between landings. The well fascia shall be galvanised mild steel of min 1.5mm with support brackets every metre. If the distance between door sill and door header is <2m but >1m then an intermediate support bracket shall be fitted.

6.17.7 Machinery and Rotating Parts Guarding

Screens or guards shall be provided to shield persons from rotating parts and machinery. Screens shall be yellow in colour.

Traction sheaves, pulleys and sprockets shall be protected and be in compliance with EN81-20/50.

6.17.8 Ledges in Lift Well

Where there are ledges in the Lift Well exceeding the maximum dimensions as described in EN81-20/50 and there is a possibility that a person can stand on these ledges the Lift Contractor shall provide suitable guarding to negate this hazard.

6.17.9 Holes in Machinery Spaces (Ferrules)

All holes shall be closed as totally as possible and provided with upstand kerbs / angles where necessary to eliminate the hazard of debris / items falling down the well.

6.18 Suspension Ropes

6.18.1 General

All suspension ropes shall be delivered to site together and shall be properly coiled or reeled and adequately protected. The suspension rope anchorage devices shall permit and indicate equalisation of tension in each rope.

6.18.2 Suspension Rope

The requirements regarding suspension are as follows: -

- a) At least four suspension ropes shall be used. Their nominal diameter shall not be less than 11mm with a minimum safety factor of 12:1.
- b) They shall be attached at their terminations by suitable means in accordance with EN 81-20/50 with eyebolts and fitted with an isolated car hitch by means of springs or other method to approval.
- c) During the service of the lift, it shall be possible, by means of adjustment of nuts on the eyebolts, to shorten the ropes by approximately 150mm.
- d) After fitting, an anti-twist rope (6mm) shall be fitted through the termination eyebolts.
- e) A data plate shall be fixed to the cross head giving the details of the suspension ropes type, construction, diameter, length, and car weight; expressed in metric terms.

- f) Ropes and equipment used for termination shall be installed in full compliance with the manufacturer's appropriate data, copies of which are to be made available to the Design Team or its representative on demand during the works, but in any case, shall be included in the Operation & Maintenance Manuals.

Alternative means of suspension will be considered as long as they have been approved by the notified body and full details are provided at the time of tender.

6.18.3 Suspension Rope Equalization

The suspension rope anchorage devices shall permit and indicate equalisation of tension in each rope compared to the other ropes.

6.18.4 Compensation system

Any compensation system shall provide noiseless operation. Open chain systems will not be accepted.

6.18.5 Data Plate

A data plate shall be attached to the car cross head providing details of the suspension rope, its construction, date of installation, lift contract speed, rated carload, and mass of empty car.

6.19 Car Slings

6.19.1 General

The lift car shall be carried in a steel sling securely fixed together and substantially reinforced and braced to relieve the car enclosure of all strain and to withstand the operation of the safety gear under full-load conditions without any permanent deformation.

A so-called ruck sack arrangement will not be acceptable.

Final design to be submitted to the Clients design team for approval.

6.19.2 Guide Shoes

6.19.2.1 General

All guide shoes and/or roller shoes shall be selected to achieve the necessary noise and vibration limits as defined in the Specification. The lift car shall be fitted with a minimum of 4 No. shoes/Rollers that are designed to withstand a lateral and vertical impact loading.

6.19.2.2 Roller Guides N/A

The lift car and counterweight shall be fitted with fully adjustable roller guide shoes, sliding shoes are not acceptable.

When roller guides are installed, they shall comply with the following requirements:

- They shall be so mounted as to provide continuous contact of all wheels with the corresponding rail surfaces under all conditions of loading and operation.
- The roller guides shall run on dry guide rails.
- Guards shall be provided to protect the wheels on top of the car and counterweight.
- The design of the shoe shall incorporate a keeper plate to ensure the retention of the lift car or counterweight in the correct relationship to the guide rails in the event of tyre or bearing failure.

- Contact pressure between the roller tyres and the surface of the guiderails in all planes shall be achieved by the provision of fully adjustable external springs in conjunction with slots in the fixing baseplate of the shoe assembly.
- All bearings utilised shall be lubricated and sealed for life by the manufacturer.

The car and counterweights are to be statically balanced following fitting of all equipment and finishes prior to final fixing and setting of the roller guides.

6.20 Counterweights and Screens

6.20.1 General

Where a counterweight is provided it shall be designed to minimise power consumption and to provide traction. All counterweights shall be filled with filler weights in accordance with the EC type approval of the lift installation. The lift installer shall weigh on completion the counterweight assembly and record this with the test documentation.

Deviation against the weight described in the EC type approval documentation will not be accepted.

6.20.2 Counterweight

The counterweight frame shall be constructed in such a manner that counterweight filler weights are locked securely in place without the risk of being dislodged. The counterweight filler weights shall be secured in the frame at the top with suitable brackets and fixings to prevent the filler weights inadvertently moving in the upward direction.

6.20.3 Counterweight Screen

A counterweight screen shall be provided in the lift pit in accordance with EN81-20/50

6.20.4 Counterweight Safety Gear

Counterweight safety gear shall be provided if the pit is suspended with accessible space underneath in accordance with the requirement of EU Type approved model lift.

6.21 Overspeed Governors and Safety Gears

6.21.1 Safety Gears, Lift Cabin, and Counterweight

Safety Gears shall be compatible overall weight of the lift cabin inclusive of the rated load capacity and rated speed and/or Counterweight. The Safety Gear shall be compatible with the EU-Type model lift approval certificate issued by the lift manufacture and shall be in full compliance with applicable European Directives and subsequent European Harmonised Standards.

6.21.2 Over Speed Governors

Over Speed Governors shall be compatible with the rated speed and installed safety gear. A Declaration of Conformity shall be supplied with each Over Speed Governor which shall form part of the final Declaration of Conformity for the completed installation. The Over Speed Governor shall be compatible with the EU-Type approval model lift certificate issued by the lift manufacture and shall be in full compliance with applicable European Directives and subsequent European Harmonised Standards.

6.21.3 Governor Pulley and Tension Weight

The governor pulley and tension weight assembly mounted in the lift pit shall incorporate a pulley guard to prevent the ingress of objects and shall have incorporated a rope stretch safety contact.

6.21.4 Lift Cabin

Lift cabin to be in conformity with HTM 08-02 lifts cabin finishes for Health Care Facilities. Lift cabin to be compliant with EN 81-70 requirements.

6.22 Drive Systems

6.22.1 General Provision

All components comprising the lift machine and associated supports, together with any diverting pulleys, shall be supported on vibration insulators.

An emergency stopping device shall be provided and fixed adjacent to the lift machine.

6.22.2 Motor/Machine

The motor offered shall be from the High Duty range.

Designed for usage category 6 according to ISO 25745-2

Over 500,000 starts per year.

120 starts per hour during regular operation.

6.22.3 Gearless Machines

Only VVVF a-synchronous squirrel cage type or VVVF permanent magnet synchronous machines shall be used.

6.22.4 Emergency Manual Operation Floor Level Indication

When the lift is being raised or lowered manually an audible and visual signal shall be activated when the lift passes through the unlocking zone. The indicator shall be easily seen and heard by personnel carrying out such emergency procedures.

This device shall be powered by a battery backed power supply to ensure correct operation in the event of a power failure.

The manual raising or lowering procedures shall be clearly described on a non-fading notice, mounted permanently in a prominent position in the machinery space.

The marking of suspension ropes will not be accepted for identifying the location of the lift car at a floor level.
Suspension and Compensation Ropes.

6.23 Control Systems

6.23.1 Lift Control Equipment

The control system shall be of the microprocessor type.

6.23.2 Diagnostic Boards and or Tools:

A diagnostic board or tool shall be provided with each controller. This board or tool shall be in ownership of the client and cannot be removed from site under any circumstances even the lift installer does not retain the maintenance.

The diagnostic board or tool shall have no security codes or features that prevents access and or prevents others of using these. If there are security codes and cannot be avoided these security codes shall be provided in the operation and maintenance manuals and shall not be changed without approval of the owner.

The components and cabinets shall be designed and mounted in a manner that facilitates inspection, maintenance, adjustment, and replacement of any serviceable parts.

All earth connections shall be made at a common link within the control panel.

Components within the control panel shall be permanently labelled and any codes or abbreviations shall match the wiring diagrams and clearly detailed in the Designation Schedule.

Terminals shall be of the screw-clamp type, or equal alternative. A minimum of 10% spare terminals shall be provided for control wiring in addition to any spare terminals provided for the spare travelling cable cores.

All spare terminals shall be clearly identified.

6.23.3 Interference

The arrangement of the electrical equipment shall be such that there is no interference with the correct operation of radio, television receivers or other electronic apparatus in this or other buildings in the locality, caused by the normal working of the lift installation.

All lift equipment shall be provided within the limitations for Electromagnetic Emissions and Immunity given in EN 12015 and. EN 12016, respectively.

No suppression components shall be used in any part of the circuit where their failure might cause an unsafe condition.

6.23.4 Automatic Re-Levelling:

Provision shall be made to allow for automatic, accurate re-levelling of the lift car where, after stopping at a floor, loading, unloading or in the event of hydraulic lifts, sinkage, causes the car to move out of floor level by more than 10mm with the doors open or closed. The Levelling accuracy shall be $\pm 3\text{mm}$.

6.23.5 Advanced or Pre-Door Opening

All lifts shall be provided with the option for advance or pre-opening of the landing doors whilst the lift is travelling into the door open zone. This feature shall have the ability to be switched off or on based on the client's requirements.

6.23.6 Building Life Support Recall EN81-73

Following receipt of a signal from the building life support system, the lift shall cancel all car and landing calls and return non-stop to the main exit floor and return to alternative landing in case of a fire alarm on the main exit landing. After the passengers have exited the lift the lifts shall park, with closed doors, and will not accept any landing or cabin call or send signals.

The lift shall return to normal operation automatically from the parked condition when the alarm signal is removed.

6.23.7 Motor Start Counter

A mechanical, analogue, motor starts counter shall be provided which shall be easily readable by persons with authority to access the machinery space without needing to open the control panel.

6.23.8 Overload Control

A load sensing device to detect an overload condition of the lift cabin with sounds an alert buzzer and indicates an overload condition in the COP.

If the carload exceeds the lift capacity by more than 10%, (or a minimum of 75kg) the car shall be prevented from starting and the doors shall remain open. A visual signal shall illuminate in the car-operating panel and in addition a buzzer shall sound or alternatively the voice announcer if fitted, shall announce the overload condition.

6.23.9 Simplex Control N/A

Single lifts shall be supplied with a control system that can be programmed on site for up collective or down collective or full collective. The control system will allow that behaviour can be changed depending on the time of day from up or down or full collective without the requirement to change hardware or software.

6.23.10 Duplex and Group Control

Lifts side by side or in a group shall be supplied with a control system that can be programmed on site for up collective or down collective or full collective. The control system will allow that behaviour is programmable and can be changed depending on the time of day from up or down or full collective without the requirement to change hardware or software.

6.24 Cabin Control Features

6.24.1 General

The control features detailed shall be provided in accordance with the scheduled requirements within this specification. The cabin control panel shall have no landing selection push buttons. All other control features shall be supplied.

6.24.2 Engraving

The location and design of all engraving in the lift cabin shall be agreed with the Design Team or its representative.

6.24.3 Cabin Position Indicator

Floor position indicator integrated in Cabin Push Stations and shall be finished in brushed Stainless Steel and be Vandal resistant EN81-71 category 1 compliant for passenger and goods/passenger lifts.

The indicators shall incorporate a direction arrow which will indicate during travel the direction of travel showing that the lift is in motion.

The indicators shall have white indication on a blue or black background or blue/black indication on a white background.

The indicators shall have the feature to state “Out of Service” in case of a lift malfunction and “Fire Fighters Control” for fire fighter’s lifts and the fire man’s switch is activated and “Maintenance” when in maintenance mode.

6.24.4 Audible Handicap Feature

An audible signal shall be provided when the lift car passes or stops at a floor level. One signal per floor shall be given.

Activation of the voice announcer announcing the floor levels may be considered to satisfy this feature if the journey times will allow the floor messages to be relayed without confusion to passengers.

This feature shall be easily disabled from within the controller without the need to disconnect any wiring.

6.24.5 Priority Service in Car

This service shall be initiated via a key switch with the key captive in the priority position. When switched on, all existing car calls are cancelled and if the lift is part of a group, it will not serve landing calls. A single lift cancels all existing landing calls. The lift will remain parked with the doors open until a car call is registered. Only one car call at a time will be accepted.

6.24.5.1

6.24.6 Voice Annunciations

A digital voice recorder shall be provided for issuing lift passengers with spoken messages of floor arrivals, car departures, use of lift and safety announcements along with the ability to add commercial and managerial announcements via a fully programmable, easy to use method.

In lift cabin in national language. As a minimum, it should state: Door opening, Door closing, which direction the lift is to travel, and which floor the lift is arriving at.

The volume of the voice announcer shall be fully and easily adjustable to minimize disruption to building occupants in the vicinity of the lifts.

6.24.7 Induction Loop System

The lift Contractor shall provide an induction loop system within each lift car complete with all controls and cable containment systems. The system shall be discretely fitted within the lift cars, and no wiring shall be visible within the car.

Signage denoting the car has been fitted with the system shall be provided, engraved on the car operating panel.

6.24.8 Push Button

All control buttons shall be antivandal minimum CAT 1. Each push button shall incorporate an illuminating indication that it has been operated or activated, which shall be cancelled when the function has been completed (i.e. door open illuminates until the doors are fully open, a car or landing call button illuminates until the call is answered etc.). This feature is to be provided in conjunction with dual illumination as detailed below.

6.24.9 Door Hold Button

An extended Door open/hold button <H> is required in the cabin push station. When the button is pushed the door will stay open for an adjustable but maximum time of 2 minutes. After that, the lift doors will close, and the lift will return to normal service. The door close button will override this command.

6.24.10 Door Open Button

A push button shall be provided which shall remain effective when the lift is standing within a door zone. By pushing the button, the doors will re-open if they are closing or closed and remain open for a pre-set period. The button shall allow for extended door opening times for the loading and unloading of bed trollies.

No control or security features shall be arranged to override the operation of the door open push, which might lead to a possibility of trapping passengers within the lift car.

6.24.11 Door Close Button

A push button shall be provided which shall remain effective when the lift is standing within a door zone. By pushing the button, the doors will close if they are opening or opened.

6.24.12 Signal and Operating Devices (Tactile and Braille Marked Pushes)

The pushes in both the car operating panel and each landing station shall have braille and tactile markings, either on the Pressel or immediately adjacent to the pushes.

The push shall be illuminated by means of LED's and full details shall be provided as part of the Tender submission.

6.25 Cabin and Landing Operating Panels and Features

6.25.1 Landing Indicators

Landing floor position Indicators on all landings, positioned above the door, display angled at 135 degree for wheel chair users to view and including arrival gong and direction arrows, and shall be finished in brushed Stainless Steel and be Vandal resistant EN81-71 category 1 compliant for passenger and goods/passenger lifts and be Vandal resistant EN81-71 category compliant for automobile and truck lifts.

The indicators shall incorporate a direction arrow which will indicate during travel the direction of travel showing that the lift is in motion.

The indicators shall have white indication on a blue or black background or blue/black indication on a white background.

The indicators shall have the feature to state "Out of Service" in case of a lift malfunction, Maintenance when in this mode, and "Fire Fighters Control" for fire fighter's lifts and the fire man's switch is activated.

6.25.2 Cabin Arrival Gongs

A sounder shall be provided at each floor to give an audible indication when the lift car arrives at the landing in response to a hall call.

The sounder shall operate once for the up direction and twice for the down direction and shall incorporate an adjustable setting to enable operation between 2 and 5 seconds before the lift arrives at a floor.

The gongs shall be easily disabled from within the controller without the need to disconnect wires.

6.25.3 Cabin Arrival Indicator

Indicators shall be provided at each landing, which shall illuminate an adjustable period before arrival, between 2 and 5 seconds.

6.25.4 Landing Operating Panels

Brushed Stainless Steel Vandal resistant EN81-71 category 1 compliant call button on the landings with call acceptance indication. The panel must be fitted flush on the wall and fitted with a back box. The call buttons are fitted in accordance with Client's architect drawings on the landings beside the landing doors and in conjunction with EN 81-70. Each landing shall be provided with 2 No. of push buttons positioned either side of the lift set.

6.25.5 Signal and Operating Devices (Tactile and Braille Marked Pushes)

The pushes in both the car operating panel and each landing station shall have braille and tactile markings, either on the Pressel or immediately adjacent to the pushes.

The push shall be illuminated by means of LED's and full details shall be provided as part of the Tender submission.

6.25.6 Maintenance Access Panels (MAP)

MAP's to be Grade 304 Linen rolled Stainless Steel integrated in the door frame on the top landing.

If this is not possible, then the MAPs to be positioned to the side of the doors for duplex lifts the left lift shall have the panel to the left side of the door and for the right lift to the right side of the door. If MAPs cannot be fitted in the door post and are positioned beside the door then these shall be flush and integrated into the wall. For machine room lifts the Control panels shall be located in a suitable location in the machine room to be agreed.

For situations where there are more than two lifts side by side and the MAPs are not fitted in the door panel a proposal needs to be forwarded to the client's architect showing the proposed location of the MAPs.

6.25.7 Light Reflectance Values (LRV)

Light reflectance values for buttons, faceplates, and indicators at landings and in lift cabins shall be in accordance with EN81-70:2018 table 2.

Item	At Landings		In the car	
	Minimum LVR point difference	Viewing angle	Minimum LVR point difference	Viewing angle
Active part of push buttons to their surrounding	30	45° above horizontal	30	45° above horizontal
Face plate to its surrounding	30	Perpendicular	30	Perpendicular
Symbols on push buttons to active areas	30 (60 recommended)	45° above horizontal	30 (60 recommended)	45° above horizontal
Lift identification to background	30 (60 recommended)	Perpendicular	-	-

6.26 Building Management Systems and Lift Remote Monitoring

6.26.1 Building Management System (BMS)

Where BMS is specified in the schedules, one common contact (NO or NC) which can give a common “lift out of service” signal to Client BMS system for future use.

6.26.2 Lift Remote Monitoring

Where remote monitoring is specified in the schedules, the lifts shall be arranged to provide information on status and functions to a monitoring station situated at a central location, to be agreed with the Design Team or its representative.

The complete system shall incorporate all software, hardware, and drivers (for the printer, remote stations etc.) required to provide a complete working system.

The monitoring station shall consist of a PC with a compatible printer for the viewing and printing of reports and data, as necessary. The printer shall incorporate an automatic sheet feeder and be of a good quality inkjet or laser type and be provided complete with 2 spare ink / toner cartridges, which shall be readily available from stationary suppliers.

All information shall be stored locally in the lift controller and transmitted to the central monitoring system. Facilities shall be provided for interrogation both locally and remotely for at least the last 500 events, which shall be stored chronologically.

The Lift Contractor shall provide all wiring conduit and trunking associated with this system within the lift machinery space and all terminal and connection boxes for termination of the interconnecting wiring.

Interconnecting wiring and suitable supports, restraint and containment between the machinery space and the remote monitoring equipment shall be provided by the designated party in accordance with the schedules.

Where these works are not the responsibility of the Lift Contractor, the Lift Contractor shall advise the size, specification, and quantity of interconnecting cables to be provided by others.

The remote monitoring system shall be provided with a standby battery.

6.26.3 Remote Monitoring station

The monitoring system shall incorporate a remote monitoring station for each lift, which will monitor and analyse the condition of the lift.

Fault conditions such as passenger alarm trappings, breakdowns and power failures shall be transmitted, immediately to the central monitoring station and advisory and performance events shall be transmitted at adjustable, regular intervals which shall initially be set to transmit once per day.

Remote monitoring stations shall incorporate a real-time clock to enable the time and date of each event to be recorded. The clock shall automatically adjust for daylight saving and shall be backed up by a standby battery supply capable of retaining the correct date and time for a minimum of 21 days.

Remote monitoring stations shall incorporate a keypad or keyboard interface and a display and shall allow for different access levels, by way of a login system to provide for access by authorised persons.

Remote monitoring stations shall incorporate a dedicated standby battery system to enable full functionality and to maintain communication links with the central monitoring unit in the event of total power failure.

To authorised false alarms, lift alarm trappings shall be verified by the automatic input and monitoring of test calls to verify the lift car is not responding to normal operational commands.

Remote monitoring stations shall have a facility for programming self-integrity tests to enable continuous monitoring to be made during long periods of inactivity. It shall be possible to set the level of reporting for all events.

A message facility shall be provided to enable messages to be left on an outstation from the central unit. These messages shall be accessible by authorised engineers with the relevant access authorities.

If the system uses a modem and phone line, it shall incorporate an intelligent interface with the auto dialler unit to enable shared use of a single phone line without affecting the effectiveness or availability of the auto-dial system.

Provision shall be made for automatic calls to be placed to check the integrity of the phone line connection to each outstation. IT point to be included and to be connected to existing BMS system.

6.27 Cabin

6.27.1 Cabin Ceilings

Cabin ceilings shall be designed to be able to withstand a loading of a minimum of 1.5kN/m² and as a minimum to withstand 2 men working on top of the roof car without deformation.

The ceiling of the car should fit from wall to wall with no crevices. Any lighting fittings should be easily maintained.

6.27.2 Escape Hatch (for Fire Fighting Lifts only)

For Fire Fighting lifts the ceiling shall have an escape hatch, with electrical interlock incorporated to the side and rear of the cabin to facilitate an option in the advent of an emergency release of trapped passengers.

The position of the escape hatch to be situated taken into consideration that the cabin can have an automobile inside and an escape route is possible by deploying a ladder.

An emergency portable escape ladder shall be supplied on the cabin roof that can be lowered through the escape hatch and can be fixed in position without the possibility of the ladder slipping or moving whilst in position.

Final design to be submitted to the Clients design team for approval.

6.27.3 CCTV

The ceiling shall be able to accommodate a CCTV camera in the rear top corner or rear centre of the cabin and mounted to the ceiling.

Lift contractor to provide trailing cables for and to the lift cabin. Cables to be terminated in lift cabin (in conjunction with CCTV contractor) and in ceiling void beside top of lift well.

- 2x power supply
- 1x 75-ohm co-axial
- 2x twisted pairs.
- 1X CAT7

6.27.4 Cabin Walls and Front Returns

Cabin walls and front returns shall be able to withstand the impact forces and point loading requirements as describes in EN81-20/50.

These panels shall be 1.5mm thick and shall be manufactured from ANSI Grade 441 pattern rolled stainless steel and anti-vandal resistant in accordance with EN81-71 Category 1.

The finishes shall be in accordance with the HTM 08-02. Proposed submittals to be provided to client and representative for review, comment and approval.

Lee View Lifts can be used for reference.

6.27.5 Cabin Floors

The cabin floor shall be constructed that it can withstand a point loading of 1.5kN at any point without deformation.

The flooring finishes shall match or of similar colouring as the landing floors to prevent for persons with impaired visibility having the possibility of an optical illusion that there is no floor.

Where necessary, the car floor should have a watertight one-piece floor-covering that is coved and attached to the car walls. The floor-covering should be slip-resistant and have a surface that allows wheeled trolleys to be easily steered. It should also meet the requirements of TGD-Part M and EN 81-70.

Under no circumstances will black or very dark coloured flooring be accepted.

Final design to be submitted to the Clients design team for approval.

6.27.6 Cabin Ventilation

Ventilation apertures shall be provided, and they shall be protected on the exterior of the cabin by the provision of deflectors to prevent foreign objects being passed through then.

All lift cars should be naturally ventilated by providing ventilation apertures at the upper and lower parts of the car in accordance with EN 81-20. If the flooring is coved up to the cabin wall and this does not allow for normal ventilation through the skirting, then the lower ventilation must be positioned in the lowest bumper rail. These ventilation apertures should be hidden under the rail and vandal resistant.

6.28 Doors

6.28.1 General

All doors shall be installed true and square within the supporting frame and any discrepant clearance gaps shall be adjusted before the lift will be accepted for final handover. Set up clearances must be 3 – 4 mm.

6.28.2 Door Operators

The door operator shall comply with the force limits set in the EN81 standard. The drive motor and accompanying VVVF drive must be adequately sized for a 50% overload condition when driving door panels at an average door speed of 0.3m/s. The door drive linkage, mountings and interface with drive motor shall be suited for the conditions as set out for the drive motor in conjunction with re-enforced heavy-duty doors and door panels.

The door operator shall be designed From the Heavy-Duty Range for a minimum lifespan of 20 years based on a minimum of 800,000 door operations per annum.

6.28.3 Door Operating System

The door operator shall be controlled by a VVVF drive. The VVVF drive shall be designed for an uninterrupted service of a minimum of 1,000,000 door operations per annum for a period of twenty (20) years.

6.28.4 Door Speed Adjustable and Opening Times

The door speed and door open times shall be adjustable.

6.28.5 Door Dwell Time

The door operator shall be fitted with an adjustable door dwell time feature that can be adjusted between 5 – 180 seconds.

6.28.6 Door Closing and Impact Forces

Door closing forces and impact forces need to be proven and to be in accordance with the relevant European Harmonised Standards and with the requirements of EN81-20/50.

6.28.7 Clearances and Installation

Maximum clearances between the doors and the surrounding trims and sills shall be 4 mm when the gates are in the closed position.

For Glass Lift Doors, the distance between door posts and door panels shall not exceed 4mm and should be set at 2 mm.

6.28.8 Door Closing Sounder

A door opening/ closing sounder shall be fitted on top of the lift cabin, activated door the door opening / closing cycle and shall give an intermitted sound, adjustable between 50dB (A) and 78dB (A) during the cycle. The sounder should stop when the doors are fully closed or fully open.

6.28.9 Door Safety Device (Safety Edge)

The cabin door panels are to be fitted with an electronic device in compliance with EN81, which will provide a protective zone for the full width and height of the doors with coloured red and green indicators which will operate on door movement to visually indicate opening (Green) and closing (Red) Memco Panachrome or equal approved.

The principle of operation will be an infrared curtain of light, and the device must remain operative throughout the complete closing cycle of the doors to within 50mm of the door closed position. The device shall have the facility to detect persons or objects as they approach the entrance. When the device is obstructed, it shall cause the doors to immediately stop and then fully re-open after which it will re-commence its normal closing cycle.

Passenger movement within the detection zones shall initiate an adjustable delay in the remaining door open time if the door is open, (initially set to 2 seconds), or shall reopen a closing door.

6.28.10 Landing and Cabin Door Panels and Frames

All door panels and frames of the cabin and landing shall be of a hollow metal construction with vertical internal channel reinforcements. The panels and frames, front and rear, shall be 1.5mm thick and shall be manufactured ANSI Grade 441 pattern rolled stainless steel and anti-vandal resistant in accordance with EN81-71 category 1.

The finishes shall be in accordance with the Design Team instruction and as detailed in the section finishes.

6.28.11 Exterior Landing and Door Panels and Frames

All door panels and frames of the cabin and landing shall be of a hollow metal construction with vertical internal channel reinforcements. The panels and frames, front and rear, shall be 1.5mm thick and shall be manufactured ANSI Grade 316 pattern rolled stainless steel and anti-vandal resistant in accordance with EN81-71 category 1.

The finishes shall be in accordance with the Design Team instruction and as detailed in the section finishes.

6.28.12 Fire Rating of Landing Doors

Fire rated doors shall be provided that have been tested and certificated by an authorised testing facility in accordance with EN81-58 and shall be rated for a fire resistance of 120 minutes.

The Lift Contractor shall be responsible for co-ordinating the interface between the landing doorframes and the building fabric to maintain the fire integrity in accordance with the certification. Fire completion stickers to be fitted to the fireproofing system at each landing.

6.28.13 Mechanical Car Door Locking

In the interests of safety, it shall not be possible to open a car door, except during the pre-opening condition and when the car is within a designated unlocking zone.

All car doors shall be provided with a mechanical car door lock, matched to the door drive and electrical locking equipment.

6.28.14 Architraves

Landings: 1.5 mm gauge Full wrap around rolled pattern stainless steel ANSI Grade 441 as a minimum shall be provided on all landings.

There where landing doors enter to the outside environment ANSI Grade 304 or 316, depending on the environment, rolled pattern stainless steel architraves shall be provided.

The type architraves will wrap around the structural door opening to three sides and returns to the front wall of the post wall.

Architraves to be fitted in conjunction with Main Contractor where applicable if not it is the responsibility of the Lift Contractor. Architraves shall meet a 120-minute fire resistance.

Final design to be submitted to the client's design team for comment.

6.28.15 Door Sills, Guides and Suspension

6.28.15.1 General

Each door shall be provided, complete with a top track, running sill and supporting frame as required and shall have adjustable suspension points.

Door guide blocks shall be easily removable/renewable from the well side of the door panel without the door having to be lifted or removed.

For all lifts hanging rollers and shoes shall be Heavy Duty robust and designed in accordance with EN81-20/50. The rollers and shoes are to be designed for a minimum life span of ten (10) years based on 1,000,000 operations per annum.

6.28.15.2 Lift Sills

The cabin door sill/track shall be constructed from extruded ANSI Grade 316 stainless steel, able to withstand points loadings of 2kN and EN81-71 category 1.

The landing doors sill/track shall be constructed from extruded ANSI Grade 316 stainless steel, able to withstand point loadings of 2kN and EN81-71 category 1.

6.29 Finishes

6.29.1 Car Walls, Floors and Ceilings

All finishes shall be in full compliance with guidance document HTM 08-02: Lifts. Special attention is drawn to suitable materials accommodate infection and hygiene control.

A suitable material that can be considered, if a stainless-steel material has preference, is:

For interior use only, ANSI Grade 441 Rolled patterned Stainless Steel

For exterior use, depending on environment, ANSI Grade 304 or ANSI Grade 316 Rolled patterned stainless steel.

Under NO circumstances should brushed stainless steel materials be considered.

The car finishes should be approved, where appropriate, by the infection control team to ensure that the materials used, and the panel design do not cause a reservoir of bacteria.

6.29.2 Flooring

The car finishes should be approved, where appropriate, by the infection control team to ensure that the materials used, and the panel design do not cause a reservoir of bacteria.

Where necessary, the car floor should have a watertight one-piece floor-covering that is coved and attached to the car walls. The floor-covering should be slip-resistant and have a surface that allows wheeled trolleys to be easily steered. Flooring to be coved.

Floor covering must meet the requirements of EN 81-70. Under no circumstances will black or very dark coloured flooring be accepted.

Final design to be submitted to the Clients design team for approval.

6.29.3 Ceilings

The ceiling of the car should fit from wall to wall with no crevices. Any lighting fittings should be easily maintained using a method of illumination that will not cause sensory discomfort to those patients lying on a trolley or bed.

6.29.4 Mirror

Mirror to be provided for these types of lifts only:

- General Passenger Lift
- Public Passenger Lift
- House Keeping Lift (Clean) (To be considered if lifts are also used as General Passenger Lifts)
- Mirror to be fitted to rear wall, behalf height and be tamper resistant as per EN81-71.

6.29.5 Lift Car Lighting

Interior lighting shall be by at least two lamps, suitably enclosed, each operated from independent power supply. The illumination at any point on the floor shall be not less than 100 lux using recessed LED tube lights, IP 54 rated, (colour temperature $\pm 5500\text{K}$) installed in the ceiling of the car. A minimum of 100 lux light levels at any point on floor level is required. The lighting fixtures shall be easily accessible for replacement of bulbs.

All lighting shall be indirect or diffused to prevent sensory discomfort for a person lying on a trolley or bed. Lighting to switch off after 15 seconds when not in use and turns on when lift is called.

The design of light fittings shall be in accordance with the schedules and agreed with the Design Team or its representative.

6.29.6 Car Handrails

A handrail, EN81-70 compliant, constructed from 40mm diameter extruded ANSI Grade 316 polished stainless-steel handrail to one side with the ends turned in shall be fitted in the lift car. The area in front of control panel to be left free from handrail, the height should be sufficient to support passengers and to protect the car when trolleys are in use.

All fixings shall be hidden with no sharp edges, and the handrails shall be bolted through the cabin walls. No grub screws to be protruding from the handrail.

6.29.7 Bumper Rails

Three (3) rows bumper rails shall be fitted in the lift cabin. The bumper rails shall be located at heights indicated by the design team or its representative.

Where the bumper rails clash with the handrail, the handrail shall take precedence over the bumper rail.

Where bumper rails meet at the corners, they shall not create a finger trap and must be terminated minimum 80 mm from the cabin corner.

The bumper rails shall be ANSI Grade 304 pattern rolled stainless steel.

Where stainless steel bumper rails are applied, the bumper rails shall be reinforced with timber, and the ends shall be chamfered and folded in made from one continuous sheet of stainless steel. End caps on the bumper rails will not be acceptable.

The bumper rails shall be smooth, have no sharp edges or protruding elements when fitted and must not provide a finger trap at the corners.

All joints or any crevices shall be filled with a suitable mastic to the design teams or its representative approval. The mastic proposed shall be in accordance with the Hygiene and Infection control guidelines.

All fixings shall be countersunk and bolted through the cabin wall. The distance between fixings shall not exceed 400mm.

The final design shall be submitted, detailing materials proposed, finishes and fixing methods to the Design Team or its representative.

6.29.8 Folding Seat N/A

Not required for these lifts.

EN81-70 states: Where a tip-up seat is provided it shall have the following characteristics:

- a) seat height from the floor: (500 ± 20) mm.
- b) depth: (300 - 400) mm.
- c) width (400 - 500) mm.
- d) ability to support of load of 150 kg.

6.29.9 Door Finishes

Regarding the door finishes including Panels, Frames, Architraves and Maintenance Access Panels (MAP's), all finishes shall be in full compliance with guidance document HTM 08-02: Lifts. Special attention is drawn to suitable materials accommodate infection and hygiene control. A suitable material that can be considered, if a stainless-steel material has preference, is:

- For interior use only, ANSI Grade 441 Rolled patterned Stainless Steel.
- For exterior use, depending on environment, ANSI Grade 304 or ANSI Grade 316 Rolled patterned stainless steel.

Under NO circumstances should brushed stainless steel materials be considered.

The door finishes should be approved, where appropriate, by the infection control team to ensure that the materials used, and the panel design do not cause a reservoir of bacteria.

6.30 Requirements for Fire Fighting Lifts

Not applicable for these lifts.

6.31 Requirements for Evacuation Lifts

Not applicable for these lifts.

7 HSE Staff Training

7.1 Training Requirements

CUH requires that nominated CUH staff are trained for specific tasks in relation the 3 No. functions of appointed persons. 12 persons in total.

The training will be provided by a CUH appointed competent person in conjunction with the Lift Maintenance Provider (Contractor).

The Contractor shall allow all cost for the training as described below with his tender submission. It is envisaged that this training will be conducted on the start of the agreement for each premises and refresher courses will be required to be conducted on an annual basis.

Training is to be provided for the following appointed persons:

- Lift Steward
- Lift Warden
- Lift Release Warden

Training in the use of equipment will be by the appointed CUH competent person and lift maintenance provider and by the site Fire Safety Advisor in relation to the emergency duties. This training (where applicable) should consider the description of the operation of the lift and its features as described in the lift owner's manual provided for each lift or type of lift.

7.2 Lift Steward

A Lift Steward is a person nominated by the CUH management to undertake simple daily monitoring of lifts to check their correct operation.

7.3 Lift Warden

Appointed by CUH management, a Lift Warden will help to evacuate occupants during emergencies by using an escape lift. There are three types of lift warden:

- Lift Warden (Floor).
- Lift Warden (Control).
- Lift Warden (Car).

7.4 Lift Release Warden

A Lift Release Warden is a person appointed by CUH management, suitably trained and qualified by knowledge and practical experience, and provided with the necessary instructions to enable the safe release of passengers from lifts. They should be recommended by the Authorised Person (Lifts), be formally appointed by management, and should undergo refresher training annually.

8 Questionnaire & Schedule of Rates.

The Questionnaire section of the attached Microsoft Excel Lift Pricing Schedule spreadsheet must be completed by the Lift Contractor.

9 Lift Pricing Schedule

The Lift Pricing Schedule section of the attached Microsoft Excel Lift Pricing Schedule spreadsheet must be completed by the Lift Contractor.

10 Delivery Schedule

The Delivery Schedule section of the attached Microsoft Excel Lift Pricing Schedule spreadsheet must be completed by the Lift Contractor.

11 Declaration of Design Lifespan and Obsolescence

The Lift Pricing Schedule section of the attached Microsoft Excel Lift Pricing Schedule spreadsheet contains a declaration of design lifespan and obsolescence sheet.

The supplier/installer must provide in writing, with his tender submission that parts will be retained for a period of ten (10) years after 20 years or if production of this equipment or parts is stopped past the 20-year period by completing this section.