THE UNIVERSITY OF NEWCASTLE AUSTRALIA

The University of Newcastle

Infrastructure and Facilities Services

Project Briefing Document

Vertical Transportation Services Design Standards

November 2025

Version 3.0

DOCUMENT CONTROL:

Document Revisions					
Revision	**Date**	**Description**	**Prepared by:**	**Checked by:**	**Approved by:**
1	27/5/2011	Design Review Update			
2	21/8/2014	Design Review Update			
3	1/11/2025	Design Review Update	EMS/Andrew Aspinall	Scott Conza	Matt McMillan

Revision Summary	
Revision	**Change summary**
1	Review to align with industry standards and compliance with current legislation
2	Review to align with industry standards and compliance with current legislation
3	Review to align with industry standards and compliance with current legislation

CONTENTS

1 GENERAL

The University of Newcastle is serviced by 73 units located in over 50 buildings, across the three main campuses of Callaghan, the Newcastle CBD and Ourimbah and two units in Regional NSW, one building in Taree known as the Manning Education Centre and the other in Tamworth known as the Tamworth Education Centre. These existing lifts are of various design, age and manufacture.

The University wishes to standardise, as much as possible, any new lift system or escalator to meet, but not be limited to, the following minimum basic requirements.

- The lifts and escalators must be safe and comply with all relevant codes and standards
- The lifts and escalators must be easily maintained, with minimal problems, by multiple (other than the original manufacturer) lift maintenance contactors
- The lifts are to be as flexible and versatile in operation as possible
- All controls and car finishes must be robust and vandal resistant.
- The lifts and escalators must have a proven, local history of reliability
- The lifts and escalators must meet minimum requirements of handling capacity and waiting time (refer clauses 7, 8 & 9) for passenger traffic and materials for goods lifts.
- The lifts must meet the minimum requirements for use of persons with disabilities as defined by the National Construction Code.
- The lifts must be design in accordance with the NSW Design and Building Practitioners Act 2020 and supporting Regulations

2 REQUIREMENTS

Any new installation shall only be installed by a competent, well-established, lift contractor with at least 10 years local lift installation experience in the Newcastle Region.

The lifts and escalators must comply fully with all local rules, regulations, codes and practices as well as gain approval and certification from the local lift inspectorate prior to the lift being placed into service.

All lifts shall be, as a minimum, user friendly to people with disabilities and in compliance with the National Construction Code. Full compliance to the lift code AS1735.12 will be applied as detailed in clause 5.

Lift power systems shall be energy efficient and environmentally friendly. Any lift power system that can be proven to be more efficient or less power consuming and/or environmentally friendly shall have preference over a less efficient system.

As numerous high passenger two-way traffic peaks will be placed on the vertical transportation system throughout each day the system must be able to provide a very high level of service at all times particularly during these peaks. For new installations/buildings the Designers shall provide traffic studies to show how they meet these requirements.

Well established escalator and lift systems that have a proven track record of reliability and ease of maintenance should be the only items considered.

3 STANDARDS

All new lift installations must comply with the following standards and requirements. The lift contractor shall ascertain and comply with all rules, regulations and by-laws including the latest amendments of the following.

EN81-20-2014	Safety Rules for the construction of Lifts
EN81-28-2018	Remote Alarm on Passenger Goods Lifts
EN81-50-2014	Design Rules, Calculations, Examinations and Tests of Lift Components
AS 1170.4 2007 (R2018)	Earthquake Structural Design Actions in Australia
AS 1735.1-2016	General Requirements
AS 1735.1.2-2021	Safety rules for the construction and installation of lifts – Lifts for the transport of persons and goods
AS 1735.1.3-2021	Examinations and Tests
AS 1735.1.2-2021	Rules for the improvement of safety of existing passenger and goods passenger lifts.
AS1735.5	Escalators and Moving walks
AS1735.11-1986	Fire-rated landing doors
AS 1735.12-1999	Facilities for Persons with Disabilities
AS1735.19-2019	Remote alarms on Passenger goods lifts
AS 3000:2018	Australian Wiring Rules
	SafeWork NSW
	National Construction Code (NCC 2022)
	NSW Fire Service
	Australian Telecommunications Regulations
	NSW Occupational Health and Safety Regulations
	Federal Disabilities Act 2010
	Disability (Access to Premises) Standards

4 NCC COMPLIANCE

As a minimum all new lift installations must comply with the following NCC requirements.

CLAUSE	NCC REQUIREMENTS
C1.10 – Fire Hazard properties	Lift Car Interior Finishes to comply with AS5637.1 Group 1 Rating.
C2D10 – Non-Combustible Building Elements	A lift shaft shall be constructed of Non-combustible materials per C2D10
C2D11 – Fire hazard Properties	Internal finishes of a lift car shall comply with S7C6
C3D11 – Separation of lift shafts	Shaft walls for lifts connecting more than 2 floors (>3 if the building is sprinklered) must meet FRL requirements in Spec C1.1 Emergency lifts must be contained within a fire-resisting shaft having an FRL of 120/120/120. This is a builder's responsibility
C4D11 – Openings if fire-isolated lift shafts	Lift landing doors to comply with NCC and meet 1-hour fire rating
D1P7 Evacuation lifts	The access/fire consultants are responsible for the design of emergency exits and compliance with this clause. If they include evacuation lifts they shall advice the DPVT consultant.

D2D22 – Access to lift pits	Where the pit is less than 3.0m access will be through the lowest landing. Otherwise compliance to D2D22 must be provide as part of the building design and is the responsibility of builder/architect.
E1.5 – Fire Sprinkler system	To be reviewed and confirmed by Fire Building Practitioner
E3.1 – Lift installation	Lift falls under the classification of electric passenger lift and must comply with Specifications 3.1
E3D3 – Stretcher facility in lift	Stretcher facility to be provided if installed to serve any story above an *effective height* of 12m
E3D4 – Warning against use of fire	Warning signs to be displayed at each landing button station.
E3D5 – Emergency Lifts	At least one emergency lift must be installed in a building with an effective height greater than 25m.
E3D6 - Landings	Access and egress to and from lift well landings must comply with Deemed -to – Satisfy Provisions.
E3D7 – Passenger lift types and their limitations	The lift meets the requirements of this clause.
E3D8 – Facilities for persons with Disabilities	All lifts to comply with AS1735.12 – 1999.
E3D9 – Fire Service Control	All lift to be fitted with fire service control if installed to serve any story above an *effective height* of 12m
E3D10 – Residential Care Buildings	To be fitted with at least one lift to accommodate stretcher
E3D11 – Fire Service Recall Switch	Landings Each group of lifts to be fitted fire drive control switch
E3D12 - Fire Service Recall Switch	Car Each lift to be fitted fire drive control switch
S17C10 – Sprinkler Anti – tamper devices	The fire engineer shall design the system to meet the requirements of this clause.
S17C10 – Sprinkler Systems in lift installation	The fire engineer shall design the system to meet the requirements of this clause.
Specification 24 – Lift Installations	
S24C2 – Solar Radiation	Lift shaft exposed to solar radiation shall comply with this requirement, the building mechanical services contractor shall design the system to meet the requirements of this clause, the electrical engineer shall design the emergency supply required.
S24C3 – Lift car emergency Lighting	The lift car shall have 2 hour emergency lighting for a period of 2 hours provided by the lift contractor
S24C4 – Cooling of lift shaft	The mechanical engineer shall work out if the lift shaft dry bulb temperature will exceed 40C, and design a ventilation system to cool the shaft as required.

S24C5 Lift Foyer Access	This requirement to be designed by Electrical building services engineer if exists
S24C6 Emergency Access doors in single shaft	The architect/builder shall design and install doors to comply. (Not applicable on this project)
Part 7 Sound transmission and insulation	The lift is installed within a shaft, the design of the shaft shall be by others to achieve compliance.
J7D8 – Lift Energy	Lift Energy Standby power and efficiency to be as per ISO25745-2
Seismic Design in Line with Importance Level 2	Structural Building Practitioner to confirm specific Seismic

5 MINIMUM VERTICAL TRANSPORTATION SERVICES

For every building that is multi-levelled there is a minimum requirement to provide a lift for persons with disabilities, the vertical movement of furniture and goods.

Where the height of a building exceeds 10.5 metres or there are more than 3 floors served consideration should be given to more than one lift being installed. A traffic study shall be carried out by a Vertical Transportation Design Practitioner to show that the design meets the requirements set out in this document.

Where classrooms, lecture theatres, laboratories etc. with heavy pedestrian foot traffic likely to occur the use of escalators, at least in part, should be seriously considered.

6 MINIMUM REQUIREMENTS FOR PERSONS WITH DISABILITIES

All new and modernised lifts in all buildings shall comply with AS1735.12, without exception.

All lifts installed at any of the University campuses or buildings shall comply with at least the National Construction Code requirement for Facilities for People with Disabilities Clause E3.6, Disability (Access to Premises – Buildings) Standards and all lift car control buttons shall comply with clause 8.3.4 Tactual Labelling of AS 1735.12

Only new lifts complying with AS 1735.1.2-2021 and AS1735.1.3-2021 shall be used for providing access for people with disabilities. For Lift upgrades or modernization, the lifts must comply with AS 1735.1.4-2021

Only within existing building and with prior written authorization from the University may the following lifts, as defined by the NCC E3D7 shall be used for the access of people with disabilities. Stairway platform lifts, low-rise platform lift, low-rise, low speed constant pressure lift, small-sized, low speed automatic lift.

To be clear, under no circumstances will these lifts be allowed to be installed in a new development/building.

7 PROVISION OF STRETCHERS AND EMERGENCY LIFTS

In all new buildings provision shall be made for the use of stretchers in all lifts, unless each floor has direct access to ground level, without the need to use stairs.

In all new buildings provision shall be made for Emergency lifts as detailed in the latest version of the National Construction Code.

8 PERFORMANCE REQUIREMENTS

8.1 ADMINISTRATIVE AND OFFICE BUILDINGS ONLY

If a normal passenger lift service, as distinct from classrooms, lecture theatres, laboratories, goods service or Facilities for Disabled Persons lift, is to be installed it shall be designed to meet the following design criteria:

Waiting Interval - the maximum up peak average departure interval from the main lowest floor landing for administrative and office buildings.

1 to 4 floors served	-	45 seconds
5 to 8 floors served	-	35 seconds
8 and higher floors served	-	30 seconds

Handling Capacity - Minimum 5-minute handling capacity expressed as a percentage of building population above the main lowest floor landing for administrative and office buildings:

1 to 4 floors served	-	10.0 %
5 to 8 floors served	-	12.5 %
8 and higher floors served	-	15.0 %

8.2 CLASSROOMS, LECTURE THEATRES ETC

For any lift installation in a building of this type careful and thorough theoretical traffic analysis is required. A detailed study is to be carried out and a full written report is to be provided by an appropriate independent consultant or at least 3 separate studies supplied by 3 potential tendering lift companies.

The use of escalators at least in part, should be seriously considered.

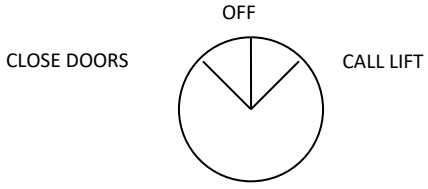
8.3 SPECIAL CIRCUMSTANCES & MIXTURE OF CLASSROOMS AND OFFICES

Where a building has a mix of classrooms and offices it will be evaluated on an individual basis. Overall the requirements of the clauses above must be observed

8.4 LIFTS SERVICING LABORATORIES OR CARRYING DANGEROUS GOOD ONLY

For any buildings that have laboratories or the like, above a level that can be accessed on grade via pathways, at least one lift shall be provided with hazardous goods function to carry dangerous goods safely, if no other means are provided such as gases and/or liquids piped directly to the laboratory. The hazardous goods function shall be provided according to the following requirements.

All landing panels (LOP) for the goods lift will be provided with a three-position key operated switch labelled “HAZARDOUS GOODS OPERATION” with the positions labelled as follows:



The lock will be spring return to the “OFF” position from both other positions.

In addition to normal switches, there will be a two-position switch in the car operating panel (COP) labelled "HAZARDOUS GOODS OPERATION". The two positions will be labelled "OFF" and "ON" and the key can be withdrawn in either position.

The key switches in both the COP and the LOP will be of the Bi-Lock type.

- When the hazardous goods service (**HGS**) key switch is in the "**OFF**" position the designated lift will operate normally and where applicable as part of a lift group.
- The attendant turns the key switch in the landing operating panel (LOP) clockwise from the "**OFF**" to the "**CALL LIFT**" position.
- An in car announcement is made.
  "**Please exit at the next stop, this lift is required for special service**". Note, this audio announcement will repeat approximately every 10 seconds
  An illuminated flashing sign in the lift COP will light "**Special service operation**"
- Hall call response is inhibited
- The lift will travel to answer the next registered lift car call in its direction of travel, the doors will open, all other lift car calls will be cancelled and new lift car calls will not be accepted. All passengers are expected to leave the lift car. The doors will close and the lift travel directly to answer the HSG key switch. If the lift is idle it will immediately travel directly in answer to the HSG key switch.
- The lift will travel (non Stop) to the "**calling**" floor (at which the **HGS** switch is selected.)
- Open its doors.
- The lift will remain at that floor with the doors open.
- The attendant will remove the key switch from the landing fixture in the "**OFF**" position.
- The lift will remain "captive" in the HGS mode of operation for **60 seconds**.
  (If the process does not proceed to the next stage, the lift will return to normal service.)
- The **HGS** car operating panel (**COP**) key switch is turned to the "**ON**" position.
- The key is removed in the "**ON**" position.
- The goods are loaded.
- The key is inserted into the hall switch and turned counter clockwise to the "**CLOSE DOORS**" POSITION. The doors close and the key returns to the central "**OFF**" position and withdrawn.
- The attendant travels via other lift or stairs, to the "**destination**" floor.
- The attendant then turns the **HGS** key switch in the LOP to the "**CALL LIFT**" position at the "**destination**" floor.
- The lift travels to the "**destination**" floor.
- The doors open.
- The goods are removed.
- The key is removed from the "**destination**" landing **HGS** key switch.
- The **COP HGS** key switch is returned to the "**OFF**" position.
- The key is removed.
- The lift returns to normal service.

The **HGS** mode of operation will not **initiate** if

- The Hall or Car Fire Service is operated. (**HFS & CFS**)
- The lift is in Inspection mode. (**INS**)
- The lift is on Independent Service. (**INDS**)

Selection of the **Hall Fire Service** mode while the lift is on **HGS** will return the lift to a designated floor for unloading.

If the **HFS** mode is selected while the lift is on **HGS**, there will be an announcement in the lift car, advising the attendant (passenger) to abandon the use of the lift and exit the lift before the doors close and the lift returns to the designated floor.

Note. The University's monitoring system will be programmed to raise an alarm if the lift is in HGS for more than **20** minutes.

9 TYPE OF LIFT DRIVE AND ESCALATORS

The type of lift drive shall be based on the following.

Machine Room Less -	To be used for all applications from 2 floors and higher, and for speeds of 1 metre per second up to 3.0 metres per second.
Overhead Gearless -	To be used for lift requiring a speed of greater than 3.0 metres per second and higher.

For all new installations permanent magnet alternating current gearless machines are to be used for the main driving machine with regenerative Variable Voltage Variable Frequency drive units capable of feeding filtered power back into the mains, shall be used. See Note below.

For all lift upgrades or modernisations alternating current machines are preferred for both geared and gearless lifts with regenerative Variable Voltage Variable Frequency drive units capable of feeding filtered power back into the mains, shall be used. In the case of buildings with Hydraulic lifts the first option would be to remove the hydraulic lift and install a new roped lift.

Escalators shall comply with the following.

- Step chains shall have a service life of at least 100,000 hours.
- All step chain rollers are to have roller or ball bearings not bushes
- The use of nylon or other "soft" materials shall not be used for major items such as drive and handrail sprockets
- Automatic lubricators shall have sufficient capacity to provide lubrication at appropriate levels for periods of at least 1 (one) month without topping up.
- All handrail returns (newels) are to have roller guides not sliders.
- Balustrades are to be made of substantial materials other than glass unless otherwise approved by UoN.
- There shall be at least 3 level steps at the entry and exit of each escalator.
- The speed of any escalator shall be limited to 0.5 mps
- Energy saving devices shall be used, such as reduced speed during quiet periods, LED lighting,

Note: The exception is for some special purpose research laboratories that have sensitive electrical requirements this regeneration be removed, these requirements should be provided as part the buildings design brief.

10 LIFT DETAIL AND ESCALATOR SIZE

The minimum size of lift cars shall be 1125kg or 15 persons for all passenger lifts with a travel of less than 12 metres. With a minimum platform size of 1400w x1900d. (Or 2000mm clear between the doors and rear wall)

The minimum size of lift cars shall be 17 persons for all passenger lifts with a travel of 12 metres or more, with a minimum of one lift car having stretcher provision. With a minimum platform width of 1400mm and 2000mm deep.

Goods lifts are to have provision for protective blankets in the lift car to protect their finishes.

Goods lifts are to be sized and have features as required for their particular application and usage.

All controls are to have vandal resistant controls and communication systems.

Any lift car emergency phone system is to be auto-dialling hands free and shall be directly connected to the Lift Service Suppliers call centre for 24 hour monitoring via a PIXEL GSM mobile gateway. The gateway shall be capable of working on 4G and 5G networks. All new lifts shall be accordance with AS1735.19

Escalator step width shall be not less than 800mm.

11 MAINTENANCE

The University has many lifts under maintenance and requires all new lifts to be as compatible and easily integrated with the existing lifts and maintenance contractors as possible. To that end consideration must be given, and documentation must be provided, before accepting any new lift system or escalator that clearly identifies it as being easily and effectively maintained by the existing maintenance contractor.

12 INTEGRATION WITH EXISTING MAINTENANCE PROCEDURES

The following procedures are to be implemented into any new lift/escalator construction specification so as to assist the integration of any new lifts into the existing lift maintenance program.

1. The University's Facilities Management is to be involved in all new vertical transportation tender assessments. All documentation must be made available to the Section with at least 1 week prior notice of the assessment date.
2. The University's Facilities Management is to be involved in the commissioning of all new lift and escalator installations. At least 2 weeks prior notice is to be given to the Section of any commissioning of new lifts or escalator.
3. Prior to commissioning of any new lift or escalator (at least 1 week) the University's Facilities Management are to be given at least one copy of the Operational and Maintenance Manuals for the particular lift/escalator.
4. Any lifts or escalator placed into Defects Liability Period must comply with the procedures for recording and reporting of the existing lifts and escalators that are in place for the University at the time of tender.