



**5 BAY VIEW STREET LAVENDER BAY
LAND AND ENVIRONMENT COURT**

for

Mills Oakley

PO Box H 316

Australia Square NSW 1215

by

John Tibbitts

Consulting Engineer, Lifts and Escalators

Date of Issue: 30 August 2021

CONTENTS

	Page
QUALIFICATIONS	2
EXECUTIVE SUMMARY	3
MY BRIEF	3
ASSUMPTIONS	4
BASIS FOR THIS STATEMENT	4
LIFT STANDARDS FOR USE WITH LIFTS CARRYING PASSENGERS.....	4
DISTANCE REQUIRED ABOVE THE TOP FLOOR SERVED BY THE LIFT	5
CONCLUSIONS	6
DEVICES OTHER THAN THOSE THAT ARE COMPLIANT WITH AS1735.....	7
GUIDELINES FOR EXPERT WITNESSES.....	7
ANNEXURE A	8

QUALIFICATIONS

1 I am:

- a qualified registered professional Engineer,
- a member of the Institute of Engineers Australia,
- a registered professional Engineer with IEAust,
- a Chartered Professional Engineer with IEAust;
- listed on the National Professional Engineers Register;
- a registered professional engineer, Queensland;
- an Asia-Pacific economic co-operation Engineer;
- an International professional Engineer (Australia)

2 I am a member of the International Association of Elevator Engineers as well as a founding and life member of the Lift Engineering Society of Australia of which I am President.

3 Since completing a trade apprenticeship in 1966 and becoming an electrical tradesman in the lift industry, then graduating from university as an electrical engineer in 1975, I have worked continuously in the field of vertical transportation on a full time basis - first with Otis Elevators, then with the NSW Public Works and Commonwealth Department of Housing, before moving back to the private sector and working in various vertical transport consultancies.

4 I am chairman of Standards Australia Lift Committee responsible for the production and maintenance of Australian Standards for lifts etc.

5 I am a member of the international working group producing and maintaining the International Standard ISO 8100 Lifts for the Transportation of Persons and Goods, Part 32 Planning and Selection of Passenger Lifts to be Installed in Offices, Hotels and Residential Buildings.

6 I have lectured at various universities including Sydney University and the University of Technology, Sydney on this subject, for in excess of 35 years.

7 I was chairman of Standards Australia Mechanical Parking Devices (Car Stackers) Committee responsible for the production of Australian Standards for mechanical

parking devices while that committee was active and producing the Australian Standard for Mechanical Parking Devices (Car Stackers).

8 My Professional Profile is at Annexure A.

EXECUTIVE SUMMARY

9 Following my review of the documentation provided, I am of the opinion that: -

- a) Australian Standard "AS1735.1 is the standard applicable to the lift as proposed at 5 Bay View Street Lavender Bay,
- b) AS1735.1 at clause 5.4 indicates that the standard which can be used for a traction type lift is EN81 - 20,
- c) Australian Standard "AS1735.3 is the standard applicable to the lift at 5 Bay View Street Lavender Bay, should the lift not be of the overhead traction type,
- d) There is no other type of lift other than overhead traction or electro-hydraulic type which could be used in a project such as that at 5 Bay View Street Lavender Bay,
- e) For the lifting or lowering device to be a lift it should comply with AS1735.
- f) If the lifting or lowering device is proposed to carry passengers, whether they be inside the vehicle or not, then the device should be provided with all the safety features of a lift compliant with AS1735.
- g) For a lift to be compliant with AS1735 it will require a top overhead of at least 3900 mm to 4000 mm above the top floor served by the lift.

MY BRIEF

10 This statement has been prepared in response to a request from Mills Oakley of 24 August 2021 for me to act as an expert in the proceedings, and undertake the following tasks: -

- a. Provide preliminary advice on the matters raised by the applicant's architect, Robyn Bruins, via email on 19 August 2021 in relation to the proposed car lift structure for the development on the site;
- b. Engage in joint conferencing with council's nominated transport engineer, Craig McLaren, and prepare a joint expert report to be finalised by 3rd September 2021;

- c. If required, attend the hearing set down for 16 - 17 September 2021;

ASSUMPTIONS

- 11 In preparing this statement I have assumed the facts, events and correspondence as presented to me are true and accurate.

BASIS FOR THIS STATEMENT

- 12 To prepare this statement I carried out an initial review of the available documents.
- 13 My opinions as expressed in this report are based on my expert knowledge acquired over more than 60 years involvement in the lift industry, my trade and university training, as well as my involvement in the production and maintenance of the various lift and escalator Codes and Standards used throughout the Globe but particularly in Australia.

LIFT STANDARDS FOR USE WITH LIFTS CARRYING PASSENGERS

- 14 In Australia the Standards applicable to lifts or devices required to carry passengers are: -
- 14.1. Australian Standards: -**
- 14.1.1. AS1735.1 Lifts, escalators and moving walks Part 1,
 - 14.1.2. EN 81 - 20 safety rules for the construction and installation of lifts – Lifts for the transport of person and goods – Part 20: Passenger and goods passenger lifts,
 - 14.1.3. AS1735.1 Lifts, escalators and moving walks Part 1.
- 15 A device designed and installed to carry passengers, whether they be passengers in a motor car or vehicle or they be ambulant, should comply with AS 1735.
- 16 Devices which do not comply with AS1735 cannot be guaranteed to have safety features necessary to carry passengers.
- 17 In particular non-compliant devices cannot be guaranteed to safely arrest the falling device.

- 18 Any lifting or lowering device which does not comply with AS1735 should not be considered a lift.
- 19 The Australian Standard “AS 1735.1:2016 at clause **5.4 Compliance Standards**” allows the use of overseas standards in that it notes that lifts escalators and moving walks shall comply with AS 1735 series or one of the following published technical standards: –
- “**ASME ASME A 17.1/CSA B 44.01**”.
- “**ASME ASME A 17. 7/CSA B .7 – 07**” “.
- “**EN 81 – 1**”.
- “**EN 81 – 2**”.
- “**EN 81 – 20**”.
- “**EN 81 – 50**”.
- “**GB 7588**”.
- 9191 being poor in my mind and I’m sure or a new and L are you a ring on any the 3.9
- 20 As there is no part in the AS1735 series of standards which details the requirements of normal passenger lifts, most lifts in Australia (99%) are designed and installed to comply with **EN 81 – 20**.
- 21 For hydraulic lifts the standard which is applicable is AS1735.3.

DISTANCE REQUIRED ABOVE THE TOP FLOOR SERVED BY THE LIFT

- 22 the distance required in a lift shaft above the floor level of the top floor served (often termed the overhead or top overrun) is determined in accordance with the clearances, both mechanical and man clearances, as required by the standard.
- 23 In the case of the project at 5 Bay View Street the top overrun is determined by the height of the lift car plus the safety rail on top of the car and clearances from the safety rail to the underside of the lift shaft roof.
- 24 To ensure the correct clearance between the top of the safety rail and the underside of the lift shaft roof the lift must first be placed above the top floor by the distance of the length of the counterweight buffer stroke plus counterweight buffer clearance plus a small amount jump due to rape stretch.

- 25 For a lift such as the one proposed at 5 Bay View Street, Lavender Bay the required buffer stroke would be 75 mm, the jump would be 35mm is and that counterweight buffer clearance would be 100 mm. That is the lift should be placed 210 mm above the top floor served.
- 26 With the car positioned the 210 mm above the top floor served, to calculate the full overhead required you must add the height of the lift car (proposed at 2300 mm) plus the car roof (50 mm), the height of the safety rail (minimum of 1100 mm required by the standard) plus the clearance between the safety rail and the underside of the lift shaft roof (310 mm required by standard). That is full overrun required by the standard is to $210 \text{ mm} + 2300 \text{ mm} + 50 \text{ mm} + 1100 \text{ mm} + 310 \text{ mm} = 3970$.
- 27 I note the position of the hoist machine located in the top of the lift shaft or the diverter pulleys also located in the top of lift shaft (referred to in some of the documents as flywheels) does not affect the required top overrun of the lift.
- 28 Should the type of lift not be of the traction kind, the only other type of lift which could be used is a hydraulic lift.
- 29 In the calculation of the required top overhead for a hydraulic lift where there is no counterweight or counterweight buffer, there is no requirement for a counterweight buffer stroke or counterweight buffer clearance. However, for the calculation of the required top overhead of a hydraulic lift, the lift must be placed a distance above the top floor served so that the lift when arriving at the top floor does not damage the piston and top of the cylinder. This distance is virtually equal to the sum of the counterweight buffer stroke plus counterweight buffer clearance plus the jump distance. Which in turn means the same overhead is required for either attraction lift or a hydraulic lift.
- 30 Again, I should note that if a lifting or lowering device does not comply with AS1735 then it cannot be classified as a lift.

CONCLUSIONS

- 31 The conclusions I have come to following my review of the documents are as follows: -
- h) Australian Standard "AS1735.1 is the standard applicable to the lift as proposed at 5 Bay View Street Lavender Bay,

- i) AS1735.1 at clause 5.4 indicates that the standard which can be used for a traction type lift is EN81 - 20,
- j) Australian Standard "AS1735.3 is the standard applicable to the lift at 5 Bay View Street Lavender Bay, should the lift not be of the overhead traction type,
- k) There is no other type of lift other than overhead traction or electro-hydraulic type which could be used in a project such as that at 5 Bay View Street Lavender Bay,
- l) For the lifting or lowering device to be a lift it should comply with AS1735.
- m) If the lifting or lowering device is proposed to carry passengers, whether they be inside the vehicle or not, then the device should be provided with all the safety features of a lift compliant with AS1735.
- n) For a lift to be compliant with AS1735 it will require a top overhead of at least 3900 mm to 4000 mm above the top floor served by the lift.
- o) 3900 mm to 4000 mm above the top floor served by the lift.

DEVICES OTHER THAN THOSE THAT ARE COMPLIANT WITH AS1735

For any device other than a lift which is compliant with AS1735 I am unable to comment as I would consider such devices to be outside my area of expertise.

GUIDELINES FOR EXPERT WITNESSES

I acknowledge that I have read the supplied "expert witness code of conduct" in schedule 7 of the uniform civil procedure rules and agree to be bound by the same in any report that I may prepare for these proceedings.

John Tibbitts

John Tibbitts

BSc (Eng), MIEAust, CPEng NER

APEC ENGINEER IntPE(Aust)

RPEQ MIAEE, MLESA

ANNEXURE A

Experience Of Mr. John Tibbitts With Lifts and Escalators

General

Over 60 years of experience in the lift industry as an apprentice, a tradesman and as an engineer.

Qualifications

Electrical Tradesman (lifts)

B. Sc(Eng) UNSW

Chartered Professional Engineer

Registered on the National Professional Engineers Register (NPER)

Member of Institution of Engineers, Australia

President of Lift Engineering Society Australia

Member International Association of Elevator Engineers

Other Experience

Chairman of ME4, The Main Committee responsible for the Standards Australia Lift Codes.

Member of various specialist sub committees for the Australian Lift Codes including the committee responsible for drafting the acceptable changes necessary for the acceptance in Australia of the European and American Lift Codes, as well as the subcommittee responsible for the interpretations of the Lift Codes. Also a member of the international working group charged with producing the international standard on PLANNING AND selection of lifts in office buildings and residential buildings.

Lecturer at University of Technology, Sydney in courses pertaining to lifts for approximately 3 decades and lecturer at Sydney University in courses pertaining to lifts for post graduate Building Services Engineers

Practical Experience.

15 years with a major lift company including serving an apprenticeship with time spent as an apprentice and a tradesman in the factory, on construction, on service, repairs and maintenance, engineering, sales engineering and as a trainer in the training of apprentices.

This period included a number of years on a service run providing maintenance on lifts and attending to lift breakdowns. All of this time with Otis elevator Company.

Consulting Engineering

15 years with State and Federal Government Departments (Department of Public Works and Commonwealth Department of Housing and Construction) responsible for lift installations and lift maintenance. This period included being responsible for the Lifts Group and in particular with the Lifts Maintenance Section responsible for some hundreds of Lifts under Maintenance with all the various Lift Maintenance Providers in NSW. It also included being responsible for the maintenance of building services other than lifts. (Electrical, security, air conditioning etc.)

Thirty years of running a Lift Consultancy Service including providing advice on lift maintenance of all types of lifts.

During this same period providing a lift expertise to a number of major Engineering Consultants in Sydney and over Australia. One of these companies specialising in reporting and commenting on the standard of lift maintenance currently being provided by lift maintenance service providers.

Some projects involving the maintenance of lifts

Amp Centre Bridge Street Sydney, 44 floor office block

Amp Sydney Cove Building, Approximately 24 floor office building

Stamford Hotel on Kent Street – approximately 27 floors of Hotel and Apartments.

Sir Stamford Hotel. Sydney

231 Elizabeth Street Sydney...Office Block

333 George Street, Sydney.....Office Block

IMB Office Block .. Wollongong

52 Clarence Street, Sydney ..Office Block

143 Macquarrie Street, Sydney...Office Block

McKell Building Sydney... Office Block

Goodsell Building Sydney.... Office block

Education Building Sydney ... office block

Herbert St, St Leonards.. Office block

828 Pacific Highway Pymble ... office block

Wollongong Government Office block

Bathurst Government Office block

Dubbo Government Office block

Orange Government Office block

Goulburn Government Office block

Albury Government Office block

Wagga Wagga Government Office block

Top Ryde shopping center

Rhodes shopping center

Target Goulburn

Sydney Airport

Parramatta Square ... office block

Various schools