19 March 2021

Department of Planning, Industry and Environment,
4 Parramatta Square, 12 Darcy Street
Parramatta NSW 2150 Australia

Dear Sir/Madam,

Re: Response to Department of Planning Apartment Design Guide Vertical Transportation Objectives – One Sydney Harbour R5 Lift System & Performance

The *Apartment Design Guide* (July 2015) (ADG) sets the below objective regarding vertical transport performance: ,

> *Objective 4F-1*
> *For buildings of 10 storeys and over, the maximum number of apartments sharing a single lift is 40.*

The ADG criteria has been created for buildings that would not have vertical transportation design carried out and therefore can be considered general guidance for the provision of lifts in those types of buildings.

As part of the planning regime for the One Sydney Harbour Towers, lift servicing has been compared to commensurate buildings internationally, with the proposed lift provisioning providing equal or better performance than those benchmarked against (as further described below).

Calculating the lift performance in R5 with respect to the Objective 4F- 1 of the Apartment Design Guidelines results in the following outcome;

Tower	Number of apartments	Number of Lifts	Ratio
R5 (On Market)	162	2	1:81
R5 (KWH)	50	1	1:50

However when designing significant apartment towers the lift provisions need to be designed by a Vertical Transportation Engineer to lift industry accepted design criteria.

The lift engineering for the project has been carried out by Lendlease Integrated Solutions Vertical Transport Design Services and we confirm lift performance of the proposed lifts is commensurate with international global standards.

Lift Design Criteria

The international guides for Vertical Transportation design are the Chartered Institution of Building Services Engineers (CIBSE) Guide D or The Vertical Transportation Handbook (Strakosch).

The target performance levels in each of these guides is as follows:

Target Performance Levels					
Apartment Building Type	CIBSE Luxury	CIBSE Normal	CIBSE Low Income	Strakosch Downtown	Strakosch Development
Interval (sec)	45-50	50-60	60-70	40-60s	50-90s
Balanced 2–Way Handling Capacity (%)	8%	6% to 8%	5% to 7%	5% to 7%	6% to 7%

Definition of Terms

The following definitions are important to provide background information to understand the way in which lifting systems are designed and measured in terms of quality and performance.

Two Way Traffic – This is where the dominant traffic flow is to and from the main floor of the building, the main floor is the primary entry and exit from the lifting system, in this case “Ground Floor”.

Handling Capacity - This is the percentage of the buildings population that can be transported in a five minute period, with the car load at no more than 80% of the cars designated capacity.

Average Interval – This is the average period of time between successive car departures from the main lobby.

Apartment Building Type –
CIBSE describes building quality as Luxury, Normal and Low Income
Strakosch describes building quality as two types, the “Downtown” type housing high proportion of business people, whereas “Development” houses a higher proportion of families.

Populations for a residential building are defined by the expected bedroom occupancy and are adjusted for the apartment building type

	Occupancy Ratio's				
Apartment Building Type	CIBSE Luxury	CIBSE Normal	CIBSE Low Income	Strakosch Downtown	Strakosch Development
Studio	1.0	1.5	2.0	1.5-1.75	1.75-2.0
1 Bedroom	1.5	1.8	2.0	1.5-1.75	1.75-2.0
2 Bedroom	2.0	3.0	4.0	3.0-3.5	3.5-4.0
3 Bedroom	3.0	4.0	6.0	4.5-5.25	5.25-6.0

Traffic Studies
The design for each rise of the building were applied to Elevate (V9.0.26) using the general analysis mode and the results are presented below.

Building R5 (On Market)
Population based on CIBSE Luxury

Low Rise serving Ground, P2 to 27
1 x 18 and 1 x 21 passenger lift @ 4.0m/s
Average Interval 57.0sec for a 9% HC (two way)

This rise extends to basement for carpark pickups

Building R5 (KWH)
Population based on CIBSE Normal

Low Rise serving Ground, P1 to 16
1 x 18 passenger lift @ 2.5m/s
Average Interval 55.7sec for a 9% HC (two way)

This rise extends to basement for carpark pickups

Passenger Lift Provisions

Lift Type and Capacity

- The passenger lifts in all Lendlease apartment buildings are a minimum of 17 person with car dimensions 1450mm wide x 2000mm deep x 2600mm high (clear internal) to allow for the requirements of the BCA DDA provisions, stretcher capabilities and movement of furniture such as king sized beds
- Additionally one lift in R5 “On Market” has been increased to 21 person (1650w x 2000d) to provide additional space for larger furniture and building plant
- Doors are at a minimum 1100mm wide x 2100 high

- Group collective operational control
- Lifts are designed to comply with the requirements of the SAA Lift Code AS1735, Workcover Authority and the NCC.
- Lifts will incorporate facilities for persons with a disability to comply with AS1735 Part 12 (NCC Compliance)

Passenger Lift Availability

Availability of lift service to the apartment floors is a priority, the performance of the lift system selected would provide statistically an average availability of 98% with expected breakdown rate of less than four “non-interference” calls per annum.

Should an event occur the average response times for the lift technician is between 30 min and 1 hour.

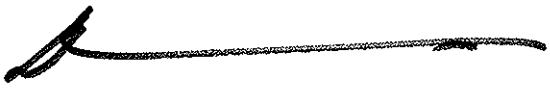
In the event of a breakdown or maintenance in the “On Market” pair, the other lift in the pair will be available to the occupants. Should the single lift in the KWH lobby be unavailable an access route has been provided between the two lobbies and lift access control would be managed to ensure all occupants continue to have lift service

Conclusions

Given the height of R5 and high speed with which the lifts will operate, the inconsistency with the Apartment Design Guide Objective 4F-1 should not be taken to correlate to poor amenity outcomes for residents. Although not in strict adherence to the ratio in the Apartment Design Guide, the results demonstrate that the One Sydney Harbour vertical transport provisions result in commensurate or greater performance than international benchmarks for luxury apartments.

Should you require further information please don’t hesitate to contact me.

Yours Sincerely



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