

Illoura Place, 28 Elizabeth St,
Liverpool

Vertical Transportation

VT Report_DA submission

Prepared for: Altis Bulky Retail Pty Ltd ATF Trustee for Altis ARET Sub Trust 20

Attention: Nick Murdoch

Date: 27 October 2021

Prepared by: Michael Matrakis

Ref: 301350263

Stantec Australia Pty Ltd

Level 6, Building B, 207 Pacific Highway, St Leonards NSW 2065

Tel: +61 2 8484 7000 Web: www.stantec.com

\\WGE-SYD-FS-01\PROJECTS\301350263\BRIEF\VT-BR-001_DA ISSUE_1.DOCX

Revision

Revision	Date	Comment	Prepared By	Approved By
001	18.10.21	DA Issue	MM	ALM
002	27.10.21	DA Issue	MM	ALM

Contents

1.	Introduction	1
3.	Lift Traffic Analysis	3
3.1	Apartment Tower	3
3.2	Commercial Levels	6

1. Introduction

28 Elizabeth Street, Liverpool, NSW, 2170, known as Illoura Place is being developed by Altis Bulky Retail Pty Ltd ATF Trustee for Altis ARET Sub Trust 20 ("Altis").

As an overview, the Project consists of the following:

Site Area	3,609m2
Proposed GFA	35,974m2
Retail GFA	760m2
Commercial GFA	8,284m2
Residential GFA	29,930m2
Building RL	128.275
Stories	34 (including ground)
Commercial Stories	4
Residential Stories	29
Residential Units	312 Units
1 Bedroom	136
2 Bedroom	128
3 Bedroom	48
Parking	411 Residential 100 Commercial 31 Retail 60 EOT Commercial / Retail Bike Parking 5 Commercial / Retail Bike Parking in Public Domain 312 Storage Cages 29 Motorcycle



This document sets out the parameters of Stantec technical design and documentation of the project.

The primary objectives of this document are:

- Identify the proposed Vertical Transportation for the project

This information contained within this report has been based on the following documents received to date:

- Client documents
- Turner Architectural documents
- Multiple design meetings and client discussion and coordination
- NCC 2019 Amendment 1
- Relevant codes and design standards for vertical transportation



2. Lift Traffic Analysis

Stantec have undertaken traffic studies for the mixed used apartment/commercial building at Illoura Place, Liverpool. The industry standard Peters Research Elevate software program was used and we provide the following advice:

2.1 Apartment Tower

2.1.1 Design Criteria

Stantec understand that the target market/price point for the building is mid-tier. As is standard industry practise Stantec have used the CIBSE Guide D:2020 to determine the design criteria. Based on the building type the guidelines recommend the following:

Peak periods – Weekday morning and afternoon/evening period

Occupancy factor (persons) for “Normal” or “mid tier” level of apartment –

Studio: 1.5

1 bedroom: 1.8

2 bedroom: 3

3 bedroom: 4

Two way handling capacity – 6-7%

Typical average waiting time – 40-60 seconds. Stantec recommendation for mid-tier is average waiting time no greater than 50 seconds.

Recommended Travel Time (Time to travel top to ground floor at rated speed)

Table 3.6 Typical values of nominal travel time, depending on building type			
Building type	Typical nominal travel times, t_{nom} (s)		
	Prestige	Standard	Basic
Office	20	25	30
Hotel	25	30	35
Residential	25	35	45
Commercial/industrial	20	30	40



2.1.2 Calculation inputs

Based on the above design criteria Stantec have used the following inputs in the simulation:

Two way handling capacity – 6%

Population (Based on Architectural 210311_WIP Unit Mix)

Level	Description	Floor Height	Studio/1 bed apartment	2 bed apartment	3 bed apartment	Population total (Per floor)
Basement 6	Residential Carparking	3				101 Resi Carbays
Basement 5	Residential Carparking	3				98 Resi Carbays
Basement 4	Residential Carparking	3				98 Resi Carbays
Basement 3	Residential Carparking	3				80 Resi Carbays
Basement 2	Commercial/Retail Parking	3				
Basement 1	Visitor Parking	3				
Ground	Entry	5				
Level 1	Commercial	3.1				
Level 2	Commercial	3.1				
Level 3	Commercial	3.1				
Level 4	Commercial	5.2				
Level 5	Apartments	3.5	7	1	0	13.5
Level 6-13	Apartments	3.1	4	6	1	28
Level 14-30	Apartments	3.1	5	4	2	27.5
Level 31-33	Apartments	3.1 (3.2 Lvl 33)	3	2	1	14.5
Totals		128.1m	133	123	45	789

Lift speeds: 2.5mps, 3mps & 4mps

No. of lifts: 4

Lift car size: 1275kg 17P, 1400w x 2000d platform

Carpark Arrivals: Arrivals distributed to each residential carpark level (3-6) evenly at 12.5% each.



2.1.3 Results

No. of Lifts	Lift Speed	Peak Period	Ground/Carpark Arrival Split	HC%	Average waiting time (s)	Waiting time for up to 90% of all users	Travel Time (s) (B6 to L33 run)
4	2.5	Evening 50%up 50%down	100/0	6	28.5	68	51.24
4	2.5	Evening 50%up 50%down	50/50	6	55.3	125	51.24
4	3	Evening 50%up 50%down	100/0	6	24.4	60	42.7
4	3	Evening 50%up 50%down	50/50	6	48.3	108	42.7
4	4	Evening 50%up 50%down	100/0	6	19.7	50	32.025
4	4	Evening 50%up 50%down	50/50	6	40.6	92	32.025

As shown above, four lifts at 2.5mps does not achieve an average waiting time within the Stantec recommendation when movements to carpark levels are assumed.

Four lifts at 3mps achieves an average waiting time within the Stantec recommendations.

Four lifts at 4mps achieves an average waiting time within the Stantec recommendations.

2.1.4 Lift Number Recommendation

Four lifts at 3mps will provide adequate service to the building for its mid-tier target market and is Stantec's minimum recommendation.

Four lifts at 4mps will provide excellent service to the building for its mid-tier target market.

2.1.5 Lift Headroom

Depending on the rated lift speed, the requirements of the lift headroom change and also above a certain speed a lift motor room is required.

If the lift speed is set at 2.5mps, the typical headroom will be circa 5m from the last level served and can be served by a machine room less lift (MRL).

If the lift speed is set at 3.0mps, the typical headroom will be circa 5-5.5m from the last level served and can be served by MRL equipment or a mini machine room (MMR). MMR equipment is effectively a machine room less lift motor that is extended into a motor room above the liftwell which will add an additional 2.5-3m motor room space above the liftwell. This



lift speed will also require pit access doors to be allowed at the level of the pit floor. This is due to the typical pit depths being greater than 2.5m for this lift speed.

If the lift speed is set at 4.0mps, the typical headroom will be circa 5.5-6m from the last level served but will require a lift machine room (LMR). Lifts at this speed generally come from the manufacturers top range of equipment which will have a CAPEX premium and will add an additional circa 3-3.5m motor room space above the liftwell. This speed will also require pit access doors like mentioned above.

2.2 Commercial Levels

2.2.1 PCA Grade A Compliance

It is Stantec's understanding that the building is to be designed to achieve the Grade A lift performance criteria outlined in the Property Council of Australia Guide to Office Buildings Guidelines. The current version of this document is the 2019 version.

To achieve a Grade A performance rating the lifts must meet the following performance criteria:

Parameter	Metric	Grade A
Car Capacity	Number of Persons	≥ 16
Lateral Vibration	Mg	≤ 20
Average Waiting Time	Seconds	Up peak ≤ 30 DCS Lunch ≤ 40
Handling Capacity	%	Up Peak ≥ 13 DCS Lunch ≥ 11
Population Density	Persons per m2 NLA	1 per 12m2

Up peak calculations are to assume 100% of users rising up the building in the morning uppeak from the entrance floors or for institutional or single tenant buildings a 85/10/5% up/down/interfloor distribution.

2.2.2 Office Level NLA

Based on the advised office GFA values, Stantec have assumed the following NLAs.

Level	GFA m2	NLA m2
Ground		N/A
Level 1	2180	1930
Level 2	2180	1930
Level 3	2180	1930
Level 4	2180	1930



2.2.3 Results

No. of Lifts	Lift Speed	Peak Period	Ground/Carpark Split	HC%	Average waiting time (s)	Waiting time for up to 90% of all users	Travel Time (s) – B2 to L4
3	1.6	Morning 85%up 10%down 5%inter	50/50	13	29.5	72	12.7

2.2.4 Commercial Lift Recommendation

Three lifts at 1.6mps achieves PCA Grade A.



Design with
community in mind

Level 6, Building B
207 Pacific Highway
St Leonards NSW 2065
Tel +61 2 8484 7000

For more information please visit
www.stantec.com

