

TRAFFIC ANALYSIS REPORT FOR

1-2 Murray Rose Avenue Sydney Olympic Park, Site 1
(Building 2) (Project: 1-2 Murray Rose Avenue Sydney
Olympic Park)



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Type: Residential

Status: Prospect

Version: Report 1

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1. SUMMARY

People flow in 1-2 Murray Rose Avenue Sydney Olympic Park, Site 1 (Building 2) is analyzed. The building has 12 floors and the travel height is 34.4 meters. The assumed population is 249 persons.

BUILDING TYPE: **Residential**

1.1. ELEVATOR ANALYSIS

DESIGN CRITERIA		
	UP-PEAK	TWO-WAY
Target design criteria	Good	Good
Average car load factor no more than	80%	80%
Average waiting time	40 s	40 s
Average time to destination	120 s	120 s
Interval	80 s	80 s
Nominal travel time	32 s	32 s
Peak passenger demand	7.5 % / 5 min	7.5 % / 5 min

SIMULATION RESULTS

ELEVATOR GROUP: 2 x 16 Pas @ 1.75 m/s GROUP CONTROL: FULL COLLECTIVE CONTROL

No of Elevators 2 | Floors/Stops -3 - 8 / 11 | Load(person) 16 | Speed (m/s) 1.75 | NTT (s) 19.7 | Population 249

TRAFFIC TYPE	DEMAND (% / 5 min)	DEMAND (persons / 5 min)	CLF (% of rated load)	AWT (s)	% of long waits	ATTD (s)	% of long journeys	MEETS THE CRITERIA
Up-peak	7.5	19	11	11	0	38	0	Yes
Two-way	7.5	19	10	15	1	39	0	Yes

DISCLAIMER

The results of the report are valid exploring theoretical vertical-traffic planning scenarios which involve KONE products, services, and people flow planning tools. The results of the report are sensitive to the parameter values used and data which is used as input, and are applicable only with the input values shown in the report. Therefore, results should not be interpreted as any kind of representation or warranty of the performance of any actual elevator installation. KONE shall in no event be liable for any damage caused by or incurred in connection with the use of the results. The user shall have no right to make copies of, or reproduce, disassemble, decompile, reverse engineer or modify the results of the report or disclose it to any third party.

2. BUILDING DATA

Assumed population is 249 persons

Floor	Comment	Height (m)	Travel (m)	Population	Entry %
8			34.4	0	0
7		3.1	31.3	31	0
6		3.1	28.2	31	0
5		3.1	25.1	32	0
4		3.1	22	32	0
3		3.1	18.9	32	0
2		3.1	15.8	32	0
1		3.1	12.7	24	0
0		3.1	9.6	21	85
-1		3.8	5.8	14	5
-2		2.9	2.9	0	5
-3		2.9	0	0	5

3. ELEVATORS

3.1. ELEVATOR PARAMETERS

ELEVATOR GROUP PARAMETERS	
Number of elevators in group	2
Rated speed	1.75 m/s
Acceleration	0.5 m/s ²
Jerk	0.8 m/s ³
Rated passenger capacity	16 persons

DOOR PARAMETERS	
Type	Low duty
Opening	Center
Width	1000 mm
Closing time	3.8 s
Opening time	2 s
Transfer time per passenger	2.1 s
Photocell delay	0.9 s
Start delay	0.7 s

ADVANCE DOOR OPENING	
Distance	0.15 m
Speed	0.3 m/s

3.2. SPEED SELECTION

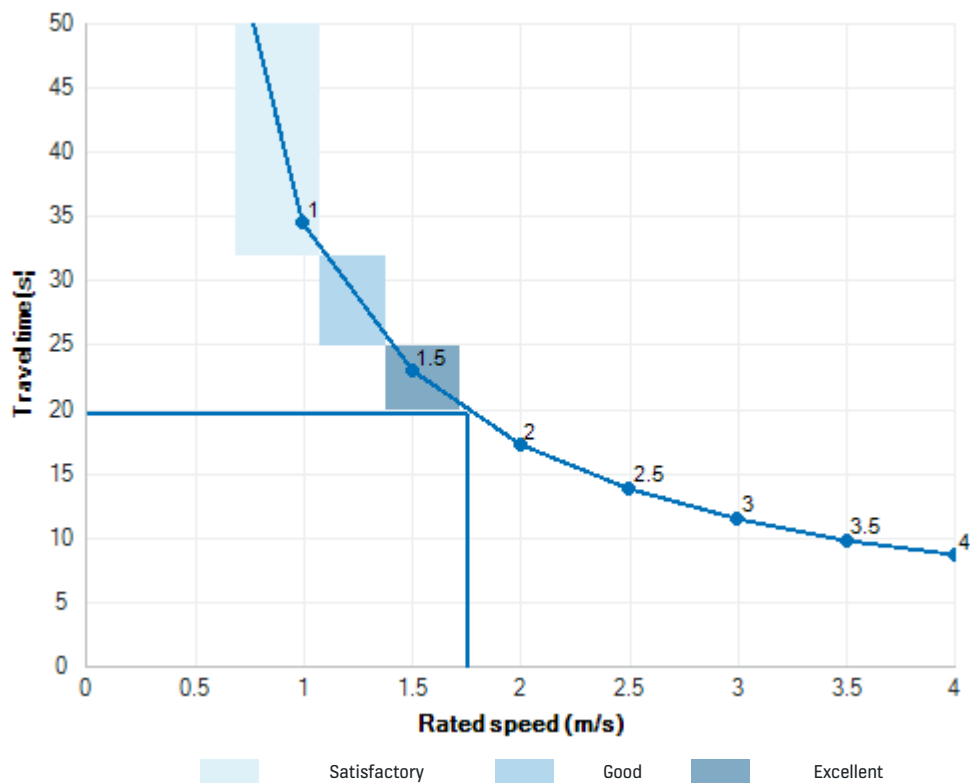
RECOMMENDED SPEEDS	
Satisfactory	0.7 - 1.1 m/s
Good	1.1 - 1.4 m/s
Excellent	1.4 - 1.7 m/s

RATED SPEED CLASSIFICATION	
Rated speed	1.75 m/s
Travel height	34.4 m
Served floors	-3 - 8
Nominal travel time	19.7 s
Minimum flight distance where full speed is reached	7.22 m

NOMINAL TRAVEL TIME GRAPH - FULL COLLECTIVE CONTROL

Nominal travel time graph for 2 x 16 Pas @ 1.75 m/s

NTT = 19.7 s | Flight time = 23.78 s | $v = 1.75 \text{ m/s}$ | $a = 0.5 \text{ m/s}^2$ | $j = 0.8 \text{ m/s}^3$ | Total travel = 34.4 m



3.3. ELEVATOR PERFORMANCE

DOOR-TO-DOOR TIME FOR TYPICAL FLOOR HEIGHT

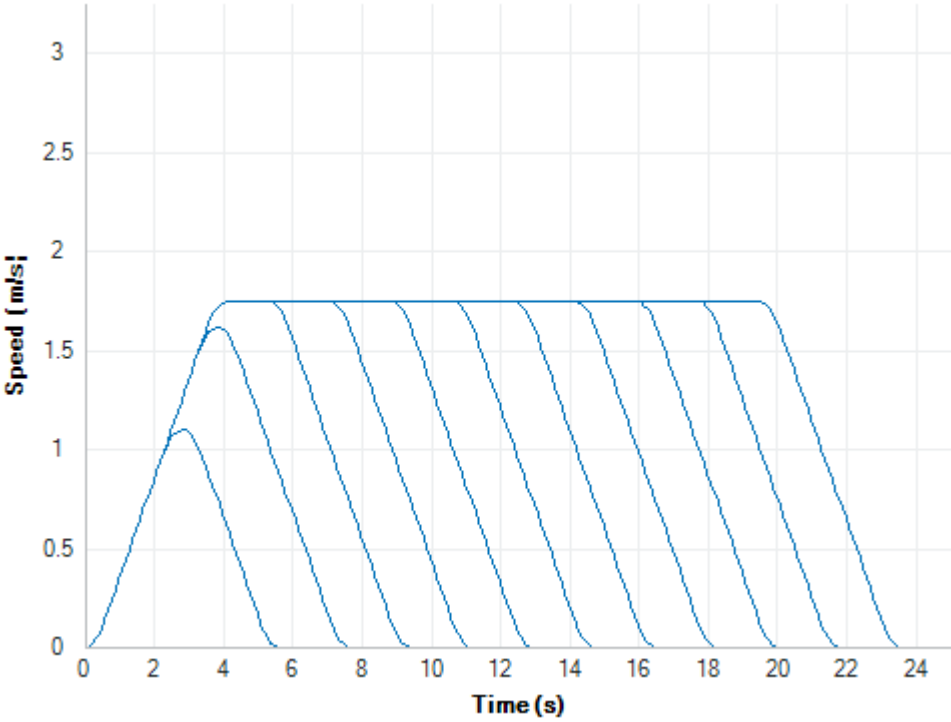
Elevator Group Name: 2 x 16 Pas @ 1.75 m/s

Run length(floors)	Top speed (m/s)	Top acceleration (m/s) ²	Brake to brake time (s)	Door closed to brake closed (s)	Door closed to beginning of door opening (s)	Door to door performance time (s)
1	1.1	0.5	5.64	6.34	5.43	11.23
2	1.61	0.5	7.7	8.4	7.48	13.28
3	1.75	0.5	9.44	10.14	9.23	15.03
4	1.75	0.5	11.21	11.91	11	16.8
5	1.75	0.5	12.98	13.68	12.77	18.57

6	1.75	0.5	14.75	15.45	14.54	20.34
7	1.75	0.5	16.52	17.22	16.31	22.11
8	1.75	0.5	18.3	19	18.08	23.88
9	1.75	0.5	20.07	20.77	19.86	25.66
10	1.75	0.5	21.84	22.54	21.63	27.43
11	1.75	0.5	23.61	24.31	23.4	29.2

THEORETICAL FLIGHT TIME CURVE

Typical floor height = 3.1 m | Rated speed = 1.75 m/s | Acceleration = 0.5 m/s² | Jerk = 0.8 m/s²



3.4. ELEVATOR CALCULATION RESULTS

OVERALL CLASSIFICATION	
Target design criteria	KONE - Good
Overall performance	Excellent

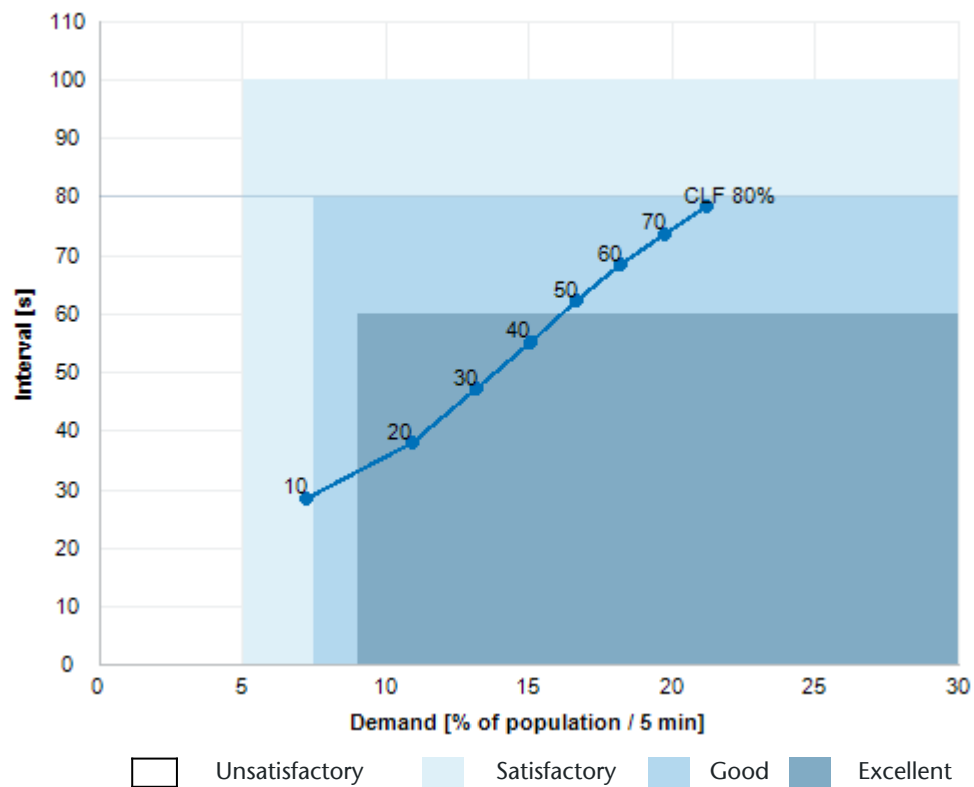
UP-PEAK RESULTS	
Car Load Factor (CLF)	80% (12.8 persons)
Handling Capacity (HC5)	52.8 persons / 5 min
Relative Handling Capacity (%HC5)	21.2 % / 5 min Excellent
Average Round Trip Time	156.5 s
Average Interval	78.3 s - Good

Note: Handling capacity, interval and round trip time are only for Full collective control.

PERFORMANCE GRAPH - FULL COLLECTIVE CONTROL

Performance Graph

Total population 249 (persons), | 2 elevators, | 16 (persons), | 1.75 m/s

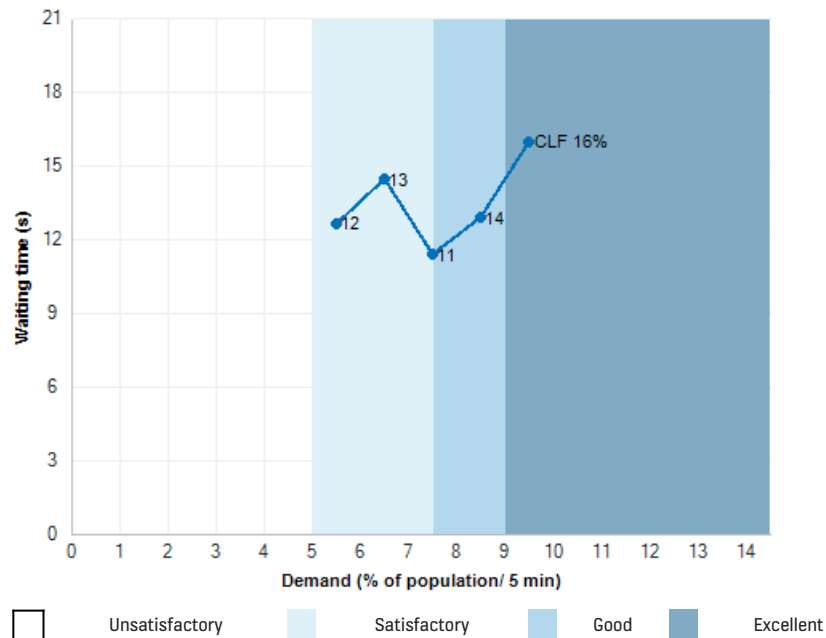


3.5. SIMULATION RESULTS

Simulation settings		
NAME	UP-PEAK	TWO-WAY
Simulation time (h)	2	2
Traffic components (incoming – outgoing - interfloor)	100-0-0	50-50-0
Peak passenger demand (% of pop./ 5 min)	7.5	7.5

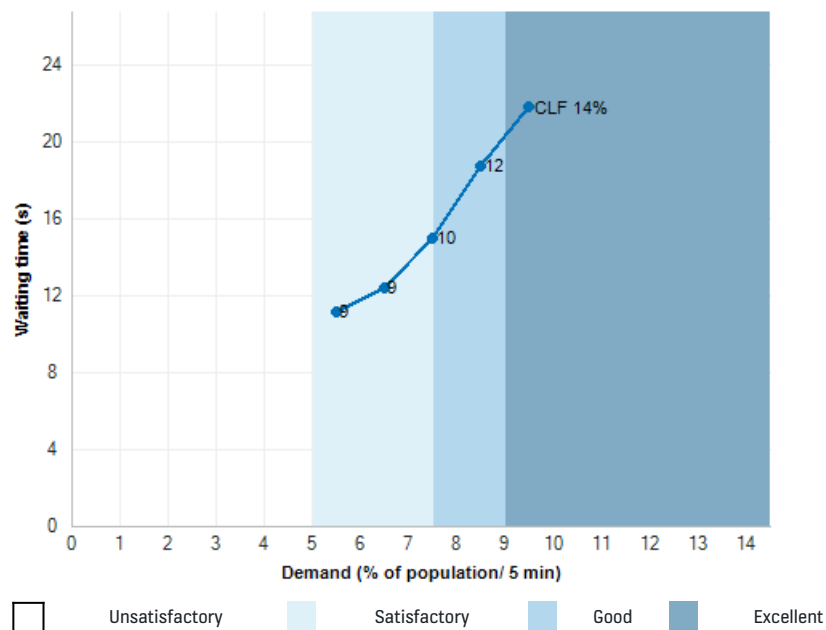
UP-PEAK WAITING TIMES

2 x 16 Pas @ 1.75 m/s



TWO-WAY TRAFFIC WAITING TIME

2 x 16 Pas @ 1.75 m/s



Average waiting times

2 x 16 Pas @ 1.75 m/s			2 x 16 Pas @ 1.75 m/s		
DEMAND	DEMAND	UP-PEAK	DEMAND	DEMAND	Two-way
[% / 5 min]	persons/5 min	AWT(s)	[% / 5 min]	persons/5 min	AWT(s)
5.5	14	12.67	5.5	14	11.15
6.5	16	14.46	6.5	16	12.38
7.5	19	11.39	7.5	19	14.96
8.5	21	12.9	8.5	21	18.73

9.5

24

15.98

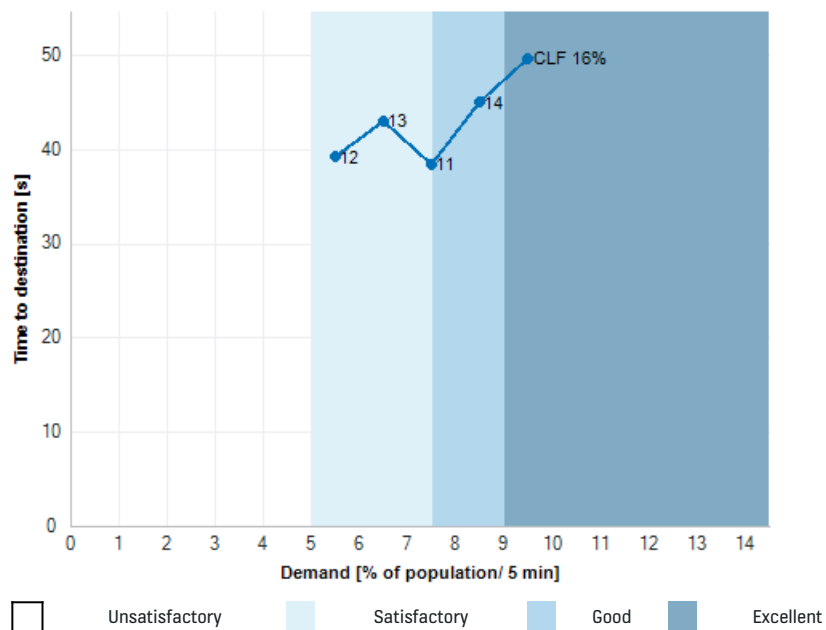
9.5

24

21.74

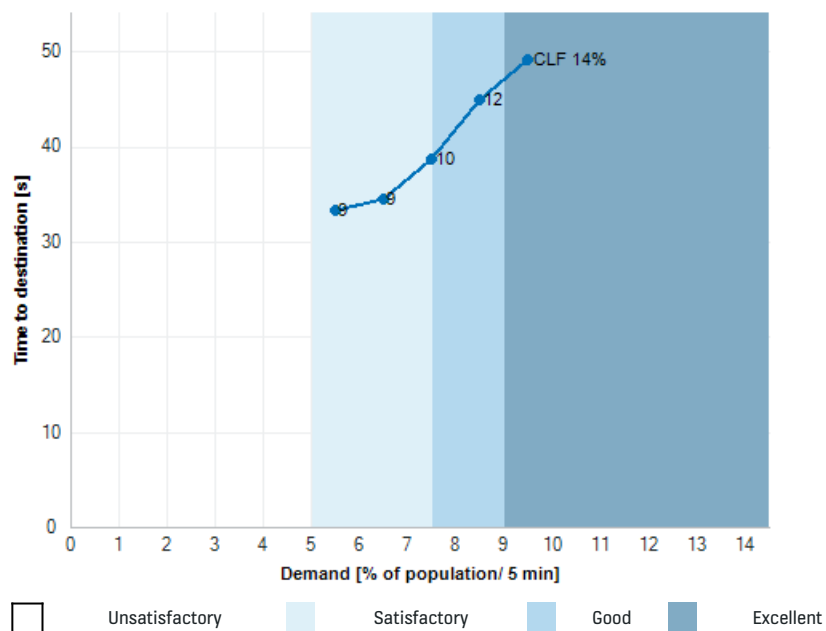
UP-PEAK TIME TO DESTINATION

2 x 16 Pas @ 1.75 m/s



TWO-WAY TRAFFIC TIME TO DESTINATION

2 x 16 Pas @ 1.75 m/s



Average time to destination

2 x 16 Pas @ 1.75 m/s			2 x 16 Pas @ 1.75 m/s		
DEMAND	DEMAND	UP-PEAK	DEMAND	DEMAND	Two-way
[% / 5 min]	persons/5 min	ATTD[s]	[% / 5 min]	persons/5 min	ATTD[s]
5.5	14	39.13	5.5	14	33.29
6.5	16	42.92	6.5	16	34.53
7.5	19	38.37	7.5	19	38.69
8.5	21	44.88	8.5	21	44.95
9.5	24	49.58	9.5	24	49.1

4. TERMS

Handling Capacity (HC) is 80% of the theoretical Transportation Capacity considering randomness in passenger arrivals and saturation in queuing.

Transportation Capacity (TC) is the theoretical number of persons per hour the system can transport.

Car Load Factor (CLF) is the maximum load in percent of nominal load reached during elevator round trip

Utilization Factor (UF) is the actual demand in percent of transportation capacity

Level of Service (LOS) shows the pedestrian space around, classified to A-F. Level A is spacious, level F is very tight.

Interval shows how often elevators leave the lobby during up-peak.

Nominal Travel Time (NTT) is obtained by dividing the travel height by the elevator rated speed

Average Waiting Time (AWT) is the time from when a passenger either registers a landing call, or joins a queue, until the responding elevator begins to open its doors at the boarding floor

Average Time to Destination (ATTD) is the time from when a passenger either registers a landing call or joins a queue until the passenger alights at the destination floor

Percentage of long waits is the proportion of passengers whose waiting time exceeds 60 seconds.

Percentage of long journeys is the proportion of passengers whose Time to destination exceeds 120 seconds.

Average Queue Length (AQL) shows the line of people with constant traffic.

Full Collective (FC) control with up and down call buttons at landings and elevator serves the landing calls according to the running direction

Destination Control System (DCS) with Destination Operation Panels at the landings and people with the same destination calls are allocated in the same cars

Destination Operation Panel (DOP) is a keypad at a landing where passenger can directly give the destination floor call to the elevator group.

Brake to brake time begins when the elevator car starts to move and ends when the elevator car has stopped after the run.

Door closed to brake closed begins when the door is closed and ends when the elevator car has stopped after the run.

Door closed to beginning of door opening begins when the door is closed and ends when the door starts to open near the end of the run before the car has stopped.

Door to door performance time begins when the door starts to close and ends when the door is 800 mm open after the run.