File Note

ARUP

13 Fitzroy Street
London
W1T 4BQ
United Kingdom
www.arup.com

t +44 20 7636 1531
e: marcus.bennett@arup.com

Project title	Castlewood House (77-91 New Oxford Street)	Job number	270330-00
cc	Chloe Staddon, Gerald Eve Andy Cook, CBRE	File reference	Stage 4_TN01
Prepared by	Marcus Bennett	Date	6 July 2020
Subject	**Castlewood House – Review of cycle access to basement level**		

This note has been prepared to summarise the proposed changes to the access arrangements for the basement level cycle parking associated with the Castlewood House development, located at 77-91 New Oxford Street, WC1A.

Background

Camden planning permission no. 2017/0618/P for the Castlewood House development includes a planning condition to provide a minimum of 234 long-stay cycle parking spaces (Condition no. 22). The endorsed planning drawings indicate the provision of most of these spaces at the first basement level, with access proposed via a dedicated cycle lift which in turn was accessed internally via an arcade connecting Bucknall Street with New Oxford Street. Stairs were also proposed to the basement level, access directly from Bucknall Street.

As part of a number of Stage 4 non-material amendments (NMA), a design decision was made to remove the dedicated cycle lift, combine lift access to the basement with the adjacent goods lift, and enhance the basement access directly from Bucknall Street including removal of an internal wall and providing wheel gullies on both sides of the stairs.

It is noted that the Stage 4 NMA drawings indicate a total of 236 long-stay cycle parking spaces, all of which are located within the first basement level. Dedicated end-of-trip facilities are also provided within the basement level[1].

Discussion

For large long-stay cycle parking facilities such as that proposed at Castlewood House, the purpose of providing lift access for cyclists is not intended to accommodate the sole means of access, but rather to provide an alternate means of access that is step-free to and from street level to those who require it. This may include those with non-standard or adapted bicycles.

[1] For further reference refer to the Interim Travel Plan for Castlewood House, submitted and discharged in accordance with clause 4.21.5 of the S106.

This is recognised within Camden's Planning Guidance on Transport (March 2019), which states:

"Lifts should measure a minimum of 2m x 2m, although where many users are likely to arrive at a similar time, for example at a large office development, lifts will not be an acceptable option, as convenient access would be compromised."

An assessment of the originally proposed cycle lift has been undertaken by GDM, as a demonstration of this point. This assessment (provided at Appendix A) assumes a 'worst-case' scenario where all cyclists would attempt to utilise the lift to access the basement during the morning peak arrival period (around 8:30am to 9:30am). Noting that the proposed cycle lift would be capable of accommodating one person (including bicycle) at a time, the capacity assessment indicates that an average wait time of some 20 minutes could be anticipated.

Furthermore, based on the lift operating times specified in the GDM assessment, each lift 'cycle' (the trip from button push at ground floor, to basement level, and back to ground floor) would take approximately 25-30 seconds, equating to a service level in the order of 120 cyclists per hour. This level of service is clearly not suitable for all cyclists, but would be adequate for intermittent use by the proportion of cyclists who require step-free access to and from street level.

While this dedicated cycle lift has now been removed as part of the Stage 4 NMA, the same function is proposed to be accommodated via the goods lift. The goods lift is larger in size than the previous cycle lift[2] and is capable of accommodating up to two persons (including bicycles) at any one time. However, the lift's available capacity for cyclists is to be shared with its service function.

Based on an assessment of the servicing requirements for the development, it is estimated that the goods lift will be in use for deliveries for an average of 10.5 minutes during the peak hour, with a maximum of up to 18 minutes during the peak hour. This is based on the following:

- During the servicing peak hour of 7:00am-8:00am, four 6m vehicles and three 8m vehicles will utilise the Castlewood House service yard
- On average, these vehicles will each deliver three roll cages for a total of 21 (the maximum assumes five roll cages, or a total of 33)
- The goods lift can hold three cages at a time, and during the peak hour would be distributed as follows:
    a. Three deliveries to the office use (distributed over ten floors, assuming equal distribution)
    b. One delivery to the basement retail unit
    c. Three deliveries to the ground floor retail units (does not need the goods lift)
- The lift has to travel 3.9m to each floor, with a 20 second load/unload time per cage.

This estimate suggests that during its busiest period, the goods lift will be available to be used for cyclist access for up to 42 minutes during an hour. Adopting the same 30-second 'cycle' from ground to basement level, and an average of 1.5 cyclists per trip, this equates to a capacity of some 125 cyclists (with bicycles) per hour.

[2] The proposed cycle lift had an internal dimension of 1800 x 2400D (17-person lift), whereas the goods lift has an internal dimension of 2700W x 3300D (33-person lift).

It is noted that this estimate is based on the busiest servicing period of the day (7:00am-8:00am), whereas demand for the cycle lift function could be expected to peak on leaving the premises (e.g. during the afternoon), outside of busy servicing periods.

Finally, it is noted that adjustments to the basement level which included removal of the cycle lift has resulted in improved access for cyclists from the Bucknall Street stairs, including the provision of double doors and wider corridors along the access route.

Summary

Based on the above, the following conclusions are made:

- The dedicated cycle lift originally proposed as part of endorsed drawings for Castlewood House has been removed as part of the Stage 4 NMA, with the lift function to be accommodated via the goods lift. Stair access from Bucknall Street into the basement level has also been enhanced to better cater for cyclists.
- As with the dedicated cycle lift, the goods lift is intended to provide step-free access to and from the basement storage facility for those who require it, and is not intended to provide the sole means of access. This is reflected in Camden's planning guidance.
- Based on an estimated peak usage for deliveries, there is expected to be sufficient capacity within the goods lift over an hour to accommodate a similar level of service for cyclists, as was provided by the dedicated cycle lift previously proposed.

DOCUMENT CHECKING

	Prepared by	Checked by	Approved by
Name	Marcus Bennett	Marcus Bennett	Simon Binks
Signature	-		

File Note

270330-00 6 July 2020

Appendix A

GDM File Note N1 - Cyclist Lift Provision

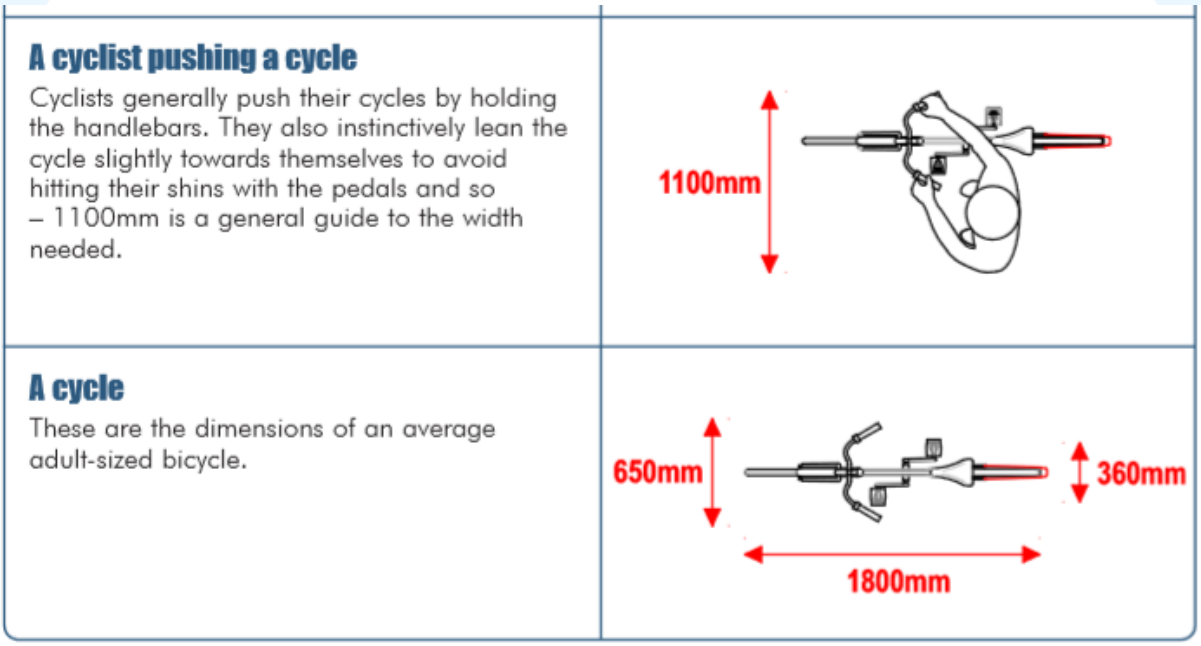
Revision	Date	Description	Prepared By	Checked By
N1	18.06.2020	**Cyclist Lift Provision**	TM	TM

This file note has been produced to confirm the cyclist lift provision for the Castlewood house building.

Original Cyclist Lift Provision

The building was original provided with a cyclist lift, to allow cyclists to enter the building at ground floor level, from either New Oxford street or Bucknall street and utilise the lift to take them down to the cycle store level at B1 level.

This lift provision was a 17-person (1275KG) electric traction lift, whose internal dimensions, would allow 1No cyclist to travel in the lift at a time. This based on a cyclist occupying 1.99m², (1.100mW x 1.800mD) see images below.



To gain a better understanding of the potential time, people would take to travel in the cycle lift from ground floor to basement level B1. A lift cycle calculation was undertaken, to give an indication of the journey time for cyclists.

We would note that the lift performance for buildings is typically, based on data, taken from the Chartered Institute of Building Services Engineers (CIBSE) Document D - Transportation Systems in Buildings. However, it should be noted that cycle lifts are not covered within this document and we are not aware of any design criteria for cyclist lift design / provision, which is provided for, say, passenger lifts within an office building.

The lift calculation was carried out using, the lift simulation software, Elevate, with results within the appendix. The software, calculations, are based the cyclist population, being transported from ground to basement level, B1 and returning to ground floor, within a five-minute interval. The calculations are based on the basement cycle population, having an 20% absenteeism.

The result of the lift calculation (page 4 of 5), found that people, would be waiting an average of 1200seconds (20minutes), see appendix.

Revised Cyclist Lift Provision

A new extensive review was carried out of, not only the cyclist lift provision, but also, the cyclist experience from when they enter the building, to the basement cyclist store area and the shower / toilet provision.

It was decided that a significant upgrade would be required for the lift to allow cyclist to be taken from the ground to basement level B1.

This resulted in a solution and strategy to utilise the 33-person (2500KG) good lift, to be dedicated to cyclist's usage, during cyclist arrival and leaving periods, of time. This significantly, enhanced lift size would allow, space to allow 2No cyclists, to travel, (comfortably) within the lift. To quantify, this lift size. We would note that the internal lift size car of a hospital bed lift is 1800W x 2700D, whereas the cyclist (good lift) internal lift car size area is 2700W x 3300D.

In addition to the above, to provide additional flexibility to the cyclist, a define cyclist route was provided, utilising cycle wheel ramps, within the staircase, from ground floor to basement B1 level, from Bucknall street.

Conclusion

The proposed cyclist lift provision has been enhanced by the provision and utilisation of an enhance goods / cyclist lift, accessed from ground floor level from both New Oxford and Bucknall street. This strategy evolved from a desire by the client to enhance the cyclist travel experience, which has also resulted in an alternative access to the cyclist store, via cycle wheel ramp from ground floor down to basement level.

Therefore, we would conclude, that above provisions, allow cyclist who travel to and from the cyclist store area of the building a good journey. Indeed, the facilities, will provide a welcome and relaxing, end to the cyclist's journey.

Appendix

ELEVATE

Elevate Version 8.24

ANALYSIS DATA

Analysis Type	Simulation
Measurement system	Metric
Dispatcher Algorithm	Group Collective Traffic mode: Up peak 1
Time slice between simulation calculations (s)	0.10
No of time slices between screen updates	10
No of simulations to run for each configuration	10
Random number seed for passenger generator	1
Energy Model	Off

BUILDING DATA

Floor Name	Floor Level (m)	No of people	Area (m²)	Area/person	Entrance Floor
basement	0.00	300	-	-	No
ground	3.80	0	-	-	Yes

Absenteeism (%)	20.00

ELEVATOR DATA

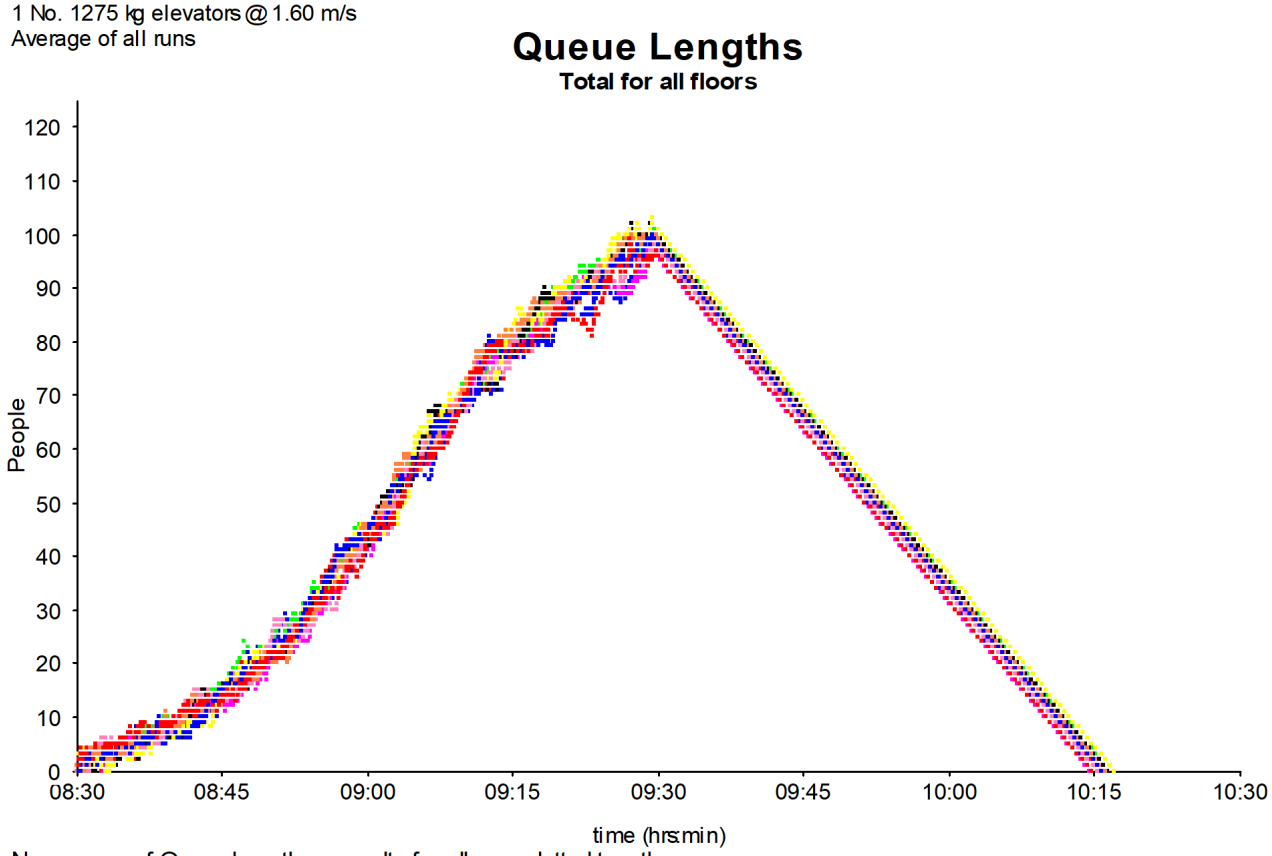
No of Elevators	1
Type	Single Deck
Capacity (kg)	1275
Car area (m²)	2.90
Door Pre-opening Time (s)	0.00
Door Open Time (s)	1.80
Door Close Time (s)	2.90
Door Dwell 1 (s)	3.00
Door Dwell 2 (s)	2.00
Speed (m/s)	1.60
Acceleration (m/s²)	0.70
Jerk (m/s³)	1.40
Start Delay (s)	0.50
Levelling Delay (s)	0.00
Home Floor	ground

PASSENGER DATA

Arrangement	Conventional for Single Deck elevators
Template	Peters Research (CIBSE) modern office up peak
Passenger Mass (kg)	75
Passenger Area (m²)	2.00
Loading Time (s)	1.20
Unloading Time (s)	1.20
Stair Factor (%)	0.00
Capacity Factor by Mass (%)	80.00
Capacity Factor by Area (%)	100.00

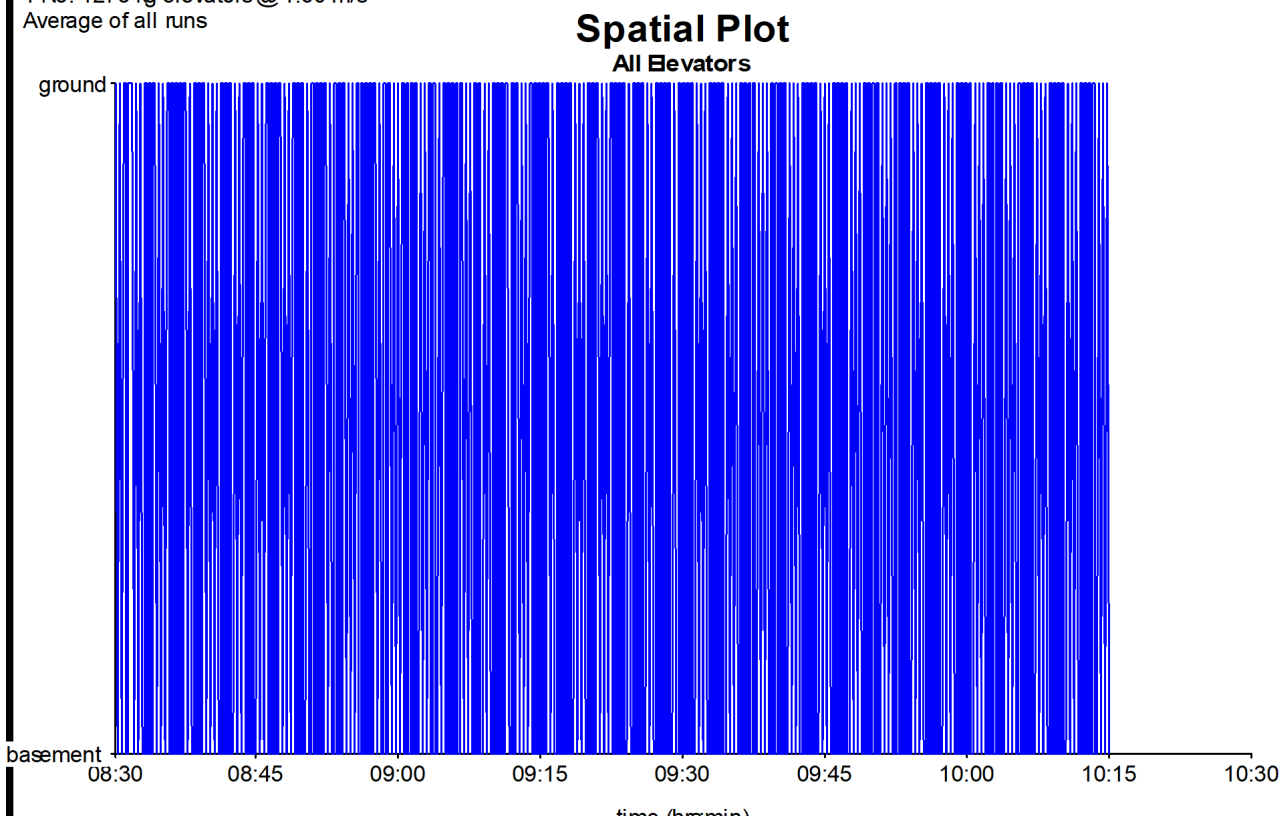
Floor Name	Entrance Bias
ground	100.00

1 No. 1275 kg elevators @ 1.60 m/s
Average of all runs



No average of Queue Length so results for all runs plotted together

1 No. 1275 kg elevators @ 1.60 m/s
Average of all runs

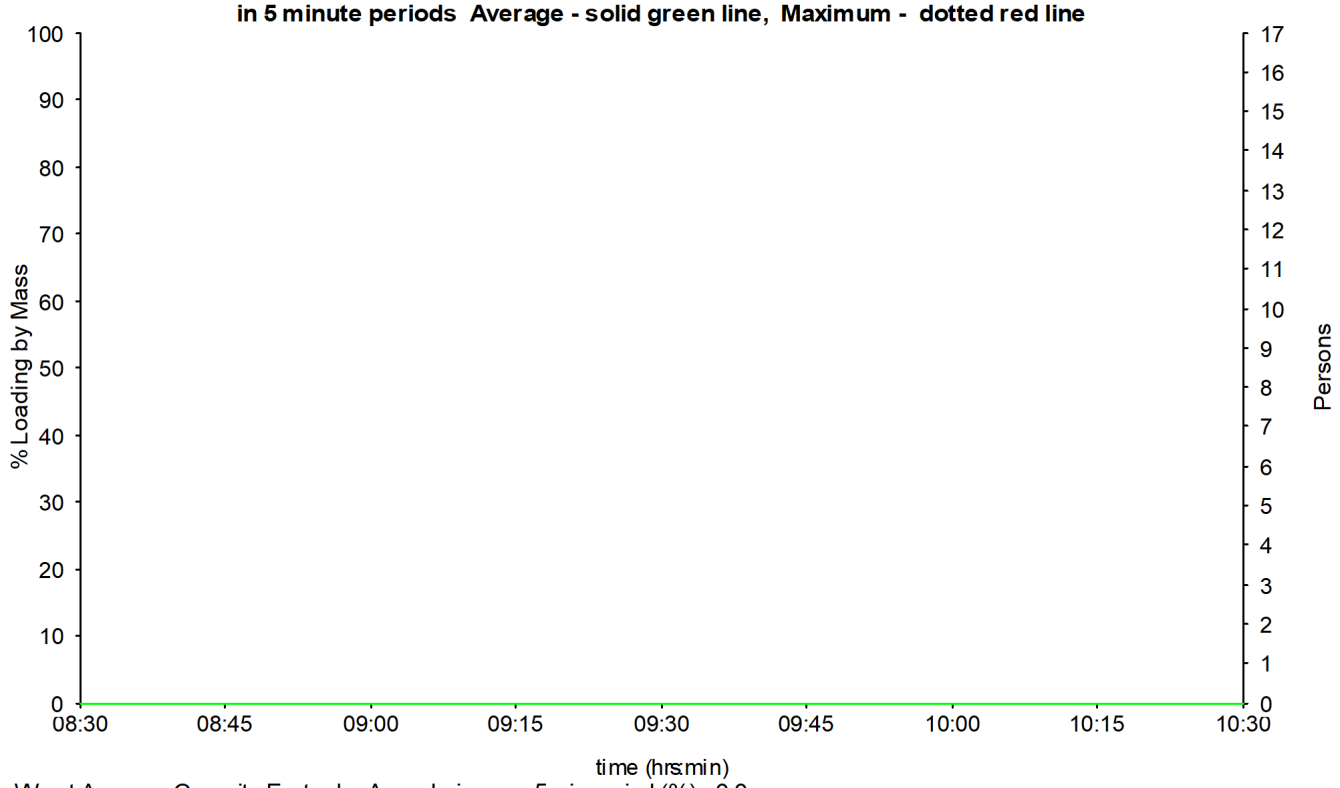


No average of Spatial Plots available, so using Run 1

1 No. 1275 kg elevators @ 1.60 m/s
Average of all runs

Car Loading on Departure from Home Floor

in 5 minute periods Average - solid green line, Maximum - dotted red line

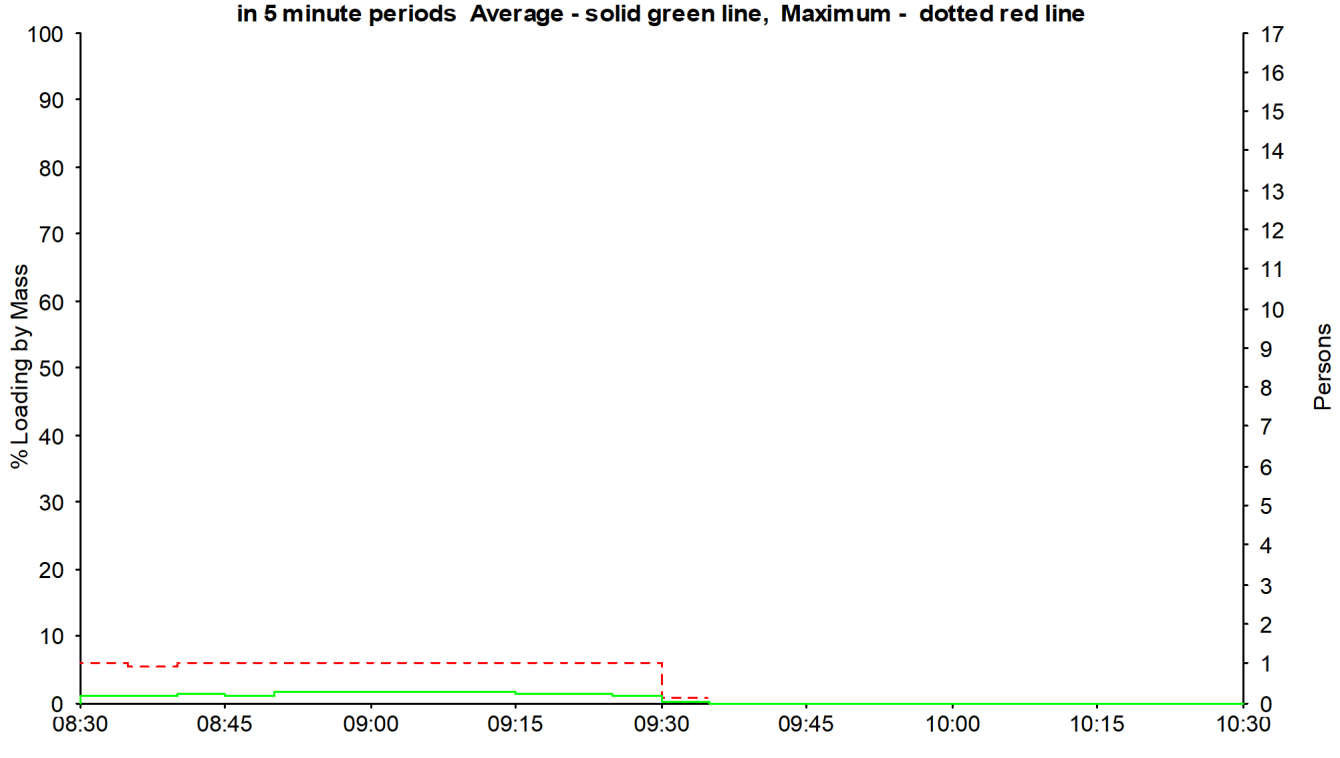


Worst Average Capacity Factor by Area during any 5 min period (%) 0.0

1 No. 1275 kg elevators @ 1.60 m/s
Average of all runs

Car Loading on Arrival at Home Floor

in 5 minute periods Average - solid green line, Maximum - dotted red line

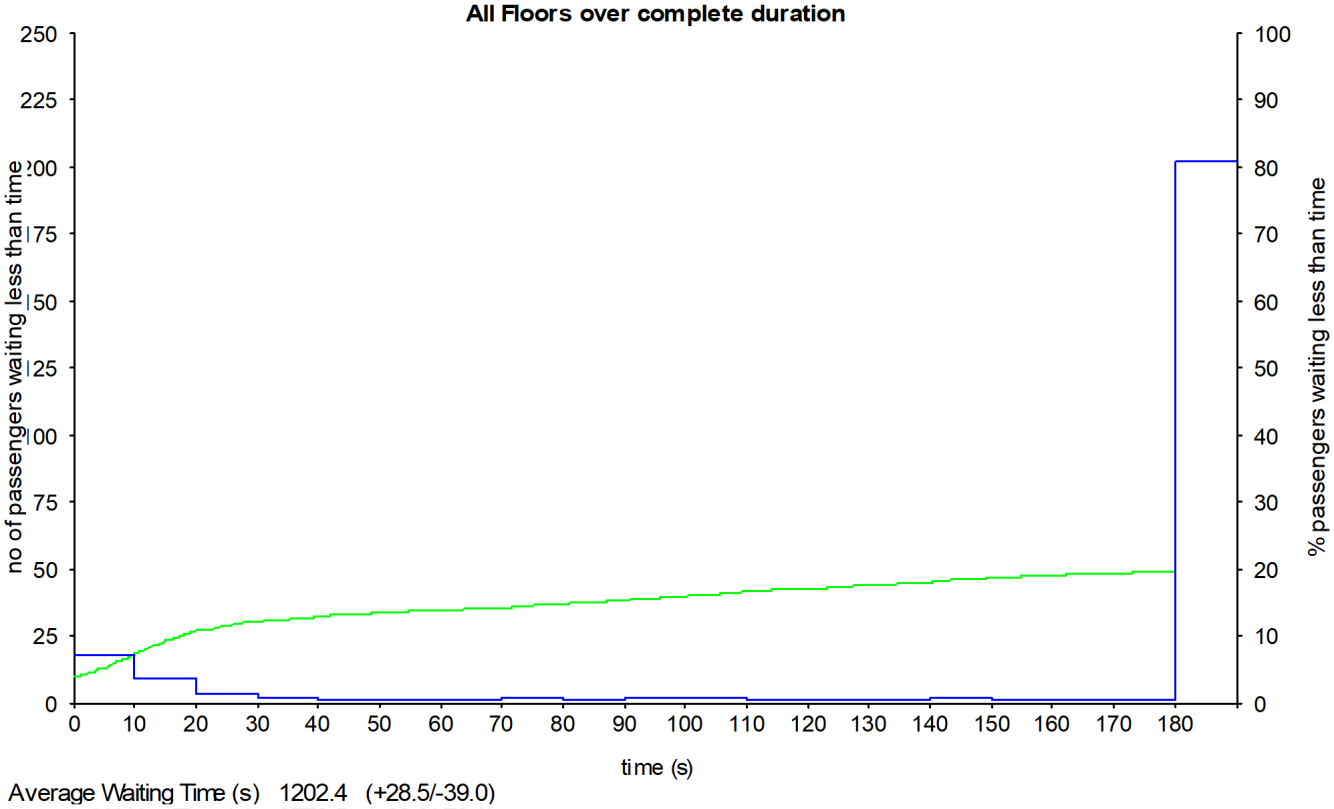


Worst Average Capacity Factor by Area during any 5 min period (%) 18.9

1 No. 1275 kg elevators @ 1.60 m/s
Average of all runs

Distribution of Passenger Waiting Times

All Floors over complete duration

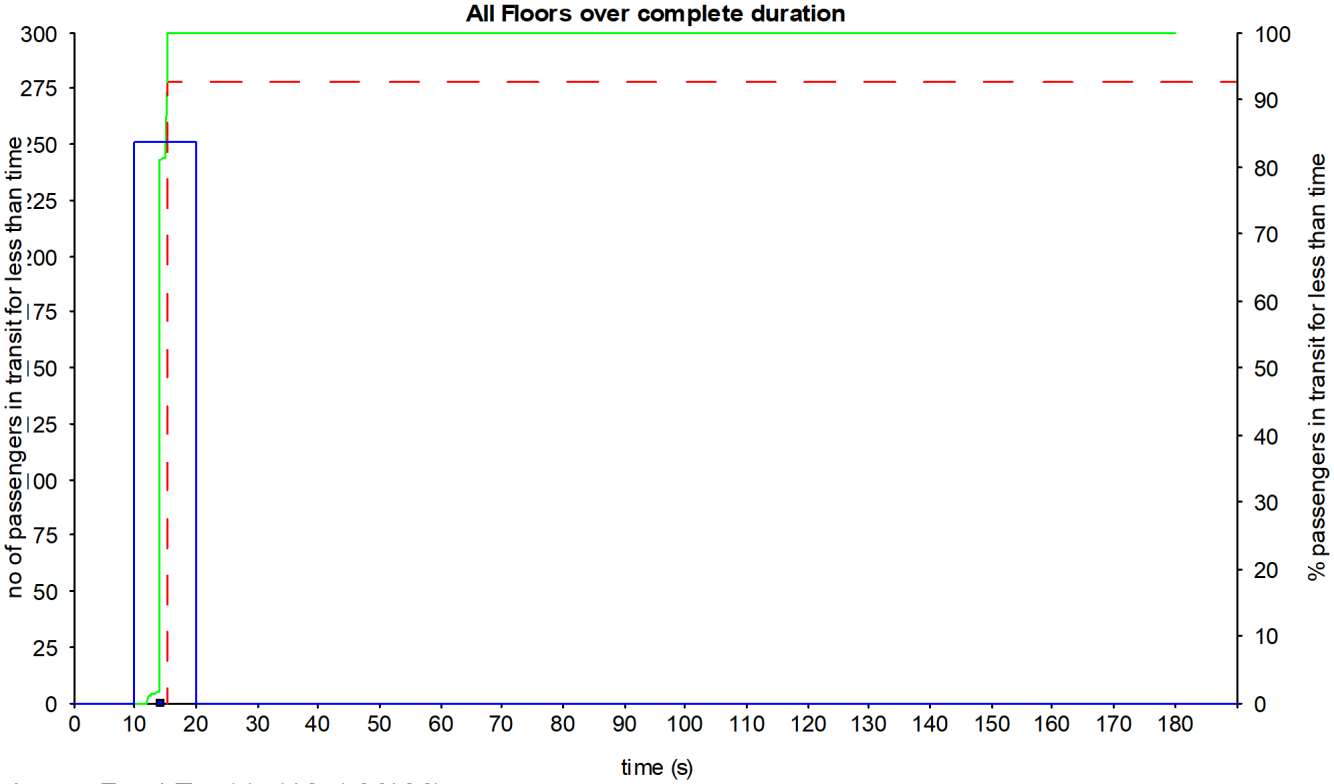


Average Waiting Time (s) 1202.4 (+28.5/-39.0)
Longest Waiting Time (s) 2772.5 (+83.9/-72.0)

1 No. 1275 kg elevators @ 1.60 m/s
Average of all runs

Distribution of Passenger Transit Times

All Floors over complete duration

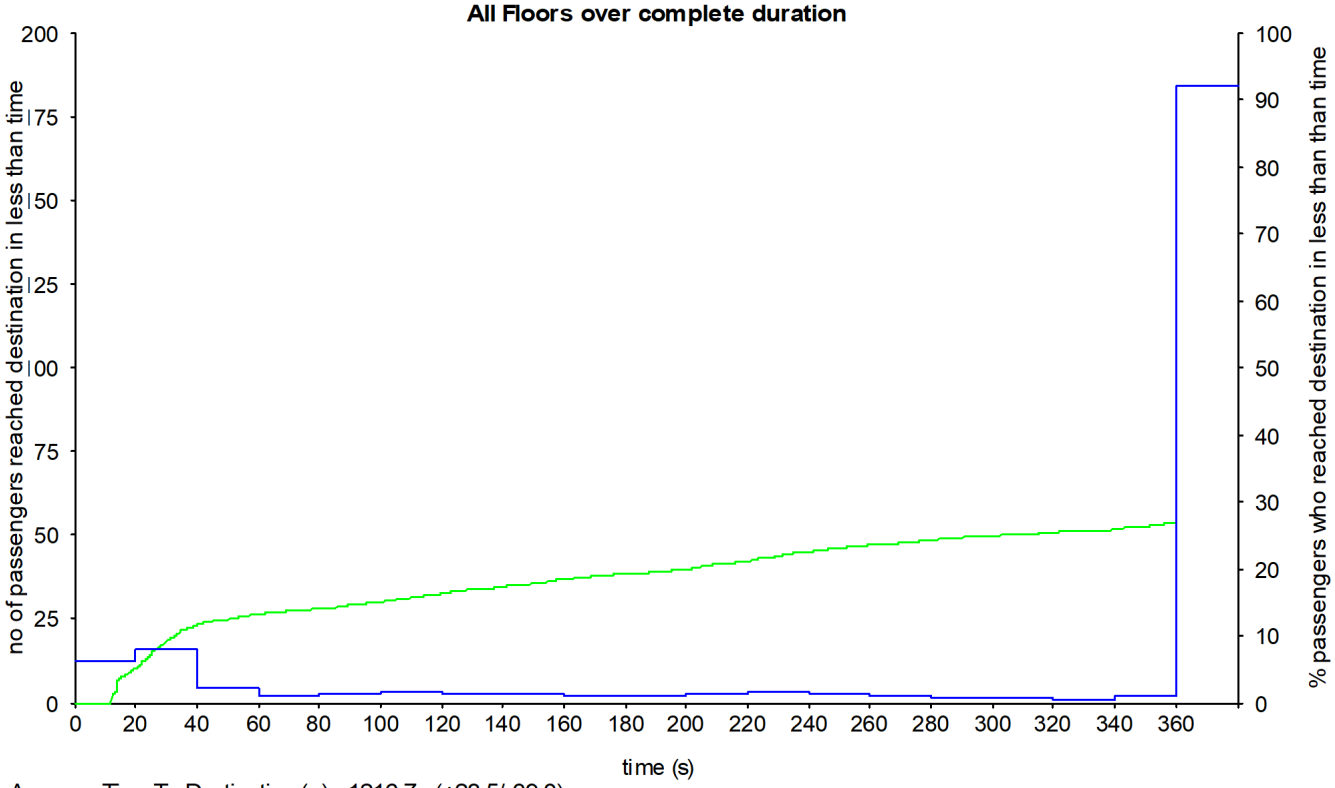


Average Transit Time (s) 14.2 (+0.0/-0.0)
Longest Transit Time (s) 15.3 (+0.0/-0.0)

1 No. 1275 kg elevators @ 1.60 m/s
Average of all runs

Distribution of Time to Destination

All Floors over complete duration



Average Time To Destination (s) 1216.7 (+28.5/-39.0)
Longest Time to Destination (s) 2786.5 (+83.9/-72.0)