

Procter & Gamble Ltd
P&G Reading Innovation Centre
Transport Assessment Addendum 2

Issue | 5 July 2017

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Job number 249765

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Contents

	Page
1 Introduction	1
2 Submitted car parking arrangements	2
2.1 TAA1 parking analysis	2
3 Further assessment of car parking needs	4
3.1 Parking data	4
3.2 Employee data	4
3.3 Analysis	5
4 Changes to submitted development	6
4.1 Changes to the land use	6
4.2 Changes to employee numbers	6
4.3 Changes to the car parking layout	7
5 Conclusions	8

Table 1: Maximum Car Parking Standards, Requirements and Proposed Uplift 2

Table 2: Submitted development land uses 6

Table 3: Revised development land uses 6

Appendices

Annex 1

Applicant's observed parking data and statistical analysis

Annex 2

Car Parking Layout

1 Introduction

Procter & Gamble (P&G – the Applicant) commissioned Arup to provide transport planning advice in support of a planning application for the proposed relocation of the P&G facilities from Egham, Surrey, to a new dedicated facility at its existing site in Reading.

The proposed development is located in the southern part of Reading, in an established industrial area, with a business park and residential areas near the site. The site of the proposed development forms a part of P&G's existing Reading site.

The proposals are for the development of a two-storey research and development facility. The facility will comprise laboratories, offices, storage warehousing, associated access, car parking and hard and soft landscaping works.

A planning application (reference: 162108) for the proposals was recommended for approval in February 2017. Arup prepared a Transport Assessment (TA) in support of the submitted development as well as a TA Addendum (TAA1) addressing comments from Reading Borough Council's highways officers. The submitted development included 541 car parking spaces including 31 visitor spaces.

This addendum to the Transport Assessment has been prepared to support amendments to the submitted development summarised below:

- A reduction in the floor spaces compared to the submitted development; and
- Removal of the 190 space multi-storey car park included in the submitted development.

The Applicant has undertaken further detailed analysis of its development requirements resulting in the above changes. The additional analysis included a review of the expected demand for car parking spaces drawing upon detailed data for the Egham and Reading sites.

The remainder of this addendum briefly summarises the details of the car parking provision for the submitted development and the additional analysis undertaken by the Applicant and the revised car parking proposals.

2 Submitted car parking arrangements

P&G undertook a parking survey of its on-site facilities in March 2016. On the day of the survey, out of the 260 employees working at the Reading site, 231 were present and the maximum occupancy of the car park was 183, which indicates a staff attendance rate of 88.9% (231/260) and a car mode share of 79.2% (183/231). The TA noted that the car mode share was broadly consistent with 2011 Census Travel to Work data for the local area.

With the proposed relocation of the 250 employees from Egham to the Reading site, applying the same staff attendance rate of 88.9%, it was predicted in the TA that, on average, 222 (88.9% × 250) relocated staff would be on site on any given day. Given the existing car mode share of 79.2%, the TA forecast that the 222 staff would require a maximum of 176 car parking spaces.

The TA noted that the car mode share of 79.2% indicated that not all existing staff drove to the site reflecting that active modes (walking and cycling) and public transport provided viable alternatives modes of travel, and that a proportion of staff relocating would be likely to use these modes as well.

The TA stated that 359 spaces (183 existing staff who drive and 176 transferring staff who drive) would be sufficient to cater for the existing and relocated staff and the 31 existing visitor spaces would be retained. The total spaces required to cater for the expected demand would therefore be 390. However, the proposal incorporated 541 spaces (including the 31 visitor spaces). The proposed provision ensured that the site could guarantee sufficient parking to avoid overspill on the local roads as this was a key concern raised by RBC during pre-application discussions.

Table 24 of the TA (reproduced as **Table 1** below) summarised the maximum number of spaces permitted under RBC's maximum parking standards for the uplift in floor space. An additional 191 car parking spaces could be provided for the additional floor space in the submitted development. The TA noted that the over provision addressed the need to ensure no overspill onto local roads would occur, bringing the total car parking provision to 541 spaces.

Table 1: Maximum Car Parking Standards, Requirements and Proposed Uplift

Land Use	Standard	Staff Parking Requirement	Proposed Staff Parking Uplift
B1(a) Office	One space per 50m ² GEA	96	-
B1(b) Research & High Tech	One space per 50m ² GEA	87	
B8 Storage & Distribution	One space per 150m ² GEA	8	
All Land Uses	-	191	230

2.1 TAA1 parking analysis

TAA1 addressed comments from RBC in relation to the trip generation assessment as well as the proposed access and parking arrangements. The

clarifications set out in TAA1 are summarised below. Text in italics are the comments from RBC's Highways Officers.

“During the pre-application consultations, it was agreed that a small number of parking spaces could be provided north of the bollards, located on the service road, however the submitted plan (Drawing 2096 P0) illustrates the access located north of the bollards is the exit for a parking area that accommodates 159 car parking spaces. This is an unacceptable amount of parking to be accessed from this point and could result in staff rat running through the site and the adjacent residential areas via Manor Farm Road. A revised access and parking layout is therefore required illustrating a reduced parking number that could be served from the northern access point. This could be achieved by segregating a number of the parking spaces.”

The bollards referred to in RBC's comments prevent through movements on the service road from which the site takes access and thus prevent the rat running referred to.

In response to the comments, the layout was revised to show the separation arrangements that would be implemented to limit the number of spaces that could be accessed from north of the bollards. The revised layout was shown on DHP Drawing 5504-2070-P/1. TAA1 also noted that the details of the access arrangements and limitations on staff access at this point would be developed through a Car Park Management Plan secured by planning condition.

In its comments on the planning application RBC also requested clarification on the number of car parking spaces provided as part of the expansion. The amended DHP Drawing 5504-3010-P/1 showed 380 spaces provided within the red line as part of the application and TAA1 clarified how this related to the total of 541 spaces presented in the TA. The clarification is reproduced below.

The relocation of the Egham facilities to the Reading site will result in the following alterations to the car parking provision at the Reading site:

- 161 employee spaces outside the red line remain;
- 150 existing spaces, including the 31 visitor spaces, within the red line are removed; and
- 380 new spaces, including 31 visitor spaces, within the red line are introduced.

The uplift in car parking spaces is therefore 230 bringing the total on the wider Site to 541, of which 380 are within the red line and shown on DHP Drawing 5504-3010-P/1.

3 Further assessment of car parking needs

The analysis undertaken by the Applicant, included as Annex 1 to this TAA, draws upon additional information not available at the time of production of the TA and TAA1. The additional data gathered is summarised below and presented in Annex 1.

3.1 Parking data

The analysis draws upon surveyed data of the car parking at the Egham and Reading facilities as summarised below.

Egham

The analysis uses car parking occupancy data collated by the security team over 74 days over October, November and December 2016 as well as January 2017. Excluding the 22nd and 23rd December data average total number of vehicles parked at the site was 243. The number of parked vehicles on Friday's is 30 vehicles lower (on average). Using only the Monday to Thursday data the average number of parked vehicles per day over the survey period was 249 (219 on Fridays). The standard deviation over the Monday to Thursday data was 27 vehicles which reflects the variable nature of working patterns and activity at the Egham facility.

Reading

The Reading site has controlled access to the car park and data were collated over an 11 day period during February and March 2017. The average total number of parked vehicles was 182 (consistent with the snap shot presented in the TA which identified 183 parked vehicles). The 11 day period was considered sufficient as the number of parked vehicles was consistently around this mark with a standard deviation of 6.5 vehicles. The nature of the working patterns at Reading, plant shifts and consistent core hours for the technology centre result in this more consistent pattern of car parking as can be seen from the visualisation of the data presented in Annex 1.

3.2 Employee data

Employee attendance data was not available for all of the surveyed days. For the Reading site six days' worth of data (within the 11 day period when parked vehicle data was collected) was available. Given the consistent pattern of parking at the Reading site the six days data (employee attendance and car park occupancy) is used in the analysis. This showed an employee to vehicles ratio of 0.75 which is broadly consistent with both the snapshot of the Reading site presented in the TA (79.2%) and the 2011 Census data presented in the TA (73.4% car driver and 2.1 motorcycle, scooter or moped).

For Egham the data available shows that on an average day 340 individuals are on site (out of a total of 509) at an attendance rate of 67% and an employee to vehicle ratio of 71.5%. This is lower than the assumption in the TA which used the snapshot data for Reading to estimate the likely car mode share for the staff transferring. The nature of the working patterns create more variability in the attendance rate and demand for car parking at the Egham site. The analysis undertaken by the Applicant draws upon the larger data set for Egham. The employee to car ratio has also been confirmed by the management team at the Egham site as c. 30% of employees there use the shuttle bus (railway station to the site and back) provided by the Applicant.

Of the employees based at Egham, c. 250 will relocate to the Reading facility (c. 49% of the total employees based at Egham).

3.3 Analysis

The Applicant's analysis uses the statistical package JMP (known as 'Jump') – an industry standard statistical package used by the Applicant in its business as it is approved by the US Federal Drug Agency) to assess a series of scenarios as summarised in Annex 1.

The analysis undertaken in JMP uses the averages and standard deviations to produce a distribution of the number of parked vehicles. Fitting a distribution (which is visualised in the data presented in Annex 1) to the raw data provides a worst-case dataset (the distribution – broadly a normal distribution - over states the parking demand compared to the average identified in the raw data.

JMP was used to run 100,000 scenarios modelling the number of parked vehicles at the redeveloped Reading site and the probability of the demand for car parking exceeding 356 spaces. The number of spaces assessed is based on 281 spaces provided on site and an offsite provision of 75 spaces to be leased by the Applicant at a nearby site.

The analysis demonstrates that in the worst case assessment, the 356 spaces is sufficient to cater for the expected demand and the chance of the demand exceeding 356 spaces is no greater than a one in 7.6 year event. The next section of the addendum sets out the revised onsite and offsite car parking provision and how the rare need for more parking spaces would be addressed.

4 Changes to submitted development

4.1 Changes to the land use

The submitted development included the land uses set out in Table 2 and the revised land uses are set out in Table 3. The revised land uses are lower than those in the submitted development are.

Table 2: Submitted development land uses

Building	Land Use	GIA (sqm)	Estimated GEA (sqm) ¹
Refurbished Gillette Building	B1(a) Office	1,640	1,726
	Other (Plant)	609	641
Rear Extension (New Build)	B1(a) Office	566	596
	B1(b) Research & High Tech	1,766	1,859
	Other (lifts, stairs, WCs, plant)	3,484	3,667
Shelter (New Build)	B1(b) Research & High Tech	240	253
	B8 Storage & Distribution	570	600
	Other (plant)	1,002	1,055

Table 3: Revised development land uses

Land Use	Estimated GEA (sqm)
B1(a) Office (refurbishment – Gillette Building)	1,720
Other (Plant)	66
B1(a) Office (new build)	380
B1(b) Research & High Tech	2125
Other (lifts, stairs, WCs, plant)	1583
B8 Storage & Distribution	230

4.2 Changes to employee numbers

The submitted development allowed c. 250 staff from the Egham site to transfer to the Reading site. The revised proposals do not amend the number of employees transferring to Reading.

¹ The Homes & Communities Agency Employment Density Guide, 3rd edition, November 2015, advises that the GIA measurements are usually obtained by reducing GEA figures by 5%.

4.3 Changes to the car parking layout

The analysis summarised in section 3 and included as Annex 1 to this addendum demonstrates that a total of 356 spaces will be sufficient to cater for the demand for car parking spaces. The one in 7.6 year occurrence of excess demand will be managed through reallocation of visitor car parking spaces to ensure there is no overspill onto the local roads.

The Applicant is committed to encouraging travel by the most sustainable modes and the submitted Travel Plan will evolve to encourage and support travel by the most sustainable modes. The Applicant is supporting and encouraging employees relocating from Egham to choose locations that allow travel by modes other than the private motor car.

The layout of the on-site parking is shown in Annex 2 to this addendum. A total of 365 car parking spaces will be accommodated on site, of which 356 will be employees spaces and the remaining nine spaces will be for visitors. The change to the number of visitor spaces (-22) has been assessed against current demand from the shaving technology centre for whom the spaces are provided. The technology centre has confirmed that eight visitor spaces is sufficient to cater for demand and an additional space has been included to ensure resilience in the visitor space provision.

As set out in section 2 of this report TAA1 summarised the changes to the parking provision set out in the planning submission. TAA 1 identified the following changes to the parking provision:

- 161 employee spaces outside the red line remain;
- 150 existing spaces, including the 31 visitor spaces, within the red line are removed; and
- 380 new spaces, including 31 visitor spaces, within the red line are introduced.

For operational reasons not all of the 161 retained spaces can now be retained; the revised breakdown of spaces is therefore as shown below:

- 91 employee spaces outside the red line remain;
- 150 existing spaces, including the 31 visitor spaces, within the red line are removed; and
- 274 new spaces, including nine visitor spaces, within the red line are introduced.

5 Conclusions

The additional analysis undertaken by the Applicant demonstrates that 356 spaces would be sufficient to cater for the expected demand for parking spaces at the redeveloped Reading site without resulting in any over spill onto the surrounding residential streets. This is consistent with the analysis originally presented in the TA which estimated the total demand to be no greater than 359 spaces. A total of 356 spaces are provided on site to cater for the expected employee demand, with nine visitor spaces retained to meet the visitor demand.

The Applicant will actively monitor its employees parking and will work pro-actively with RBC and the local community to address any contraventions of the proposed regime set out in this addendum.

Annex 1

Applicant's observed parking
data and statistical analysis

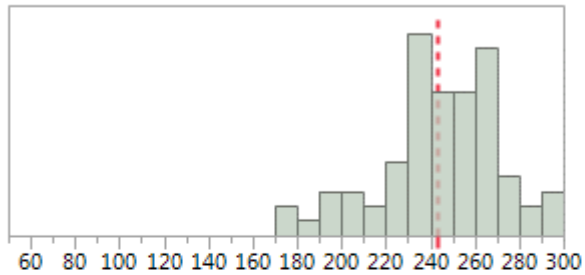
APPENDIX 1 – Car Park Raw Data for Egham & Reading collected by the Applicant

Egham Car Park Data		Reading Car Park Data	
Date	Total	Date	Total
03/10/2016	225	02/12/2016	243
04/10/2016	229	05/12/2016	247
05/10/2016	233	06/12/2016	269
06/10/2016	287	07/12/2016	265
07/10/2016	211	08/12/2016	248
10/10/2016	239	09/12/2016	230
11/10/2016	257	12/12/2016	225
12/10/2016	244	13/12/2016	252
13/10/2016	219	14/12/2016	231
14/10/2016	178	15/12/2016	273
17/10/2016	246	16/12/2016	234
18/10/2016	238	19/12/2016	232
19/10/2016	226	20/12/2016	209
20/10/2016	221	21/12/2016	180
21/10/2016	170	22/12/2016*	135
24/10/2016	232	23/12/2016*	62
25/10/2016	230	03/01/2017	240
26/10/2016	230	04/01/2017	269
27/10/2016	260	05/01/2017	261
28/10/2016	197	06/01/2017	298
31/10/2016	235	09/01/2017	273
01/11/2016	253	10/01/2017	297
02/11/2016	266	11/01/2017	282
03/11/2016	245	12/01/2017	264
04/11/2016	209	13/01/2017	192
07/11/2016	278	16/01/2017	264
08/11/2016	250	17/01/2017	297
09/11/2016	265	18/01/2017	258
10/11/2016	253	19/01/2017	243
11/11/2016	196	20/01/2017	256
14/11/2016	230	23/01/2017	276
15/11/2016	235	24/01/2017	263
16/11/2016	253	25/01/2017	260
17/11/2016	235	26/01/2017	263
18/11/2016	206	27/01/2017	252
21/11/2016	240	30/01/2017	242
01/12/2016	260	31/01/2017	250
		23/02/2017	174
		25/02/2017	186
		01/03/2017	180
		04/03/2017	177
		07/03/2017	183
		08/03/2017	183
		13/02/2017	171
		14/02/2017	190
		15/02/2017	189
		16/02/2017	189
		17/02/2017	178

** data from 22 & 23 December removed*

Distributions Site=Egham Total

Number of Cars

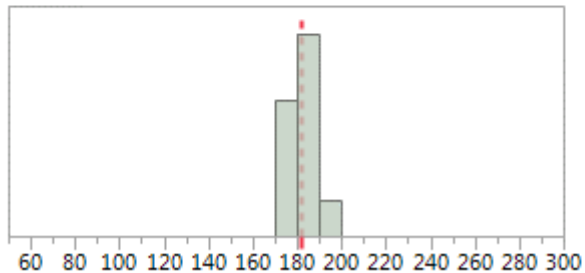


Summary Statistics

Mean	243.31944
Std Dev	27.112092
N	72

Distributions Site=Reading

Number of Cars



Summary Statistics

Mean	181.81818
Std Dev	6.4002841
N	11

APPENDIX 2 – Reading Car Park and Building Occupancy Raw Data

Date	Spaces Used	People On Site	Car - People Ratio
23/02/2017	174	242	71.9%
25/02/2017	186	239	77.8%
01/03/2017	180	231	77.9%
04/03/2017	177	246	72.0%
07/03/2017	183	240	76.3%
08/03/2017	183	241	75.9%
Mean	180.50	239.83	75.3%
Std.Dev	4.42	4.96	2.7%

APPENDIX 3 – Numbers of individual in Branson building

Date	Day	P&G Building
01/11/2016	Tue	245
02/11/2016	Wed	107
03/11/2016	Thu	227
04/11/2016	Fri	184
07/11/2016	Mon	202
08/11/2016	Tue	201
09/11/2016	Wed	206
10/11/2016	Thu	204
11/11/2016	Fri	187
14/11/2016	Mon	207
15/11/2016	Tue	230
16/11/2016	Wed	217
17/11/2016	Thu	215
18/11/2016	Fri	177
21/11/2016	Mon	213
22/11/2016	Tue	226
23/11/2016	Wed	216
24/11/2016	Thu	236
25/11/2016	Fri *	185
28/11/2016	Mon	198
29/11/2016	Tue	228
30/11/2016	Wed	214

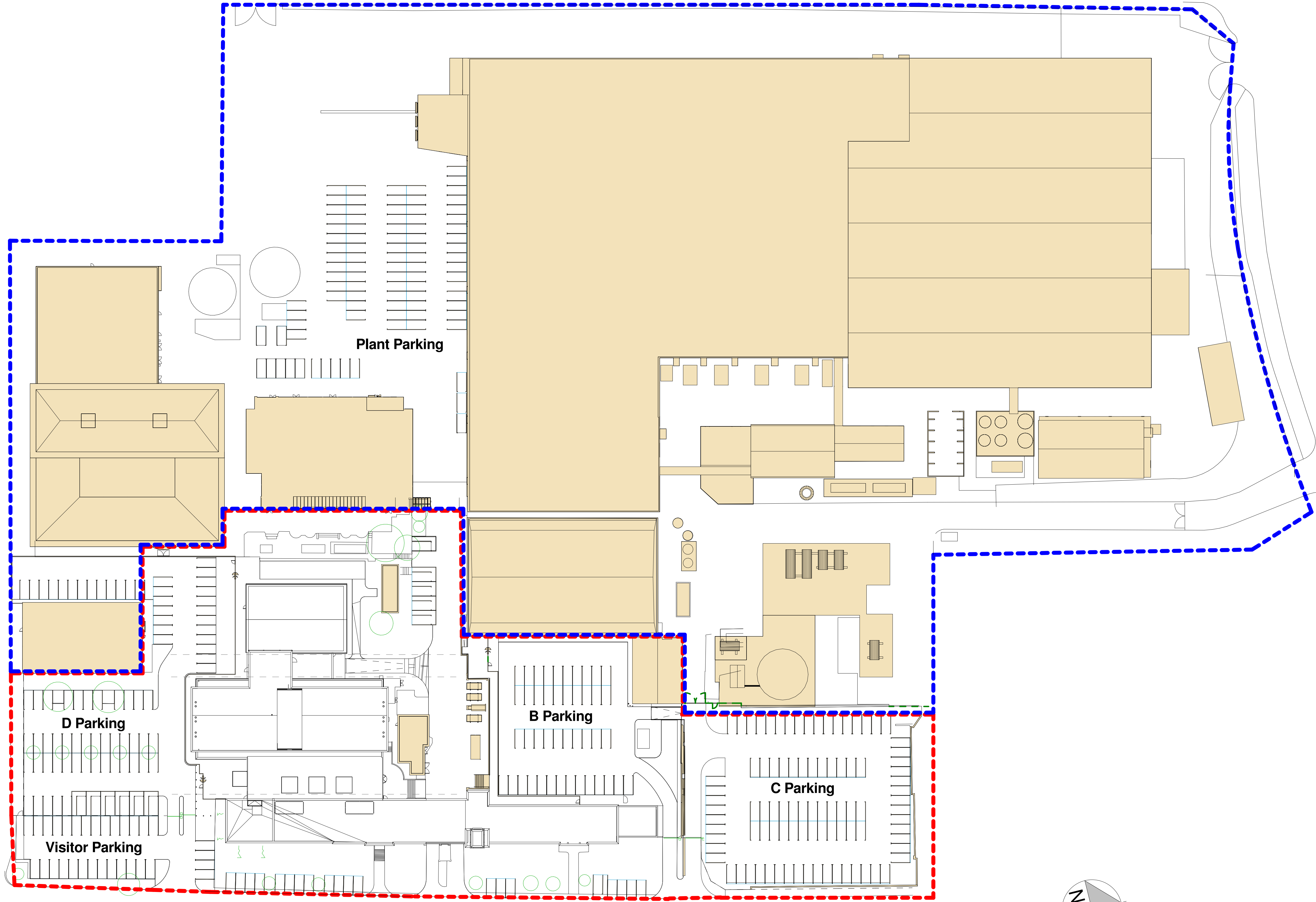
* Abnormally low day, removed from calculations

* Friday - lower counts, removed from calculations

Average number of people	216.8
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Annex 2

Car Parking Layout



1 Wider Site Plan
1 : 500

Notes

The Contractor is to check all dimensions and conditions on site before commencing. Do not scale from this drawing.

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Scale Bars

TO BE USED ONLY AS GUIDANCE

1:100

mm

0

100

200

300

400

500

1:200

mm

0

100

200

300

400

500

1:500

M

0

5

10

15

20

25

1:1250

M

0

10

20

30

40

50

60

70

KEYPLAN

4	Site boundaries reviewed	RO	06/07/17
3	Parking layout and security fence amended	YJ	05/07/17
2	Security fence position amended	YJ	03/07/17
1	Project Name, Site Boundaries, Visualisation Update	RO	15/06/17

Rev	Description	By	Date
Project Status	STAGE 3	Drawing Status	

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Client / Project

P&G

452 BASINGSTOKE ROAD

Drawing

Wider Site Plan with Parking

Date	14/06/17	Scale	1 : 500	@ A1
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SD Checked	RO	Drawn By	Author	Checked	Checker
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