

KINGS OAK ASSET PORTFOLIO LTD
1 MANOR HOUSE DRIVE, NORTHWOOD,
LONDON HA6 2UJ

HIGHWAYS STATEMENT

REPORT REF. 194450-01
PROJECT NO. 194450
DECEMBER 2019



CONTENTS

	Page
1.0 INTRODUCTION	1
2.0 EXISTING SITUATION	5
3.0 THE PROPOSED DEVELOPMENT	13
4.0 TRIP GENERATION	16
5.0 SUMMARY AND CONCLUSIONS	19

FIGURES

Figure 1 Location Plan

DRAWINGS

194450-001 Access Arrangements and Visibility Splay

APPENDICES

- A. Scheme Plans**
- B. Census data**
- C. TRICS output**

DOCUMENT CONTROL SHEET

REV	ISSUE PURPOSE	AUTHOR	CHECKED	APPROVED	DATE
-	Draft Client Issue	ML	SE	ML	22/07/19
-	2 nd draft client/project team issue	ML	SE	ML	28/07/19
-	Final	ML	SE	ML	18/12/19

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1.0 INTRODUCTION

- 1.1 Ardent Consulting Engineers (ACE) has been appointed by Kings Oak Asset Portfolio to provide design input and support for the proposed redevelopment of the site at 1 Manor House Drive (on the corner of the junction with Ducks Hill Road), Northwood HA6 2UJ, for residential (C3) use. The London Borough of Hillingdon (LBH) is the local planning and highway authority.
- 1.2 This Highways Statement (HS) has been prepared to accompany a full planning application submission to LBH and summarises matters pertaining to the site access and site layout, including the proposed parking and refuse arrangements. The proposed scheme comprises the demolition of the existing detached house on the site and its replacement with 7 flats in a single block with 7 on-site car parking spaces.

Previous applications

- 1.3 Two previous applications for the redevelopment of the site to provide five and six 2-bedroom flats respectively, both with on-site car parking, have been submitted to LBH.

December 2016 application and subsequent appeal (6 flats)

Application

- 1.4 The first (LBH ref 27306/APP/2016/4520) was refused consent in June 2017 on five grounds. Of these, one related to insufficient on-site car parking in an area claimed to be subject to parking stress, although the highways officer did not raise any significant concerns about the application, this reason being added by members.

- 1.5 The committee report concluded: *The Highways Officer has advised that there are no local waiting restrictions in place. There is some local parking stress in Manor House Drive even though most properties have off-street car parking. The proposal will almost certainly result in further on-street car parking demand. This will increase local parking stress as no visitor car parking is provided within the site. The proposals will undoubtedly generate increased traffic in the local area but this is unlikely to be significant. On the basis of the above comments they do not have significant concerns over this application. Therefore, the proposals are considered to be compliant to the Council's policies AM7 and AM14 of the Council's Local Plan Part 2.*

Appeal

- 1.6 This scheme was the subject of a planning appeal (PINS Ref APP/R5510/W/17/3180250) and while it was dismissed, this was not on parking grounds, on which the Inspector concluded as follows: -

The development would provide 6 parking spaces, one per flat. The Council's parking standards require 1.5 spaces per flat. The London Plan indicates a maximum of 1 parking space per 1-2 bed dwellings with location and public transport accessibility as further considerations. The site has a low public transport accessibility level rating indicating it is not well served by public transport so reliance on cars would be more likely. At the Council's Planning Committee meeting, concerns were raised about parking stress arising from insufficient parking on the development site, but I do not have any evidence specifically to support this before me in this appeal.

Having inspected the site and the surrounding area, I note that at the start of Manor House Road there are the two long sections of wall lining both sides of the road with no other houses along this stretch of the road until the road reaches the rear and turns a corner. Parking could

readily occur here without obstructing the access to other houses. The long stretch of wall then continues on the lefthand side around the rear of the cul-de-sac and up the hill past the turning head. This significant stretch of road would be likely to be available for onstreet parking because No 76 and the appeal development have their own parking and houses farther down Manor Road have their own parking. On that basis, overspill parking from the new development or from any other of the surrounding dwellings is likely to be able to be accommodated without significant difficulty. Furthermore, should the immediate vicinity prove insufficient, there are no parking restrictions applying to cars parking on either side of Ducks Hill Road. Again, these areas would be likely to be available for parking.

There were no objections or concerns from the Highways section regarding safety as a result of the development. The photographs of parking provided in the appeal indicate a relatively low level of parking at various times over several days. Most if not all houses in the cul-de-sac and on Ducks Hill Road have onsite parking for several vehicles. As set out above that would leave a reasonable stretch of road with capacity for occasional visitor parking or overspill from the proposed development. Consequently I do not consider that this development is likely to give rise to highway safety issues or significantly contribute to parking stress in Manor House Road or the area. I conclude that would not conflict with Policies AM7 and AM14 of the London Borough of Hillingdon Local Unitary Development Plan: Part Two- Saved UDP Policies or Policy 6.3 of the London Plan, which are aimed at securing safe and efficient transport systems.

September 2018 application and subsequent appeal (5 flats)

- 1.7 A further application (LBH ref 27306/APP/2018/3045) was submitted to LBH for five 2-bedroom flats, in September 2018; this was also refused but only on grounds of bulk and massing, again with no objection from the highways officer. This application was

subsequently appealed, with a decision upholding the refusal issued in October 2019.

New (2019) application

1.8 This report has been prepared to accompany a full application for a new scheme of seven flats with seven on-site car parking spaces which is intended to address the concerns raised about bulk and massing cited by LBH in refusing the 2018 application.

1.9 Following this introduction, this report is structured as follows: -

- **Section 2.0** considers the existing situation, including proximity of the site to local services, pedestrian and cycle facilities and accessibility by public transport;
- **Section 3.0** outlines the proposed development and internal layout, including parking provision and servicing arrangements;
- **Section 4.0** sets out the expected weekday peak hour and 12-hour trip generation by mode of travel; and
- **Section 5.0** provides a summary and conclusion.

2.0 EXISTING SITUATION

Site Location

- 2.1 The site is located on the north eastern corner of the priority T-junction of the A4180 Ducks Hill Road with Manor House Drive, a lit and adopted residential cul-de-sac, subject to a 30mph speed limit, located within Northwood. Manor House Drive runs north east from the A4180 for about 50m before turning left through a 90 degree bend to continue south west. A stub on the north west corner of the bend, at the rear of the application site, provides access to nos 2 and 3.
- 2.2 The site location is shown in **Plates 2.1 and 2.2**.

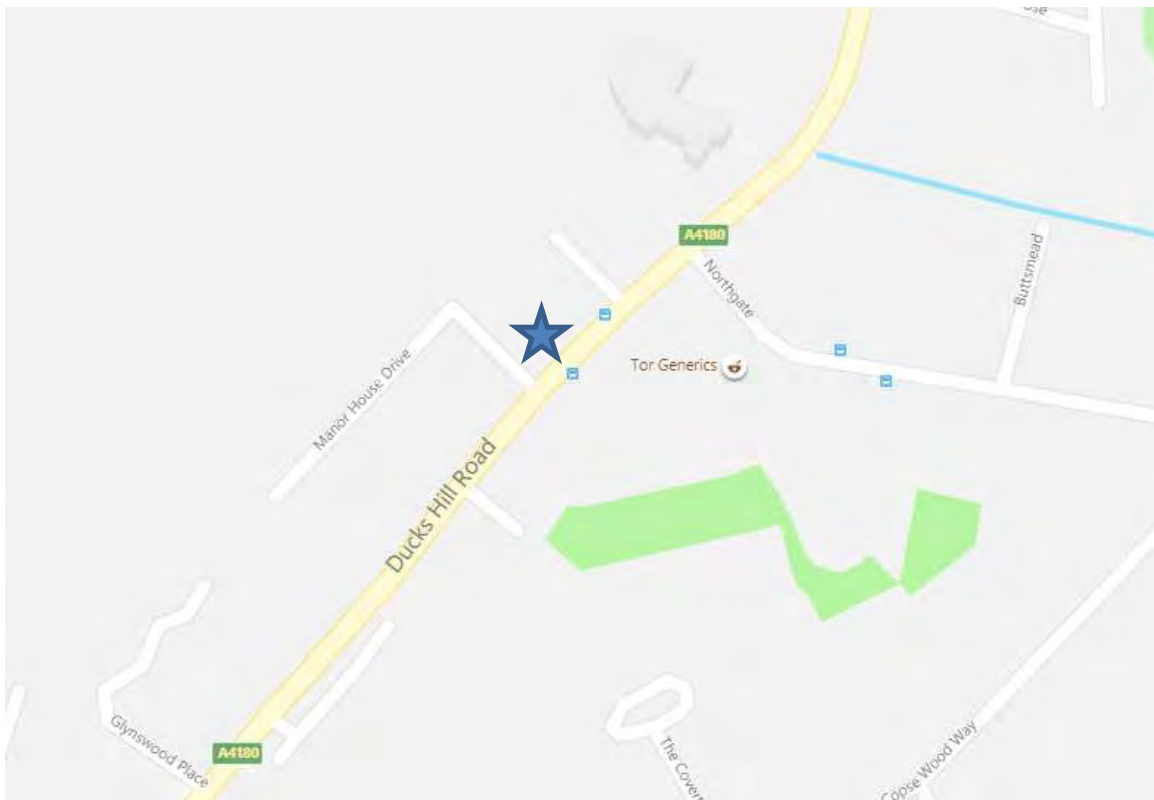


Plate 2.1: Site Location

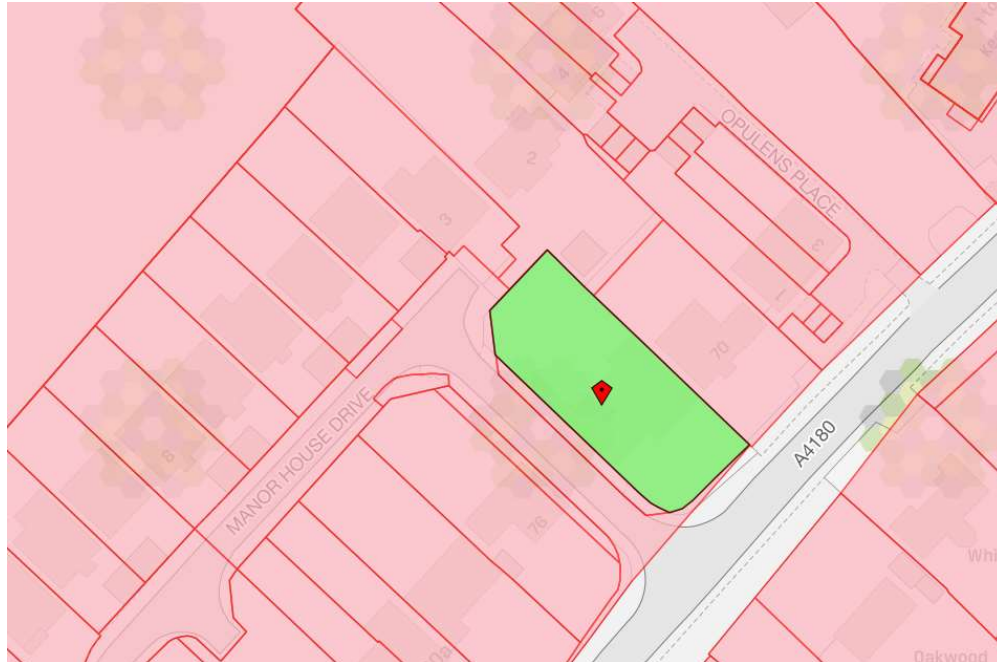


Plate 2.2: The Site

- 2.3 Ducks Hill Road is largely fronted by residential properties passing the site on a north/south alignment. To the north it connects with Rickmansworth Road, which continues north to Rickmansworth, whilst to the south it passes through Ruislip and connects to the A40 adjacent to RAF Northolt, approximately 8km to the south of the site.
- 2.4 There are a number of facilities in the wider vicinity of the site, including: primary schools and nurseries; churches; a hospital; leisure and recreation facilities (Northwood Cricket Club, Northwood Golf Club, Ruislip Woods Nature Reserve and the Northwood Health Club); and local shops in Northwood near Northwood Underground Station.

Access Arrangements

2.5 The development site currently comprises a single large detached residential dwelling, accessed from Manor House Drive by means of a dropped kerb and footway crossover immediately adjacent to the tangent point of the bellmouth at the junction with Ducks Hill Road.

2.6 **Plates 2.3 to 2.5** below show the site access and frontage.



Plate 2.3: Existing site access looking north from Ducks Hill Road junction



**Plate 2.4: Site looking north east from Manor House Drive
(accesses to nos 2 and 3 on the left)**



**Plate 2.5: Site looking north along Manor House Drive from
Ducks Hill Road**

- 2.7 There is a short section of footway running around the corner from the junction with Ducks Hill Road and along the eastern side of the initial section of Manor House Drive which terminates immediately

beyond the existing site access; beyond here to the north is a grass verge which continues along the western boundary of the site.

- 2.8 The www.crashmap.co.uk website shows that there has only been one personal injury accident, which was “slight” in severity, in the past five years in the vicinity of the site. This occurred to the south west of the Ducks Hill Road/Manor House Drive junction, see **Plate 2.6**.

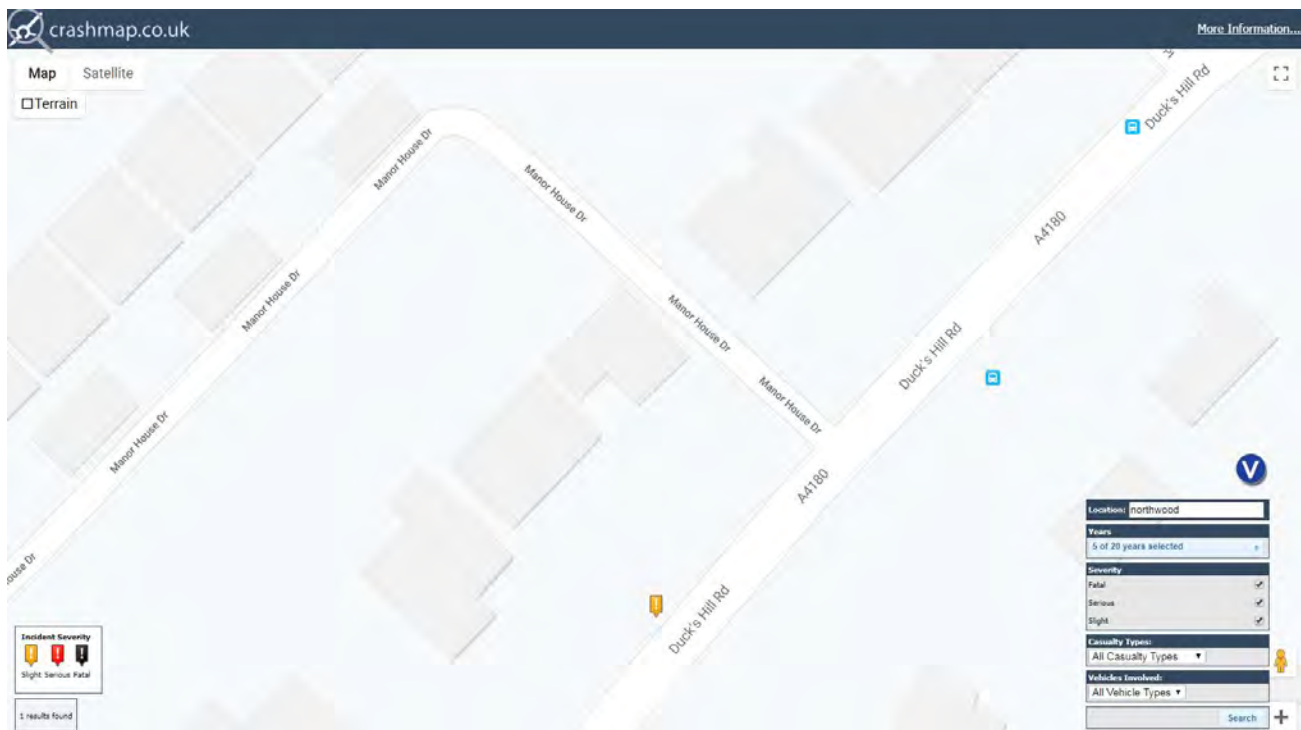


Plate 2.6: Crashmap data

Pedestrian/Cycle Access

- 2.9 Footways are provided on both sides of Ducks Hill Road and on the opposite (west) side of Manor House Drive in the vicinity of the site.
- 2.10 There are bus stops on Ducks Hill Road immediately adjacent to the site. The existence of available routes encourage walking as a main

mode of travel for local destinations and as part of an integrated journey with public transport for wider area travel.

- 2.11 The London Cycle Network series of guides outline cycle routes within London. Guide 3 covers the local area and indicates that there are routes recommended by cyclists that pass in the vicinity. There is a recommended route connecting Mount Vernon Hospital to the north of the site with the centre of Northwood along Kewferry Drive and Moor Park Road and these connect with the wider cycle network.
- 2.12 There is also opportunity to cycle through Ruislip Woods National Nature Reserve to the southeast of the site, which connect with recommended routes to the south.
- 2.13 The availability of cycle routes in the site locale will encourage cycle trips within a 5km site catchment.

Public Transport

Buses

- 2.14 The bus stops on Ducks Hill Road are served by the 331 route which runs between Ruislip Station and Uxbridge Station via Northwood Station, Mount Vernon Hospital, Harefield and New Denham (see **Plate 2.7**). This operates every 20 minutes during weekday and Saturday daytimes, and half hourly during the evenings and all day on Sundays.

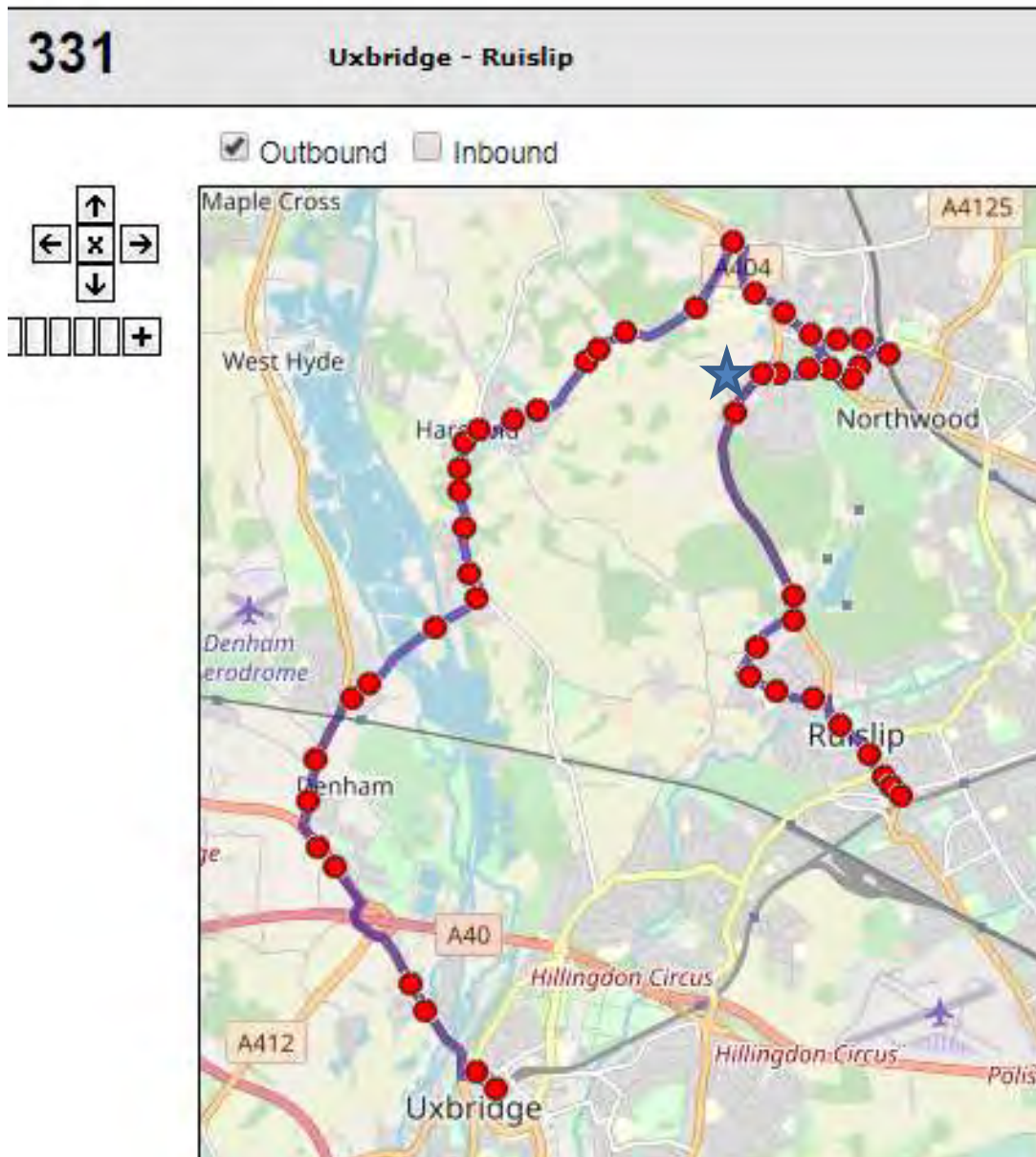


Plate 2.7: 331 bus route

Trains

- 2.15 The nearest rail station is Northwood, on the London Underground, which is located some 1.6km (a 20-minute walk) to the east of the site, via The Avenue and Green Lane. This station is also accessible

via the 331 bus route (see above), which also provides a link to Ruislip station.

- 2.16 Northwood is on the main part of the Metropolitan Line with 9 trains per hour in each direction operating during the morning peak hour via Harrow-on-the-Hill and Wembley Park to/from Baker Street. Some trains continue to the City (Aldgate) via Euston Square, Kings Cross St Pancras, Farringdon, Moorgate and Liverpool Street. In the other direction trains run to Watford, Rickmansworth, Amersham and Chesham. Ruislip is served by the Uxbridge branch of the Metropolitan and Piccadilly lines, the latter providing a link to the West End via Acton Town (for Heathrow), Hammersmith and Earl's Court.

Public Transport Accessibility Level (PTAL)

- 2.17 The PTAL of the site has been derived using the TfL Web-based Connectivity Assessment Toolkit (WebCAT) which provides an indication of the connectivity of a site to the public transport network. The PTAL is based on the weekday morning peak period service frequency of all bus services accessible from stops within a 640m (8 minutes') walk distance as well as rail services accessible from stations within a 960m (12 minutes') walk distance. Northwood Underground station falls outside this distance so its services are not included in the PTAL score, even though residents of the development may elect to walk to the station to access its frequent Metropolitan line train service.
- 2.18 The site has a published PTAL of 1a. It should be noted that the *Mayor's Transport Strategy Draft for Public Consultation* (June 2017) states that: *About one third of Londoners live in areas with the lowest (0, 1a and 1b) PTALs.*

3.0 THE PROPOSED DEVELOPMENT

- 3.1 The proposed development comprises redevelopment of land at 1 Manor House Drive, including demolition of the existing house, to provide seven no residential dwellings (all flats, 2x1-bed and 5x2-bed) in a single 3-storey building, with 7 on-site car parking spaces at ground level.
- 3.2 The internal layout is shown on the drawing by scheme architects EngineRoom attached at **Appendix A**, including the proposed parking, pedestrian access and refuse store arrangements.

Access

- 3.3 Vehicular access to the parking for the development will be from a single new priority "T" junction crossover arrangement with Manor House Drive Road, located some 28m north of the existing access, as shown on **ACE Drawing number 194450-001**. The existing access close to the Ducks Hill Road junction will be stopped-up, which will provide a highway safety benefit (both the previous application schemes retained the existing access).
- 3.4 Drivers egressing from the proposed car park will be able to see to the left/south east to the junction with Ducks Hill Road some 36m away from an "X" distance of 2m back from the channel line. To the right/north west they will be able to see to a "Y" distance of some 14m. These "Y" distances are commensurate with stopping distances for wet weather speeds of 27mph and 15mph respectively using the parameters in the *Manual for Streets (MfS, DfT, 2007 – 1.5 seconds driver reaction time and 0.45g deceleration rate)*. The "X" distance is suitable for a private access onto a lightly trafficked residential cul-de-sac, as set out in the *MfS*.

- 3.5 The available visibility is considered adequate bearing in mind the nature of Manor House Drive, and that the visibility to the right extends to just 6m from the gates at the accesses to nos 2 and 3, with vehicles egressing from the driveway gates to these houses unable to gain much speed as they turn left past the proposed access towards Ducks Hill Road.

Parking

- 3.6 A total of 7 on-site car parking spaces, are proposed, which equates to a scheme average provision of 1.0 spaces per dwelling. This compares with London Plan maximum standards of up to less than one space per dwelling for flats, and LBH's own maximum standards of up to 1.5 spaces per flat.
- 3.7 The bays will be a minimum of 2.4m x 4.8m in size (2.7m wide adjacent to walls), with an 8m a 8m clear area within the car park to allow cars to turn around so that they can egress in forward gear.
- 3.8 Secure cycle parking will also be provided, in line with both LBH and London Plan minimum standards (2 spaces per dwelling for 2+ bedroom units), within a secure covered store.
- 3.9 The proposed level of car parking is the same as in the 2016 application, which was deemed sufficient by the Inspector in the appeal decision for that scheme.

Resident Population Car Ownership

- 3.10 The *National Planning Policy Framework* (MHCLG, 2019) states that car parking standards should take account of local car ownership levels. In order to establish the potential parking demand associated with the proposed development, we have obtained data on car ownership for the Northwood ward from the 2011 Census by

dwelling type, tenure and size (number of rooms including kitchens and utility rooms but excluding bathrooms, hallways and cupboards). All the flats within the proposed development have either 2 or 3 rooms as defined by the Census, with each having a shared lounge/kitchen plus 1 or 2 bedrooms.

- 3.11 The Census data shows an average of 0.96 cars per household for owner-occupied flats with 1-3 rooms in the ward, so applying this to the proposed scheme gives projected ownership levels of $7 \times 0.96 = 7$ cars (rounded up), which could be accommodated within the car park on site. The full Census data is in **Appendix B**.
- 3.12 The document *Residential Car Parking Research* (published by the then DCLG in 2007) recommends that where around 50% or more of spaces are unallocated, no additional provision needs to be made for visitors; otherwise up to 0.2 unallocated spaces per dwelling should be provided for them. Applying the full 0.2 per dwelling to the proposed scheme of seven flats gives expected peak demand from up to $7 \times 0.2 = 1.4$ visitors' cars.

Refuse Collection

- 3.13 Refuse collection will take place from Manor House Road by means of the existing weekly round, which is currently used to serve residential properties in the area, including the current house on the site. No new routing of refuse vehicles will be required, and they will not need to enter the car park.
- 3.14 Bins will be housed in a refuse store on the western frontage of the development, along Manor House Drive, well within the 25m maximum carry distance of the adopted highway.

4.0 TRIP GENERATION

- 4.1 We have derived the expected weekday morning and evening peak hours and 12-hour trip generation of both the existing house and the proposed flats from the industry-standard TRICS database. To do this we derived person trip rates for privately owned houses and privately owned flats from TRICS, selecting only those sites in Greater London and in suburban and edge of town locations in the outer Boroughs (see **Appendix C**). We then applied Travel to Work data for the resident population of Output Areas E00012311/15 by main mode from the 2011 Census (see **Appendix B**).
- 4.2 **Table 4.1** sets out the resultant trip generation by mode of travel together with the expected net change.

Table 4.1: Potential weekday trips by main mode of travel (source: TRICS/2011 Census)

	Weekday am peak hour			Weekday pm peak hour			Weekday 12-hour period		
	<i>In</i>	<i>Out</i>	<i>Two-way</i>	<i>In</i>	<i>Out</i>	<i>Two-way</i>	<i>In</i>	<i>Out</i>	<i>Two-way</i>
Existing situation - Trips by mode (1 house)									
Person Trip rates (per house)	0.432	1.000	1.432	0.456	0.417	0.873	4.671	5.465	10.136
People	0	1	1	0	0	1	5	5	10
Vehicles (63%)	0	1	1	0	0	1	3	3	6
Pedal cycles (1%)	0	0	0	0	0	0	0	0	0
Car passengers (3%)	0	0	0	0	0	0	0	0	0
Pedestrians (2%)	0	0	0	0	0	0	0	0	0
Bus passengers (3%)	0	0	0	0	0	0	0	0	0
Train passengers (27%)	0	0	0	0	0	0	1	1	3
Proposed development - Trips by mode (7 flats)									
Person Trip rates (per flat)	0.143	0.588	0.731	0.400	0.166	0.566	4.613	3.939	8.552
People	1	4	5	3	1	4	32	28	60
Vehicles (63%)	1	3	3	2	1	3	20	17	38
Pedal cycles (1%)	0	0	0	0	0	0	0	0	0
Car passengers (3%)	0	0	0	0	0	0	1	1	2
Pedestrians (2%)	0	0	0	0	0	0	1	1	1
Bus passengers (3%)	0	0	0	0	0	0	1	1	2
Train passengers (27%)	0	1	1	1	0	1	9	7	16
Change (Proposed 6 flats – 1 existing house)									
People	+1	+3	+4	+2	+1	+3	+28	+22	+50
Vehicles (63%)	0	+2	+2	+1	0	+2	+18	+14	+32
Pedal cycles (1%)	0	0	0	0	0	0	0	0	0
Car passengers (3%)	0	0	0	0	0	0	+1	+1	+1
Pedestrians (2%)	0	0	0	0	0	0	+1	+1	+1
Bus passengers (3%)	0	0	0	0	0	0	+1	+1	+1
Train passengers (27%)	0	+1	+1	+1	0	+1	+7	+6	+13

4.3 **Table 4.1** shows that the level of trip generation associated with the proposed development would be minimal and would not be expected to have a material impact. A net increase of only two vehicle movements in each weekday peak hour is predicted

compared to the existing single house on the site which would not have a noticeable impact on the local highway network.

5.0 SUMMARY AND CONCLUSIONS

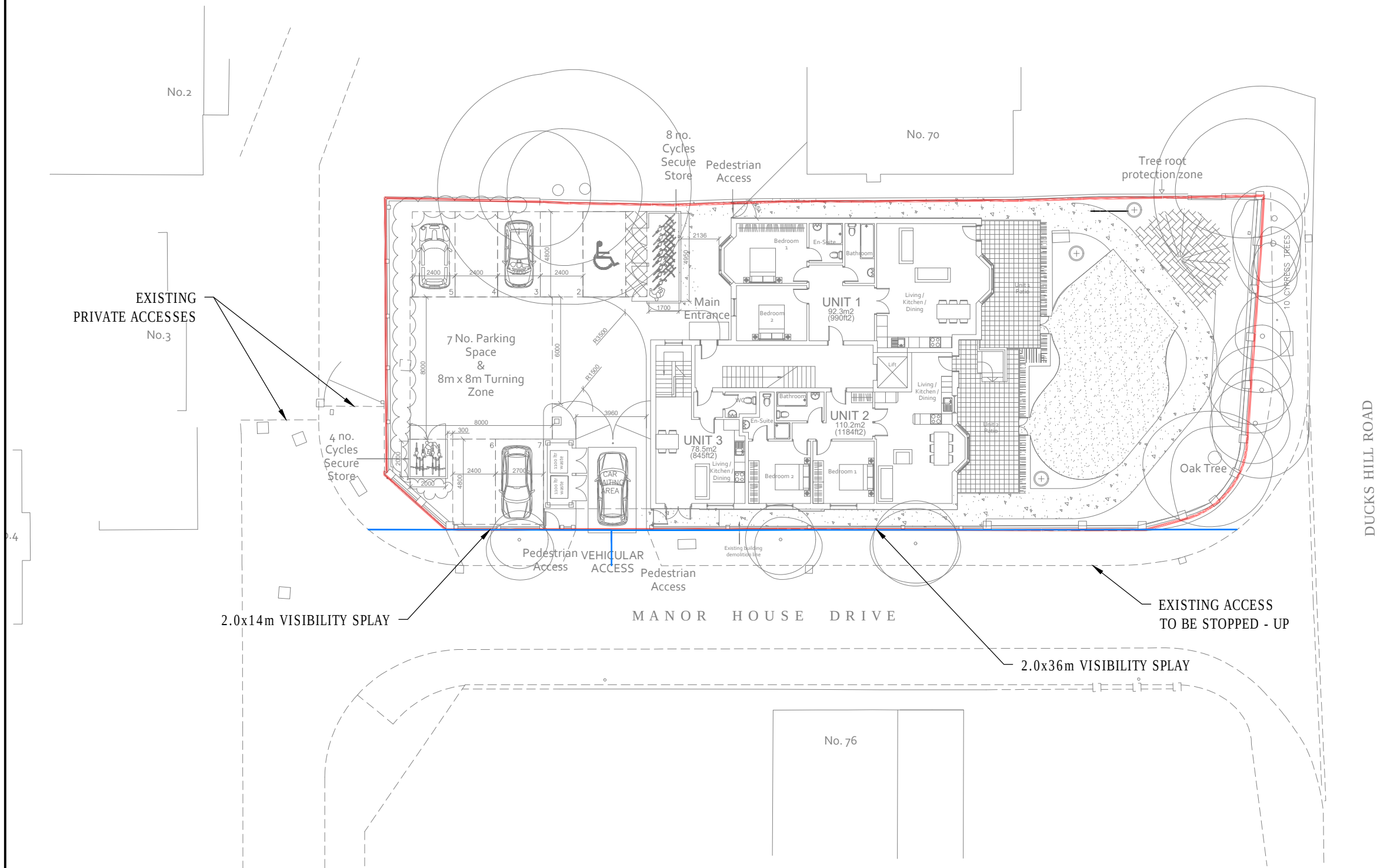
- 5.1 KRSNA Property Solutions has submitted a full planning application to redevelop the site at 1 Manor House Drive, including demolition of the existing single detached house, to provide seven no 1- and 2-bedroom dwellings (all flats for private sale) in a single 3-storey building, with 7 on-site car parking spaces at ground level.
- 5.2 The proposals involve stopping-up the existing access to the site from Manor House Drive, which is located immediately adjacent to the junction with Ducks Hill Road and replacing it with a new access 28m to the north.
- 5.3 The proposed refuse collection arrangements involve collection from the street utilising a refuse store located just beyond the back of the footway. LBH refuse vehicles will be able to collect refuse containers from this location without requiring a change to their existing collection round.
- 5.4 The proposed level of on-site car parking has been determined using Census car ownership data for existing owner occupied flats in the local area, and with regards to current London Plan and LBH maximum standards, with which it complies. It is comparable to the level of provision proposed in conjunction with a scheme previously refused by LBH which, although dismissed on appeal for other reasons, was considered adequate by the Inspector. Secure, covered cycle parking has also been provided in line with current local minimum standards.
- 5.5 We have derived the expected trip generation of the proposed development from the TRICS database and Census modal split data and found this to be minimal and not be expected to have a material impact on the operation of the local highway network.

5.6 It is concluded that there is no reason to object to the proposed development on highways grounds.

Drawings



KEY:
SITE BOUNDARY



Rev	Description	Drm	Chk	App	Date
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ARDENT CONSULTING ENGINEERS

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Web: www.ardent-ce.co.uk
E-mail: enquiries@ardent-ce.co.uk



Client
KINGSBRIDGE ASSETS LLP

Project Title:
**1 MANOR HOUSE DRIVE,
NORTHWOOD**

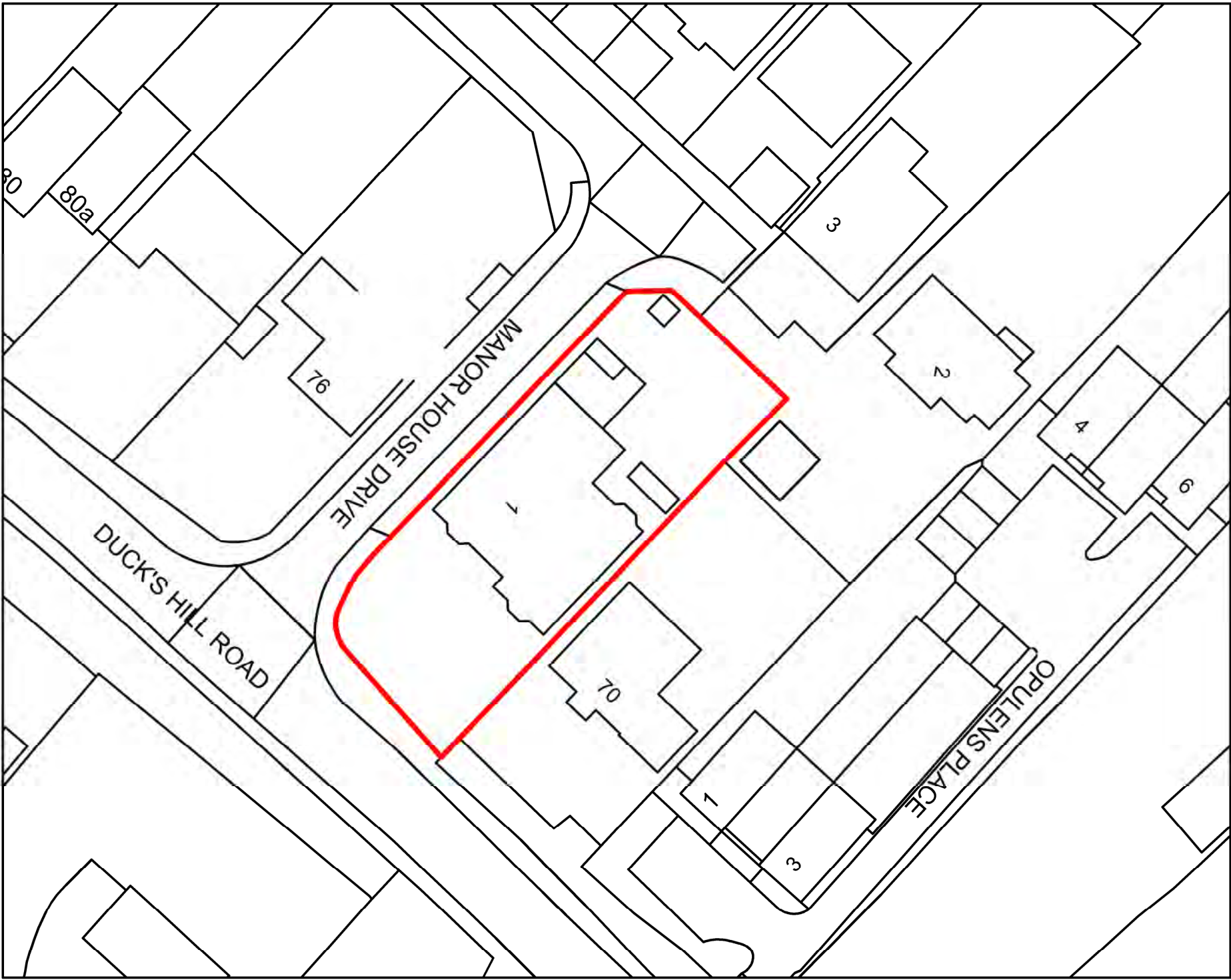
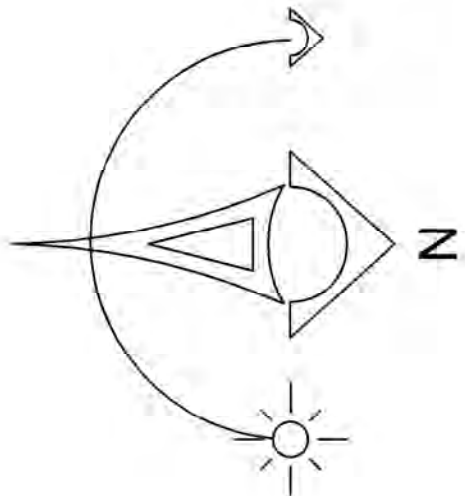
Drawing Title:
**CAR PARK ACCESS
VISIBILITY SPLAYS**

A3 Scale	Date	Designed by
1:250	DEC 2019	KI
Drawn by	Checked by	Approved by
KI	KI	ML

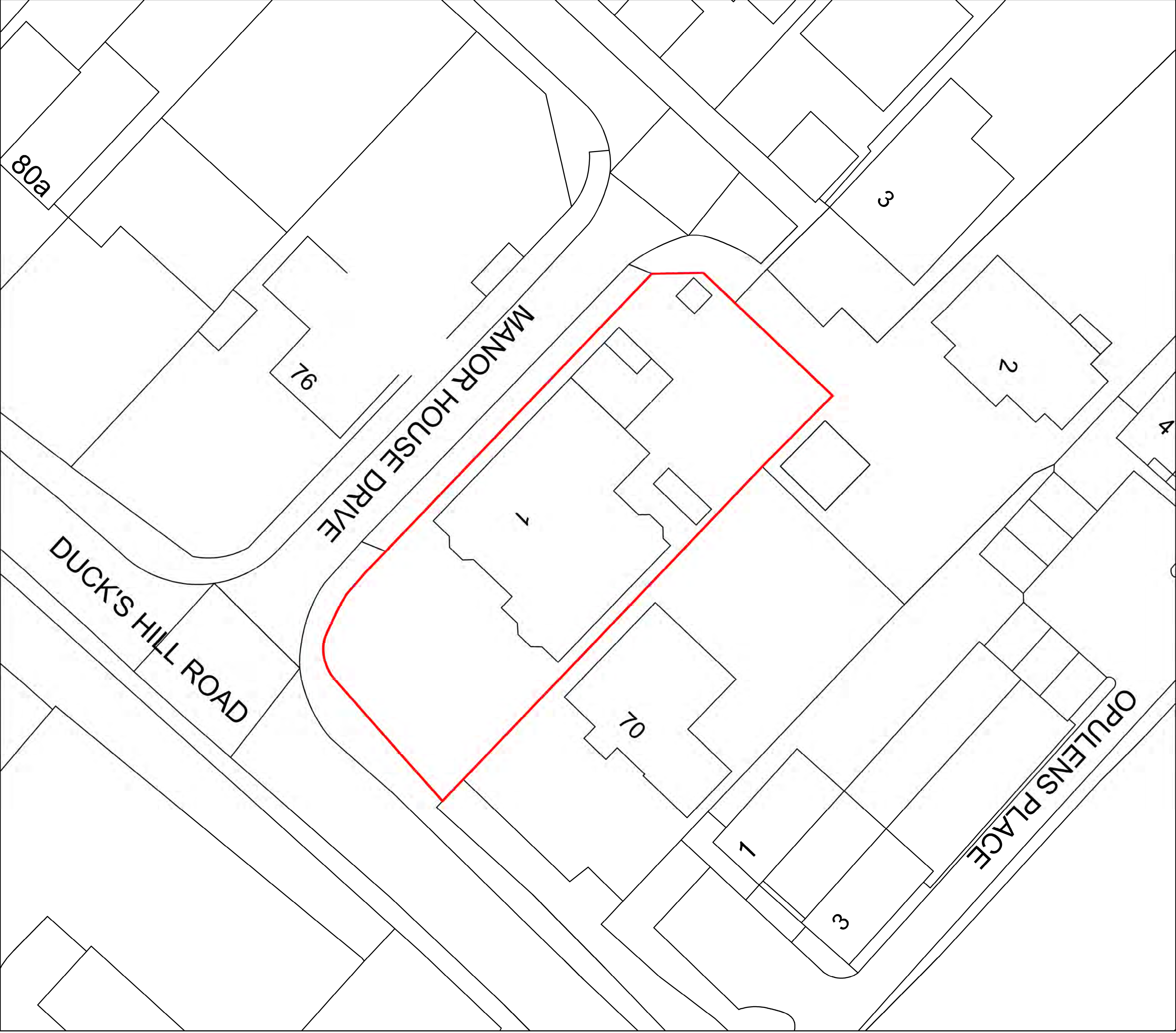
Drawing Number
194450-003

Appendix A

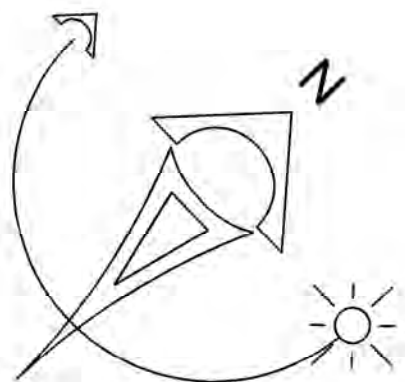
Scheme Plans



2 Proposed Location Plan Scale 1:500 @ A1



1 Proposed Site Plan Scale 1:200 @ A1



Approximate Site Area:
0.08902 Hectare

Total Parking: 7

Accommodation Schedule:

- Unit 1 - 2B 4p (92.3m2)
- Unit 2 - 2B 4p (110.2m2)
- Unit 3 - 2B 4p (78.5m2)
- Unit 4 - 2B 4p (93.2m2)
- Unit 5 - 2B 4p (102.0m2)
- Unit 6 - 1B 2p (61.2m2)
- Unit 7 - 1B 2p (70.3m2)

Amenity Space:
312.9sq m



Proposed Ground Floor Plan

Rev:

Date:

Details:

By:

Chk:



engineerroom

CHALLENGE. RE-DEFINE.

EngineRoom
2 Cardinal Street
Ipswich
IP1 1LG

PLANNING

Client / Location:
1 Manor House Drive
Northwood

Drawing:
PROPOSED
GROUND FLOOR

Scale:

Date:

Job No:

A1 @ 1:100

27-09-19

ER1901006

Drawn:

Dwg No:

IB

301

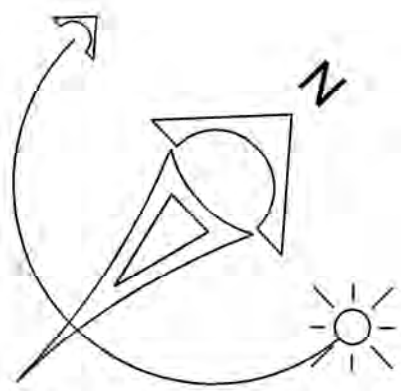
Check:

Rev:

PB

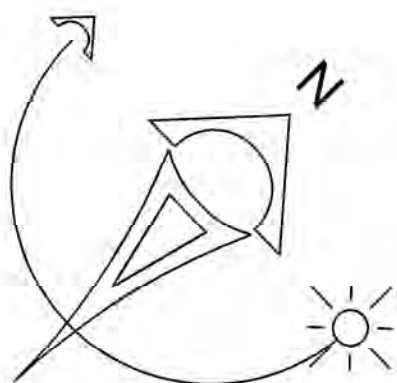
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Notes:

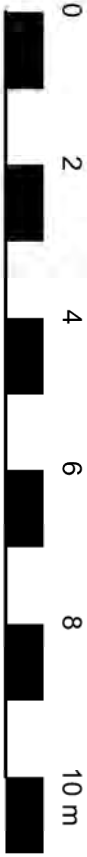


Proposed First Floor Plan

Rev: Date: Details: By: Chk:		EngineRoom 2 Cardinal Street Ipswich IP1 1LG	
Client / Location:		PLANNING 1 Manor House Drive Northwood	
Drawing:		PROPOSED FIRST FLOOR	
Scale:	Date:	Drawn:	Check:
A1 @ 1:100	27-09-19	IB	PB
Job No:	Dwg No:	Rev:	
ER1901006	302		
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Proposed Second Floor Plan



Rev.	Date:	Details:	By:	Chk:
				
EngineRoom 2 Cardinal Street Ipswich IP1 1LG				

Client / Location:		PLANNING	
1 Manor House Drive Northwood			

Drawing:

PROPOSED SECOND FLOOR			
Scale:	Date:	Drawn:	Check:
1:100 @ A1	27-09-19	IB	PB
Job No:	Dwg No:	Rev:	
ER1901006	303		

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Appendix B

Census data

Car or Van Availability (QS416EW)

				Northwood Ward		Hillingdon London Borough		London Region		England Country
All Households	Count	Households	Mar-11	4578		100214		3266173		22063368
No Cars or Vans in Household	Count	Households	Mar-11	816	18%	22716	23%	1357251	42%	5691251
1 Car or Van in Household	Count	Households	Mar-11	2080	45%	43942	44%	1324032	41%	9301776
2 Cars or Vans in Household	Count	Households	Mar-11	1267	28%	25193	25%	458659	14%	5441593
3 Cars or Vans in Household	Count	Households	Mar-11	283	6%	6125	6%	95619	3%	1203865
4 or More Cars or Vans in Household	Count	Households	Mar-11	132	3%	2238	2%	30612	1%	424883
All Cars or Vans in Area	Count	Vehicles	Mar-11	6038	1.32	122486	1.22	2664414	0.82	25696833
Car or Van Availability, 2011 (QS416EW), Mar11		LastUpdated								
Car or Van Availability, 2011 (QS416EW), Mar11		Source								
Car or Van Availability (QS416EW)		National Statistics								

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CT0103 - Accommodation type by tenure by number of rooms by car or van availability

Dataset population : All occupied households (excluding caravans or other mobile or temporary structures)

Geographical level : National to 2011 Census merged wards

Source : 2011 Census (27 March)

				Total: Car or van availability	No cars or vans in household	1 car or van in household	2 cars or vans in household	3 or more cars or vans in household		No cars or vans in household	1 car or van in household	2 cars or vans in household	3 or more cars or vans in household	Average cars/household
E36007364 Northwood	Total: Accommodation type	Total: Tenure	Total: Number of rooms	4,577	816	2,079	1,267	415		18%	45%	28%	9%	1.40
E36007364 Northwood	House or bungalow	Owned: Owned outright or with a mortgage or loan	Total: Number of rooms	2,134	120	820	833	361		6%	38%	39%	17%	1.89
E36007364 Northwood	House or bungalow	Owned: Owned outright or with a mortgage or loan	1 - 3 rooms	34	5	20	9	0		15%	59%	26%	0%	1.12
E36007364 Northwood	House or bungalow	Owned: Owned outright or with a mortgage or loan	4 rooms	161	13	102	42	4		8%	63%	26%	2%	1.26
E36007364 Northwood	House or bungalow	Owned: Owned outright or with a mortgage or loan	5 rooms	322	33	188	83	18		10%	58%	26%	6%	1.34
E36007364 Northwood	House or bungalow	Owned: Owned outright or with a mortgage or loan	6 rooms	352	27	174	112	39		8%	49%	32%	11%	1.61
E36007364 Northwood	House or bungalow	Owned: Owned outright or with a mortgage or loan	7 rooms	345	25	135	154	31		7%	39%	45%	9%	1.67
E36007364 Northwood	House or bungalow	Owned: Owned outright or with a mortgage or loan	8 or more rooms	920	17	201	433	269		2%	22%	47%	29%	2.42
E36007364 Northwood	House or bungalow	Shared ownership; rented and living rent free	Total: Number of rooms	509	99	251	130	29		19%	49%	26%	6%	1.25
E36007364 Northwood	House or bungalow	Shared ownership; rented and living rent free	1 - 3 rooms	60	19	35	4	2		32%	58%	7%	3%	0.86
E36007364 Northwood	House or bungalow	Shared ownership; rented and living rent free	4 rooms	144	40	65	38	1		28%	45%	26%	1%	1.01
E36007364 Northwood	House or bungalow	Shared ownership; rented and living rent free	5 rooms	115	21	57	27	10		18%	50%	23%	9%	1.34
E36007364 Northwood	House or bungalow	Shared ownership; rented and living rent free	6 rooms	77	12	46	16	3		16%	60%	21%	4%	1.18
E36007364 Northwood	House or bungalow	Shared ownership; rented and living rent free	7 rooms	43	2	24	15	2		5%	56%	35%	5%	1.46
E36007364 Northwood	House or bungalow	Shared ownership; rented and living rent free	8 or more rooms	70	5	24	30	11		7%	34%	43%	16%	1.88
E36007364 Northwood	Flat, maisonette or apartment	Owned: Owned outright or with a mortgage or loan	Total: Number of rooms	798	148	465	174	11		19%	58%	22%	1%	1.08
E36007364 Northwood	Flat, maisonette or apartment	Owned: Owned outright or with a mortgage or loan	1 - 3 rooms	176	36	116	22	2		20%	66%	13%	1%	0.96
E36007364 Northwood	Flat, maisonette or apartment	Owned: Owned outright or with a mortgage or loan	4 rooms	410	82	234	88	6		20%	57%	21%	1%	1.06
E36007364 Northwood	Flat, maisonette or apartment	Owned: Owned outright or with a mortgage or loan	5 rooms	173	24	97	50	2		14%	56%	29%	1%	1.19
E36007364 Northwood	Flat, maisonette or apartment	Owned: Owned outright or with a mortgage or loan	6 rooms	31	5	15	11	0		16%	48%	35%	0%	1.19
E36007364 Northwood	Flat, maisonette or apartment	Owned: Owned outright or with a mortgage or loan	7 rooms	6	1	1	3	1		17%	17%	50%	17%	1.88
E36007364 Northwood	Flat, maisonette or apartment	Owned: Owned outright or with a mortgage or loan	8 or more rooms	2	0	2	0	0		0%	100%	0%	0%	1.00
E36007364 Northwood	Flat, maisonette or apartment	Shared ownership; rented and living rent free	Total: Number of rooms	1,136	449	543	130	14		40%	48%	11%	1%	0.76
E36007364 Northwood	Flat, maisonette or apartment	Shared ownership; rented and living rent free	1 - 3 rooms	636	319	268	46	3		50%	42%	7%	0%	0.59
E36007364 Northwood	Flat, maisonette or apartment	Shared ownership; rented and living rent free	4 rooms	375	101	211	56	7		27%	56%	15%	2%	0.94
E36007364 Northwood	Flat, maisonette or apartment	Shared ownership; rented and living rent free	5 rooms	97	25	51	20	1		26%	53%	21%	1%	0.98
E36007364 Northwood	Flat, maisonette or apartment	Shared ownership; rented and living rent free	6 rooms	17	1	8	7	1		6%	47%	41%	6%	1.55
E36007364 Northwood	Flat, maisonette or apartment	Shared ownership; rented and living rent free	7 rooms	5	1	1	1	2		20%	20%	20%	40%	2.32
E36007364 Northwood	Flat, maisonette or apartment	Shared ownership; rented and living rent free	8 or more rooms	6	2	4	0	0		33%	67%	0%	0%	0.67

Appendix C

TRICS output

Calculation Reference: AUDIT-437201-190709-0723

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE

Selected regions and areas:

01	GREATER LONDON	
BN	BARNET	1 days
BT	BRENT	1 days
HO	HOUNSLOW	1 days
KI	KINGSTON	2 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Secondary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of dwellings
Actual Range: 10 to 82 (units:)
Range Selected by User: 10 to 82 (units:)

Parking Spaces Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/97 to 03/07/18

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Tuesday	2 days
Thursday	3 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	5 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	5
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This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Development Zone	1
Residential Zone	4

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C3	5 days
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This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Secondary Filtering selection (Cont.):

Population within 1 mile:

20,001 to 25,000	1 days
25,001 to 50,000	4 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

500,001 or More	5 days
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This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	3 days
1.1 to 1.5	2 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	1 days
No	4 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	2 days
2 Poor	1 days
3 Moderate	1 days
4 Good	1 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1	BN-03-A-01 NORRY'S ROAD COCKFOSTERS	SEMI DETACHED		BARNET
	Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 10 Survey date: THURSDAY 20/10/05 Survey Type: MANUAL			
2	BT-03-A-01 KENTON ROAD BRENT	SEMI DETACHED		BRENT
	Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 82 Survey date: TUESDAY 20/11/07 Survey Type: MANUAL			
3	HO-03-A-01 THORNBURY ROAD OSTERLEY	MIXED HOUSING		HOUNSLOW
	Suburban Area (PPS6 Out of Centre) Development Zone Total Number of dwellings: 82 Survey date: TUESDAY 16/09/14 Survey Type: MANUAL			
4	KI-03-A-01 COOMBE RISE KINGSTON UPON THAMES	DETACHED		KINGSTON
	Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 12 Survey date: THURSDAY 24/06/10 Survey Type: MANUAL			
5	KI-03-A-02 WOLSEY CLOSE KINGSTON UPON THAMES	DETACHED		KINGSTON
	Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 20 Survey date: THURSDAY 24/06/10 Survey Type: MANUAL			

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
KN-03-A-01	Inner London
SK-03-A-01	Inner London
WE-03-A-01	Inner London

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

MULTI-MODAL TOTAL PEOPLE

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	41	0.199	5	41	0.665	5	41	0.864
08:00 - 09:00	5	41	0.432	5	41	1.000	5	41	1.432
09:00 - 10:00	5	41	0.320	5	41	0.432	5	41	0.752
10:00 - 11:00	5	41	0.296	5	41	0.354	5	41	0.650
11:00 - 12:00	5	41	0.335	5	41	0.311	5	41	0.646
12:00 - 13:00	5	41	0.379	5	41	0.534	5	41	0.913
13:00 - 14:00	5	41	0.345	5	41	0.223	5	41	0.568
14:00 - 15:00	5	41	0.311	5	41	0.335	5	41	0.646
15:00 - 16:00	5	41	0.403	5	41	0.388	5	41	0.791
16:00 - 17:00	5	41	0.714	5	41	0.461	5	41	1.175
17:00 - 18:00	5	41	0.456	5	41	0.417	5	41	0.873
18:00 - 19:00	5	41	0.481	5	41	0.345	5	41	0.826
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:		4.671			5.465				10.136

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: $COUNT/TRP*FACT$. Trip rates are then rounded to 3 decimal places.

Calculation Reference: AUDIT-437201-190709-0717

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
 Category : C - FLATS PRIVATELY OWNED
 MULTI-MODAL TOTAL PEOPLE

Selected regions and areas:

01	GREATER LONDON	
EN	ENFIELD	2 days
HV	HAVERING	1 days
RD	RICHMOND	3 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Secondary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of dwellings
 Actual Range: 18 to 493 (units:)
 Range Selected by User: 9 to 493 (units:)

Parking Spaces Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/97 to 03/07/18

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	1 days
Tuesday	2 days
Wednesday	1 days
Thursday	1 days
Friday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	6 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	5
Edge of Town	1

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	5
Built-Up Zone	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C3	6 days
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This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Secondary Filtering selection (Cont.):

Population within 1 mile:

10,001 to 15,000	1 days
25,001 to 50,000	4 days
50,001 to 100,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

125,001 to 250,000	1 days
500,001 or More	5 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	5 days
1.1 to 1.5	1 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Not Known	1 days
Yes	2 days
No	3 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	3 days
1a (Low) Very poor	1 days
1b Very poor	1 days
2 Poor	1 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1	EN-03-C-02	BLOCKS OF FLATS	ENFIELD
	CARTERHATCH LANE		
	ENFIELD		
	FORTY HILL		
	Edge of Town		
	Residential Zone		
	Total Number of dwellings:	76	
	Survey date: FRIDAY	10/11/17	Survey Type: MANUAL
2	EN-03-C-03	BLOCKS OF FLATS	ENFIELD
	NORTH CIRCULAR ROAD		
	PALMERS GREEN		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	18	
	Survey date: WEDNESDAY	08/11/17	Survey Type: MANUAL
3	HV-03-C-02	BLOCKS OF FLATS	HAVERING
	WATERLOO ROAD		
	ROMFORD		
	Suburban Area (PPS6 Out of Centre)		
	Built-Up Zone		
	Total Number of dwellings:	493	
	Survey date: TUESDAY	22/11/16	Survey Type: MANUAL
4	RD-03-C-01	BLOCKS OF FLATS	RICHMOND
	KEW ROAD		
	KEW		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	144	
	Survey date: TUESDAY	11/06/02	Survey Type: MANUAL
5	RD-03-C-02	BLOCK OF FLATS	RICHMOND
	B306 QUEENS RIDE		
	BARNES		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	28	
	Survey date: MONDAY	29/01/07	Survey Type: MANUAL
6	RD-03-C-03	BLOCKS OF FLATS	RICHMOND
	BESSANT DRIVE		
	KEW		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	120	
	Survey date: THURSDAY	26/04/18	Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
BT-03-C-01	Inner London
BT-03-C-02	Inner London
CN-03-C-01	Inner London
HG-03-C-02	Inner London
HK-03-C-03	Inner London
IS-03-C-01	Inner London
IS-03-C-03	Inner London
TH-03-C-02	Inner London
TH-03-C-03	Inner London

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED

MULTI-MODAL TOTAL PEOPLE

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	6	147	0.085	6	147	0.386	6	147	0.471
08:00 - 09:00	6	147	0.143	6	147	0.588	6	147	0.731
09:00 - 10:00	6	147	0.149	6	147	0.264	6	147	0.413
10:00 - 11:00	6	147	0.146	6	147	0.267	6	147	0.413
11:00 - 12:00	6	147	0.149	6	147	0.238	6	147	0.387
12:00 - 13:00	6	147	0.201	6	147	0.216	6	147	0.417
13:00 - 14:00	6	147	0.188	6	147	0.213	6	147	0.401
14:00 - 15:00	6	147	0.189	6	147	0.230	6	147	0.419
15:00 - 16:00	6	147	0.323	6	147	0.231	6	147	0.554
16:00 - 17:00	6	147	0.356	6	147	0.193	6	147	0.549
17:00 - 18:00	6	147	0.400	6	147	0.166	6	147	0.566
18:00 - 19:00	6	147	0.461	6	147	0.204	6	147	0.665
19:00 - 20:00	3	71	1.136	3	71	0.491	3	71	1.627
20:00 - 21:00	3	71	0.687	3	71	0.252	3	71	0.939
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:		4.613			3.939			8.552	

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: $COUNT/TRP*FACT$. Trip rates are then rounded to 3 decimal places.