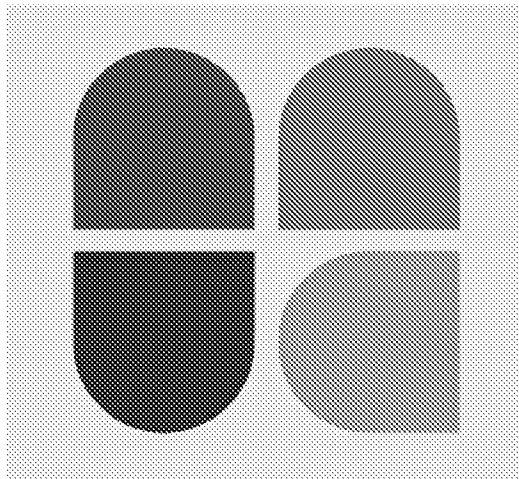




B R I G H T P L A N

**WINGS NURSERY, LIDSEY ROAD,
WOODGATE, WEST SUSSEX**

RESIDENTIAL DEVELOPMENT

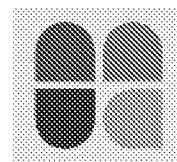
Transport Statement

Prepared on Behalf of

Thakeham Client Ltd

THAH/19/6115

June 2020



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Residential Development

Document: Transport Statement

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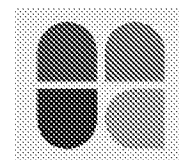
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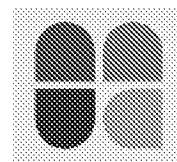
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PLANS

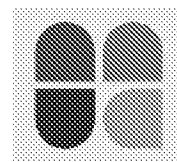
Plan 01 Accessibility Plan

DRAWINGS

- 001** Access Overview and Visibility Splays
- 002** Refuse Vehicle Swept Path Analysis
- 003** Car and Fire Tender Swept Path Analysis
- 004** Secondary Access Visibility Splay and Hook Lane Cycle Parking
- 005** Secondary Access Car and Fire Tender Swept Path Analysis
- 006** Internal Layout Visibility Splays
- 007** Internal Layout Turning Head Swept Path Analysis
- 008** Refuse and Car Passing Swept Path Analysis
- 009** Fire Tender Access Swept Path Analysis
- 010** Car Parking Swept Path Analysis
- 011** NMU Offsite Works Overview

APPENDICES

- Appendix A** WSCC Pre-Application Response
- Appendix B** Stage 1 RSA
- Appendix C** 2011 Census Data
- Appendix D** Distribution Model
- Appendix E** Traffic Assignment
- Appendix F** ATC Data
- Appendix G** PICADY - Site Access
- Appendix H** Level Crossing Survey
- Appendix I** LINSIG - Woodgate Level Crossing



1 INTRODUCTION

- 1.1.1 This Transport Statement has been commissioned by Thakeham Client Limited on behalf of Southern Housing Group Limited to support a planning application for a residential development on land at Wings Nursery, Lidsey Road, Woodgate, West Sussex.
- 1.1.2 The application site is located on the western side of the A29 Lidsey Road approximately 260m to the south of Woodgate's village centre. The site's location within the context of the local road network is demonstrated in **Figure 1.1**.

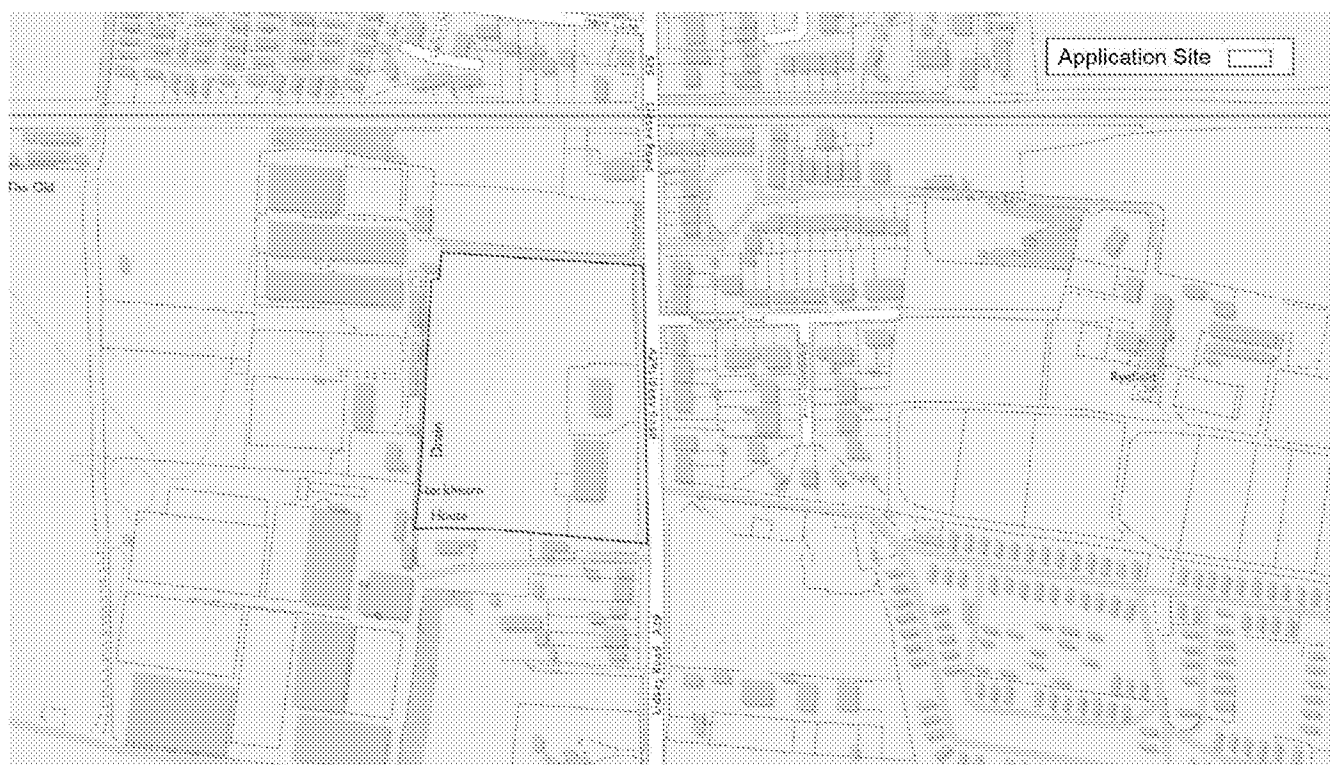
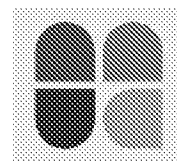


Figure 1.1: Site Location

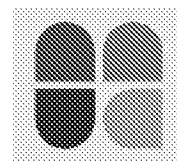
- 1.1.3 The site encompasses an area of approximately 2.56ha, comprised of a large open field and former agricultural nursery. The proposed development would involve the provision 81 residential dwellings.

1.2 Planning Context

- 1.2.1 The site was previously subject to an outline planning application for 55 residential dwellings (planning ref: AL/32/19/OUT) which was permitted in October 2019. Many of this project's highway principles have been addressed and accepted as part of the approved site's highway assessment.
- 1.2.2 This site has been subject to a pre-application consultation with highway consultees West Sussex County Council (WSCC). The pre-application assessment addressed matters affected by the increased number of dwellings, in particular the proposed access arrangements and traffic impact.
- 1.2.3 This Transport Statement has been prepared in accordance with WSCC's preapplication comments which are attached at **Appendix A**.
- 1.2.4 The remainder of this report is comprised of the following: -



- i. **Section 2** provides an overview of the site's transport planning context including, site accessibility, the local road network conditions, and highway safety;
- ii. **Section 3** provides an assessment of the proposed development including the proposed access, internal layout, and offsite infrastructure proposals;
- iii. **Section 4** considers the proposed developments anticipated impact on the local highway network supported by trip generation assessment and capacity modelling;
- iv. **Section 5** provides a summary of the report's main conclusions.



2 SITE CONTEXT

2.1 Existing Site & Access

- 2.1.1 The application site is 2.4ha located on the western side of the A29 Lidsey Road, approximately 1km to the south of Westergate. The existing site is served by two vehicular accesses adjoining the A29 Lidsey Road. The accesses take the form of gated crossovers measuring 3.8 metres in width. An additional field access is located at the north-east corner of the site. The site's northern and southern access points are shown in **Figure 2.1**.



Northern Access

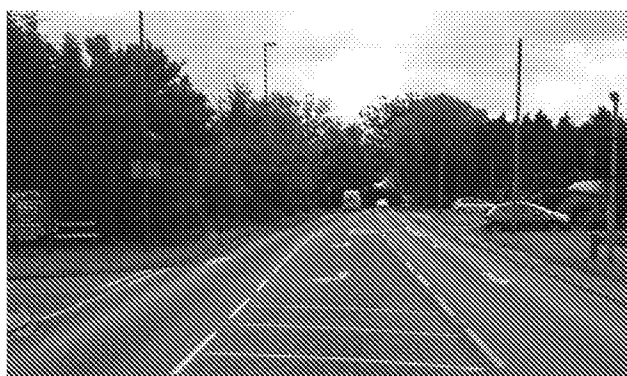
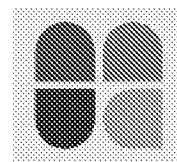


Southern Access

Figure 2.1: Existing Access Points

2.2 Local Road Network

- 2.2.1 The A29 Lidsey road is subject to a 30mph speed limit in the vicinity of the site, increasing to 50 mph c.100m to the south of the site. The 30mph limit is enforced by mobile speed cameras which are sign posted. A radar speed sign is located at the site frontage to alert drivers exceeding the speed limit. The A29 Lidsey Road is not subject to parking restrictions in the vicinity of the site.
- 2.2.2 There are 4 road junctions in the vicinity of the proposed development site; the Woodgate Road / Lidsey Road Junction; the Willows Caravan Park access which is supported by a right turn lane facility; access to Lidsey Road Nursey immediately to the north of the site; and an untitled lane 10m south of the site which serves 3-4 residential dwellings and a glass houses.
- 2.2.3 Woodgate level crossing is situated approximately 230m to the north of the site which can generate vehicle queues in both northbound and southbound directions along the A29 Lidsey Road during the AM and PM peak traffic hours. The carriageway features in the vicinity of the site are shown in **Figure 2.2**.



Right Turn Lane into Willows Caravan Park



Speed Camera Sign



Woodgate Level Crossing



Radar Speed Sign

Figure 2.2: Carriageway Features

2.1 Wider Road Network

- 2.1.1 The A29 provides a connection between local settlements of Bognor Regis, Shripney, Westergate, Eastergate and Fontwell. The A29 also provides a key link between the A259 and A27 which forms part of Highways England's Strategic Road Network. The A259 and A27 provide links to Chichester, Worthing and Brighton. The wider road network is demonstrated in **Figure 2.3**.

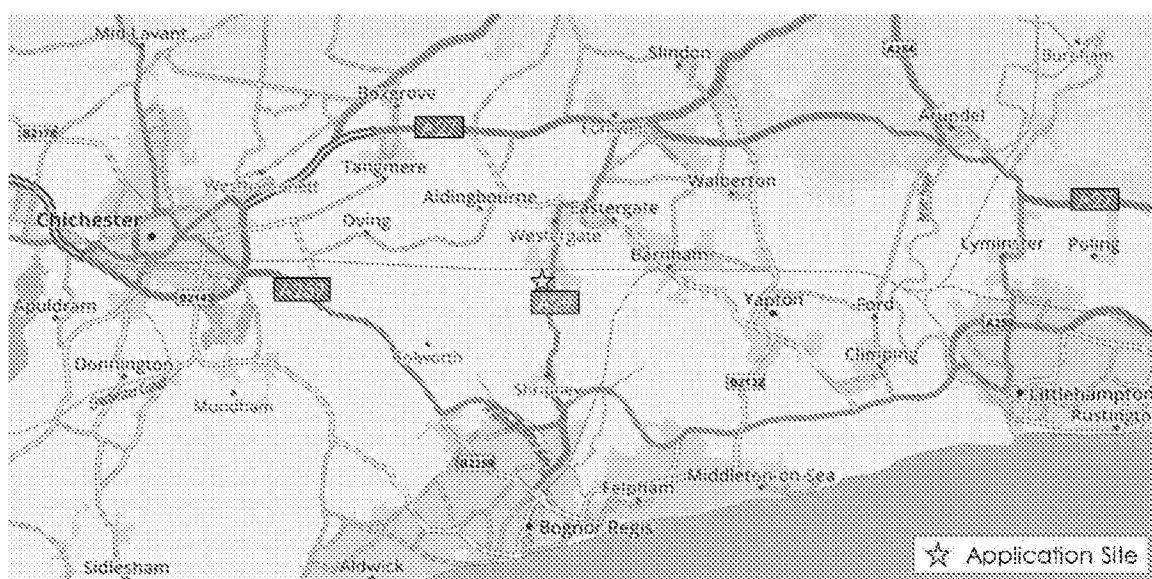
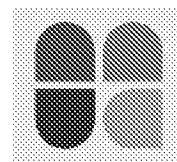


Figure 2.3: Key Road Network



2.2 A29 Realignment

- 2.2.1 Arun District Council are proposing the strategic realignment of the A29 as outlined in the West Sussex Transport Plan to address traffic congestion on the A29 during peak periods. The A29 realignment will provide a new 4.3km road to the east of Woodgate, Eastergate and Westergate extending from the A29 Fontwell Avenue, to the existing A29 Lidsey Road, north of Shripney. The realignment would bypass the section of the A29 passing the site. The planned realignment is demonstrated in **Figure 2.3**.
- 2.2.2 The proposed road will provide a reliable connection to Bognor Regis and substantively reduce traffic along the section of the existing A29 that is bypassed, especially at the Woodgate level crossing. The planned realignment is demonstrated in **Figure 2.3**.

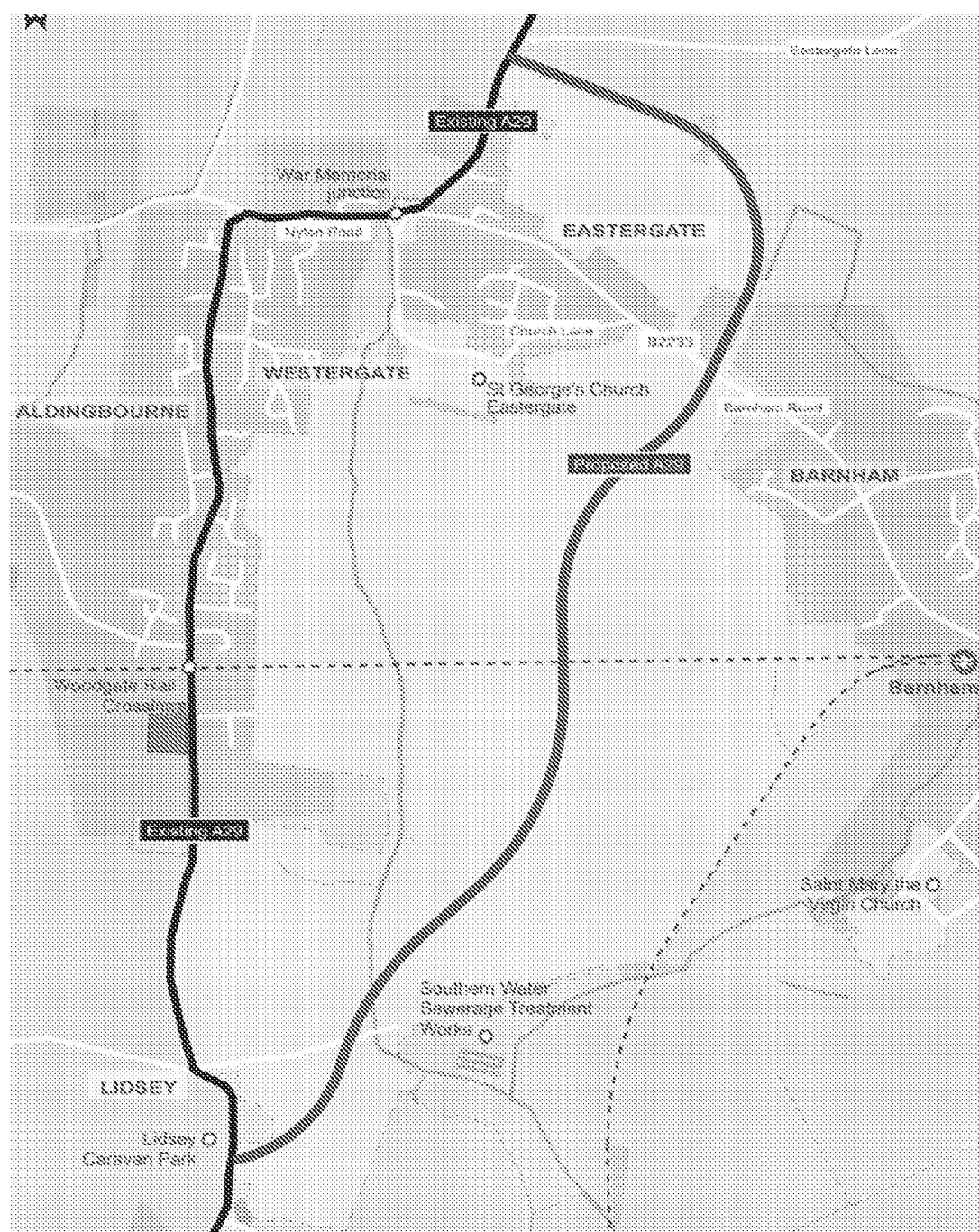
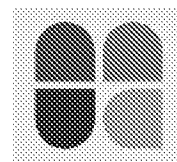


Figure 2.3: A29 Realignment



2.3 Accessibility Credentials

- 2.3.1 The application site is located approximately 260m to the south of Woodgate village centre (equating to a 2-minute walk), and c.1km to the south of Westergate's facilities and amenities (12-minute walk). All walking times are based on the Chartered Institute for Highways and Transport (CIHT) guidance 'Providing for Journeys on Foot'.
- 2.3.2 The CIHT guidance states that facilities situated within 2km and 8km are accessible to pedestrians and cyclists respectively. The proximity of public transport, shopping services and other local amenities are demonstrated in **Plan 01** and **Figure 2.3**.

Destination	Distance from Site	Walk / Cycle Time
Convenience Shop	0.27 km	3mins walk
Post Office	0.27 km	3mins walk
GP	2.24 km	7mins cycle
Public House	0.17 km	2mins walk
Bus Stop	0.03 km	<1min walk
Train Station	3.84 km	12mins cycle
ATM	0.27 km	3mins walk
Bus Stop (with services to Chichester)	1.56 km	19mins walk
Nearest Primary School	0.50 km	6mins walk
Nearest Secondary School	1.65 km	20mins walk

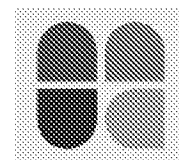
Figure 2.3: Site Proximity to Amenities

2.4 Pedestrian Accessibility

- 2.4.1 Lidsey Road is supported by lit footways either side of the carriageway. These provide access to local bus stops, day-to-day amenities and the established residential areas of Woodgate, Westergate and Eastergate to the north and north-east. To the south of the site the footway extends for approximately 100m.
- 2.4.2 The Chartered Institute of Highways and Transportation (CIHT) publication 'Providing for Journeys on Foot' (2000) states that the average length of a journey on foot is 1 kilometre. It further recommends a preferred maximum walking distance of 2 kilometres for commuting journeys. As shown on the attached **Plan 01**, local bus stops and convenience shopping facilities are within 1km of the site.

2.5 Cycle Accessibility

- 2.5.1 There is limited provision of on-street / off-street cycleway infrastructure in the vicinity of the site. The CIHT's publication 'Cycle Friendly Infrastructure' (1996), suggests that reasonably fit individuals can comfortably cycle a distance of 8 kilometres to workplace destinations. The surrounding villages of Fontwell, Walberton and Barnham, including Barnham railway station are therefore accessible by bicycle.



2.6 Accessibility by Bus

- 2.6.1 The site benefits from a bus stop located in the immediate vicinity of the site which serving northbound and southbound buses. The bus stop is served by no.66A and 66C services, which operate on a frequent basis Monday to Saturday, providing access to local destinations including Bognor Regis, Westergate and Yapton.
- 2.6.2 The bus services provide opportunities for interchange with local and national rail services at both Bognor Regis and Barnham railway stations. A summary of available bus services is provided in **Figure 2.4**.

Service No.	Route Summary	Typical Daytime Frequency	Operating Hours
66A	Bognor Regis – Yapton – Bognor Regis	Mon-Sat: every 3-4 hours	Mon-Fri: 07:23-17:52 Sat: 07:27-18:13
66C	Bognor Regis – Yapton – Bognor Regis	Mon-Sat: every 4 hours	Mon-Sat: 08:27-16:47

Figure 2.4: Bus Services Available from Willows Caravan Park Bus Stops

2.7 Accessibility by Train

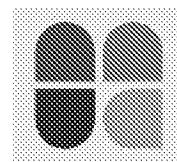
- 2.7.1 Barnham rail station is located approximately 4km to the east of the site. The station provides access to regular rail services, operated by Southern to a range of local and regional destinations as identified in **Figure 2.5**.

Destination	Route Summary	Typical Journey Time	Typical Frequency
Bognor Regis	Barnham – Bognor Regis	6 – 8 min	4 every hour
Littlehampton	Barnham – Ford – Littlehampton	9 – 11 min	2 every hour
Portsmouth	Barnham – Chichester – Havant – Portsmouth	31 – 44 min	3 every hour
Brighton	Barnham – Worthing – Shoreham-by-sea – Hove – Brighton	40 – 46 min	2 every hour
Southampton	Barnham – Chichester – Havant – Fareham – Southampton	1hr 5min – 1hr 7min	2 every hour
London Victoria	Barnham – Horsham – Crawley – Gatwick Airport – Clapham Junction – London Victoria	1hr 22min – 1hr 37min	4 every hour

Figure 2.5: Rail Services Available from Barnham Railway Station

2.8 Accident Data

- 2.8.1 To determine highway safety on the local road network an assessment of Personal Injury Accidents (PIAs) has been undertaken for a five-year period from December 2014 to November 2019 using the Sussex Safer Roads Partnership online data portal. The area considered extends along the A29 approximately 400m to the north and south of the site and includes Woodgate Level Crossing.



- 2.8.2 Collisions are classified as 'slight', 'serious' or 'fatal', depending on the severity of the injury sustained. Patterns displayed in the data can be assessed with regards to their proximity, frequency, severity and the cause of incident to identify underlying highways design issues. The distribution of the incidents relative to the site is displayed in **Figure 2.6**.

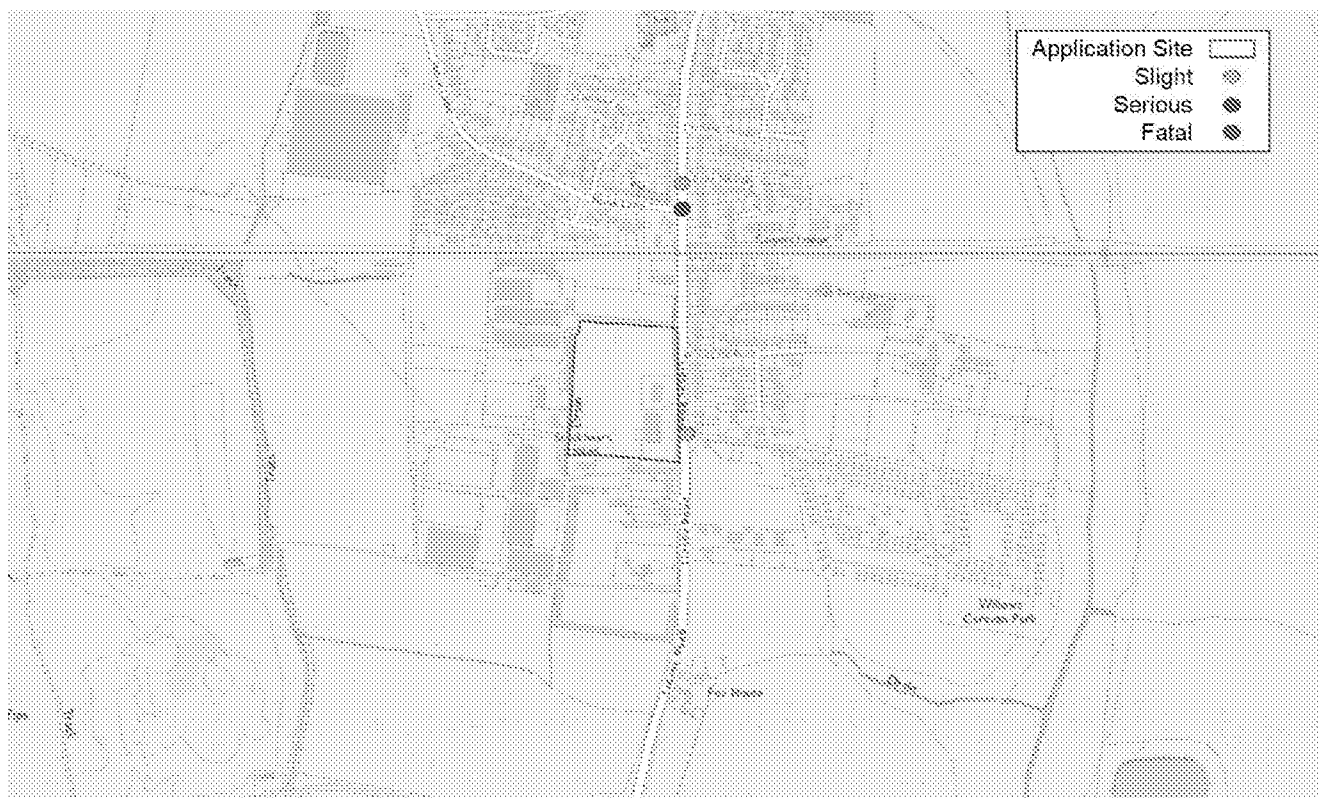
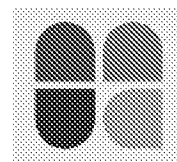


Figure 2.6: PIA Distribution

- 2.8.3 The study revealed 3 incidents in the study area, comprised of 2 slight incidents and 1 serious incident. The serious incident occurred on Hook Lane and is related to driver losing control of a vehicle. The incident in the vicinity of the site frontage involved a motorcycle overtaking a right turning vehicle.
- 2.8.4 The recorded PIA incidents do not reveal pattern in terms of distribution, severity or cause that can be attributed to an underlying highway safety issues on the local road network.



3 PROPOSED DEVELOPMENT

3.1 Overview

- 3.1.1 The planning application proposes the construction of 81 residential dwellings, increasing the number of dwellings from the 55 approved as part of the planning application AL/115/17/OUT. The site's accommodation schedule is shown in **Figure 3.1**.

Dwellings Type	No. Units
1 Bed Flat	4
2 Bed Flat	2
2 Bed House	36
3 Bed House	39
Total	81

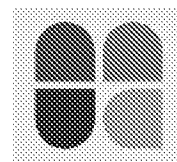
Figure 3.1: Accommodation Schedule

3.2 Proposed Access

- 3.2.1 The site would be served from two accesses adjoining the A29 Lidsey Road. The existing northern access would be formalised and would serve the main body of the site (72 dwellings). In addition, the existing field access would be formalised and would serve 9 dwellings. The site's access arrangements would remain consistent in their form to those proposed within the approved application (AL/115/17/OUT).
- 3.2.2 The site's southernmost access would be stopped up, providing a betterment to the local road network by removing the potential conflict point between vehicles turning right into Willows Caravan Park and those turning right into the site's southern access. The closure of the southern access also removes the potential for vehicle conflict between the southern access and private lane immediately to the south.

Primary Access

- 3.2.3 The primary access would take the form of a T-junction with a simple priority arrangement, supported by a right turn lane on Lidsey Road. The access would have a combined lane width of 6.0m supported by 8.0m corner radii. The access would be flanked by pedestrian footways on the north side of the carriageway and would provide a pedestrian crossing facility across the bellmouth.
- 3.2.4 In accordance with DMRB CD123 guidance for 'Geometric design of at-grade priority and signal-controlled junctions' the right turn lane would develop using a 1:20 taper for a c.70kph design speed. A 'direct taper' length over which vehicles can enter the right turn lane is introduced using a 15m taper length in accordance with CD123.
- 3.2.5 The proposed right turn lane would provide a deceleration length of 40m in accordance with CD123 Table 5.22, which sets out appropriate deceleration lengths relative to the carriageway design speed. A turning length of 10m has been provided in accordance with CD123. A PICADY assessment (see **Section 4**) has been undertaken demonstrating that no queuing is anticipated to occur within the right turn lane, therefore no additional reservoir for queuing vehicles would not be required.
- 3.2.6 The reformed access would require the bus flagpole to be relocated c.10m south of its present location. This would ensure that buses would stop an appropriate distance from the site access without overhanging the junction. The proposed access and right turn lane design is shown in **Drawing 2019/6115/001**.



Secondary Access

- 3.2.7 The secondary access would serve 9 dwellings which would generate infrequent vehicles movements (less than 5 during the AM peak). The access would take the form of a 5.0m crossover. The access width would enable cars to pass at the access. A vehicle swept path analysis demonstrating these manoeuvres has been undertaken on **Drawing 2019/6115/005**.

Visibility Requirements

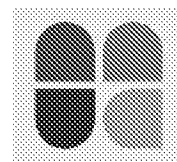
- 3.2.8 The ATC Speed Surveys on the A29 Lidsey Road revealed a design speed of 30.9mph in the northbound direction and 32.2 in the southbound direction. Using DMRB TD 9/93 calculation coefficients the recorded design speeds require a stopping site distance of 66.5m in the lead direction and 71.0m in the trail direction.
- 3.2.9 The proposed access arrangements accordingly achieve the necessary visibility splays of 2.4m x 66.5 in the lead direction and 71.0m in the trail direction. Additionally, 71.0m stopping sight distance to vehicles utilising right turn lane is achievable. The proposed visibility splays and sight lines are demonstrated in **Drawings 2019/6115/001 and 2019/6115/004**.

3.3 Pedestrian Access

- 3.3.1 Pedestrian access to the site would be served from 2.0m wide footways flanking either side of the site's access road, connecting with the existing footways on the A29 Lidsey Road. Crossing facilities in the form of dropped kerbs and tactile paving would be provided to facilitate pedestrian movements across the primary access.
- 3.3.2 The secondary access would provide pedestrian access via a shared surface arrangement. The proposed pedestrian facilities are demonstrated in **Drawing 2019/6115/001 and 2019/6115/004**.

3.4 Internal Layout

- 3.4.1 The proposed site would be served from a short access road that connects to an internal estate road from which properties and side roads, parking courts are served. The site's internal carriageways would not be offered for adoption by the LHA. The site's internal carriageway arrangement is demonstrated **Drawing 2019/6115/006**.
- 3.4.2 The site access road would provide a width of 6.0m and the estate road a width of 5.5m. The internal carriageway geometries enable two-way movements between cars and allow a car and refuse freighter to pass along the majority of the internal carriageways. A vehicle swept path analysis demonstrating two-way vehicle movements is shown in **Drawing 2019/6115/008**.
- 3.4.3 Visibility requirements at internal carriageway junctions have been based on a design speed of 20mph. Using the calculation coefficients set out in MfS, a stopping site distance (adjusted for bonnet length) of 25.0m would be required. Visibility splays of 2.4m x 25.0m are accordingly achievable from all of the site's internal junctions as demonstrated in **Drawing 2019/6115/006**.
- 3.4.4 Forward visibility at internal carriageway bends has been measured along centre of the inner lane in accordance with MfS requirements. The required forward visibility is achievable as demonstrated in **Drawing 2019/6115/006**.
- 3.4.5 Footways would flank either side of the access road, reducing to a single footway provision along the estate road facilitating pedestrian movements through the site. An internal footpath links the cul-de-sac served from the secondary access to the main estate road. Uncontrolled crossing points would be provided along the distributor road to support pedestrian movement across the carriageway.



- 3.4.6 Shared surface arrangements have been provided along no-through roads and private drives in accordance with MfS guidance. MfS suggests that shared surfaces are appropriate where carriageways form cul-de-sacs, where parking is controlled or takes place in designated areas, and where vehicle flows are below 100 movements per hour.

3.5 Emergency Access

- 3.5.1 The site would allow fire tenders (the largest emergency vehicle) to comfortably negotiate the proposed accesses and internal carriageways. Fire tenders would be able to access within 45m of dwellings in accordance with Building Regulation requirements. A minimum carriageway width of 3.7m is maintained throughout the site in accordance with Building Regulation requirements.
- 3.5.2 A vehicle swept path analysis has been undertaken demonstrating fire tenders negotiating the site access, internal carriageways and performing turning manoeuvres in **Drawings 2019/6115/003 2019/6115/005 and 2019/6115/007**.

3.6 Servicing Arrangements

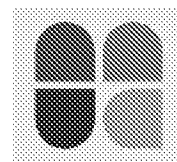
- 3.6.1 The site's access geometries are such that large service vehicles can negotiate the primary access. A vehicle swept path analysis has been undertaken demonstrating a large refuse vehicle (the largest service vehicle) negotiating the access in **Drawing 2019/6115/002**.
- 3.6.2 Where necessary, turning heads are provided on no-through roads to enable refuse freighter access and egress in a forward gear. A vehicle swept path analysis has been undertaken demonstrating refuse freighter turning manoeuvres in **Drawings 2019/6115/007**.
- 3.6.3 Refuse collection for the dwellings at the north east corner of the site would take place from the A29 Lidsey Road. Bin carry distances between properties and refuse collectors would be within the maximum thresholds set out in MfS from all properties (25m for collectors 30m for residents).

3.7 Offsite Infrastructure

- 3.7.1 Sustainable infrastructure would be provided in accordance with the approved planning application AL/32/19/OUT to improve the site and wider local area's accessibility credentials. This section of the report sets out the infrastructure that would be provided.

Proposed Pedestrian Infrastructure

- 3.7.2 To enhance the footway network additional crossing points and footway enhancements would be provided: -
- i. Uncontrolled crossing facilities would be provided at the following locations: -
 - o Lidsey Road adjacent to the development frontage to facilitate pedestrian movement across Lidsey Road;
 - o At the junction of Woodgate Road / Lidsey Road to facilitate pedestrian movement along the footway flanking the eastern side of Lidsey Road;
 - o At the junction of Oaktree Lane / Lidsey Road to facilitate pedestrian movement along the footway flanking the eastern side of Lidsey Road;



- At the junction of Willows Caravan Park / Lidsey Road to connect with relocated southbound bus stop.
 - 25.0m past the site's southern boundary, in close proximity to the relocated bus stop, a pedestrian crossing would be provided to link Lidsey Road's western footway to the relocated southbound bus stop.
 - Crossing would also be provided across the primary and secondary access points.
- ii. The pedestrian footway shown on the west of A29 has been locally widened and extended up to the boundary of the Prince of Wales public house.
 - iii. A footway has also been provided up to Lee's Yard and tactile paving provided at the access road serving Willows Caravan Park linking to this footway provision.

3.7.3 An overview of the proposed pedestrian infrastructure is provided in **Drawing 2019/6115/011**.

Proposed Bus Infrastructure

3.7.4 As part of the development proposals, the bus stops immediately opposite the site would be subject to improvement. The northbound bus stop would provide a new shelter and an increased area of hardstanding. The southbound bus stop would be relocated south of the Willows Caravan Park access to provide more space for the facility, which would include a new shelter and seating and increased area of hardstanding. The proposed bus infrastructure is demonstrated in **Drawing 2019/6115/011**.

Proposed Cycle Infrastructure

3.7.5 To encourage cycle use, additional cycle parking adjacent to the convenience shop would be provided on Hook Lane. The cycle parking would take the form of 2 Sheffield stands (4 cycle spaces) and a small area of hard standing on what is currently the verge on the convenience store's southern boundary. The proposed cycle infrastructure is demonstrated in **Drawing 2019/6115/011**.

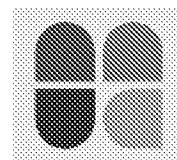
3.8 Stage 1 Road Safety Audit

3.8.1 A new Stage 1 Road Safety Audit (RSA) has been provided to review the proposed vehicle / pedestrian access arrangements and offsite works. The audit has been provided to accord with the GG119 guidance and to account for minor changes to the geometric design. The Stage 1 RSA identified 4 problems and recommendation.

3.8.2 All problems and recommendations have been accepted and incorporated into the proposed design where applicable. A copy of the Stage 1 RSA including the 'Designer's Response' is attached at **Appendix B** of this report.

3.9 Car & Cycle Parking

3.9.1 Arun District Council's 'Parking Standards Supplementary Planning Document' (January 2020) has been consulted to establish the planning authorities parking requirements. A summary of the parking standards, required provision and proposed provision is shown in **Figure 3.2**.



Dwelling no. / type	ADC Standard (Parking Behaviour Zone 2)	ADC Requirement	Proposed Provision
4 x 1 bed dwelling	2 spaces per dwelling	4 spaces	4 spaces
38 x 2 bed dwelling	2 spaces per dwelling	76 spaces	76 spaces
39 x 3 bed dwelling	2 spaces per dwelling	78 spaces	78 spaces
Visitor	20% of the total number of dwellings	16 spaces	16 spaces
Total	-	174	174

Figure 3.2: Residential Car Parking Standards & Provision

3.9.2 As shown in **Figure 3.2**, ADC's parking standards require 174 spaces. A total of 174 spaces have accordingly been provided at the correct ratio per dwelling. Residents car parking would be provided in a mixture of driveways and car ports. The on-street parking would take the form of parallel parking bays.

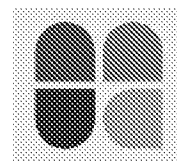
3.10 Cycle Parking

3.10.1 ADC's parking standard has been consulted to establish the planning authorities cycle parking requirements. A summary of the cycle parking standards, the required provision and proposed provision is shown in **Figure 3.2**.

unit no. / size	ADC Standard	ADC Requirement	Proposed
38 x 2 bed house	1 space per dwelling	38 spaces	38
39 x 3 bed house	2 spaces per dwelling	78 spaces	78
6 x 1 and 2 bed flats	1 space per dwelling	6 spaces communal storage	6
Total	-	122	122

Figure 3.2: Residential Cycle Parking Standards & Provision

3.10.2 As shown in **Figure 3.2**, ADC's parking standards require a total 122 spaces. The 122 spaces have accordingly been provided at the correct ratio per dwelling. Cycle parking is provided within rear garden storage. Communal storage facilities are provided for flats.



4 TRIP GENERATION AND TRAFFIC IMPACT

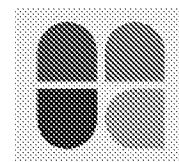
4.1 Overview

- 4.1.1 WSCC's pre-application response identified that trip rates used to support the recent business case for the A29 realignment application should be used to derive the site's vehicular trip generation in the interests of consistency with other developments in the locale. The approved vehicular trip rates are summarised in **Figure 5.1**.

TRICS Trip Rate per Dwelling			
	Arrivals	Departures	Two-way Total
AM Peak Hour	0.124	0.324	0.448
PM Peak Hour	0.312	0.161	0.473
TRICS Vehicle Trip Generation – 81 Dwellings			
AM Peak Hour	10	26	36
PM Peak Hour	25	13	38

Figure 5.1: Anticipated Trip Generation

- 4.1.2 The approved trip rates suggest the proposed development would generate 36 additional vehicle trips during the AM peak period (08:00 – 09:00) and 38 additional trips during the PM peak period (17:00 – 18:00). The peak traffic hour would equate to 1 additional vehicle accessing/egressing the site every 1-2 minutes.
- 4.2 **Traffic Assignment Model**
- 4.2.1 To determine the north / south distribution of development traffic, a traffic assignment model has been prepared to consider weekday AM / PM peak hour scenarios which typically exhibit the greatest traffic impact on the local road network. To provide a robust assessment all traffic is considered to originate from the primary access.
- 4.2.2 Data has been gathered from the 2011 census 'Location of usual residence and place of work' dataset which identifies workplace destinations for residents of a particular area (ward or lower output level). For the purposes of this assessment, data has been gathered from the Arun 003C and 003D output lower layers. The census data is attached at **Appendix C**.
- 4.2.3 Using the census data, trips to/from the site have been assigned to the north/south based on typical route efficiency as calculated using Geographic Information System (GIS) algorithms. The model suggests that 72% of traffic would travel to/from the north, and 28% would travel to/from the south. The distribution model is attached at **Appendix D**.
- 4.2.4 To determine the quantum of additional vehicle trips on the key routes, the site's anticipated trip generation (**Section 5.1**) has been distributed in accordance with the distribution model. Based on the percentage distribution shown in **Appendix D**, the site's AM and PM traffic generation has been assigned to determine the number of vehicles travelling to/from the north/south. The traffic assignment model is attached at **Appendix E**.



4.3 Junction Capacity Modelling

Site Access

- 4.3.1 A junction capacity modelling assessment has been undertaken for the proposed access and the A29 Lidsey Road junction using PICADY. The modelling assessment used flows recorded within the ATC survey on the A29 Lidsey Road undertaken in January 2018 in conjunction with planning application AL/115/17/OUT (**Appendix F**).
- 4.3.2 The recorded flows have been growthed using TEMPRO (version 7.2) to determine the flows on the A29 Lidsey Road in a future 2031 scenario (end of ADC Local Plan Period). A summary of the PICADY modelling results is provided in **Figure 4.3** and the full PICADY output is attached at **Appendix G**.

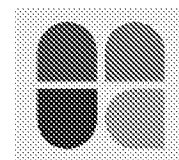
	AM Peak Hour			PM Peak Hour		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
Stream B-AC	0.1	6.97	0.05	0.0	6.45	0.03
Stream C-AB	0	6.77	0.01	0.0	6.27	0.03

Figure 4.3: Summary of PICADY Results (2031 Traffic + Proposed Development)

- 4.3.3 As shown in **Figure 4.3** above, the PICADY assessment revealed a maximum Ratio Flow Capacity (RFC) of 0.05 on Arm B (site access) in the AM peak hour. A maximum queue length of 0.1 vehicles was recorded on Arm B equating to a maximum delay of 6.97 seconds. The PICADY output is attached at **Appendix G**.

Woodgate Level Crossing

- 4.3.4 The traffic impact of the proposed development on the Woodgate Level crossing has been assessed using a LINSIG capacity model. It is however worth noting that the realignment of the A29 would substantively change the flow characteristics on the existing A29 Lidsey Road as a significant proportion of traffic would divert to use the new A29 route owing to its improved efficiency and reliability.
- 4.3.5 The modelling results presented in this assessment are therefore considered to present a situation that is unlikely, as traffic levels substantively reduced by 2031 (end of ADC's local plan period). Within the context of the forthcoming A29 realignment, this assessment has to be viewed as a worst-case scenario.
- 4.3.6 The proposal's trip impact has been capacity tested during weekday AM / PM network peak traffic hours (08:00-09:00 and 17:00-18:00) to determine the effect on the junction when there is currently least capacity is available on the A29, i.e. when the gates are down most and traffic volumes are highest.
- 4.3.7 The typical barrier down times have been based on the previous survey undertaken in January 2018 in conjunction with the previous application at the site. The survey identified that the barriers were down 36% of the peak hours (average). The barrier surveys is attached at **Appendix H**.
- 4.3.8 The following scenarios were modelled for the capacity assessment: -
- AM / PM Baseline Traffic Scenario (2031)
 - AM / PM Baseline Traffic + Proposed Development Traffic Scenario (2031)



4.3.9 The LINSIG output identifies a degree of saturation and maximum queue lengths associated with each stream, (i.e. the arm of the junction). A degree of saturation at 85% signifies the point at which the potential capacity improvements should be considered, whilst a degree of saturation exceeding 100% signifies significant delay increases.

4.3.10 A summary of the LINSIG modelling results is provided in **Figures 4.4** and **4.5** and the full LINSIG output is attached at **Appendix I**.

	AM Peak Hour			PM Peak Hour		
	Mean Max Queue (PCU)	Ave. Delay per PCU (s)	Deg. Sat (%)	Mean Max Queue (PCU)	Ave. Delay per PCU (s)	Deg. Sat (%)
Northbound	21.5	31.0	27.3%	61.1	65.4	53.6%
Southbound	34.4	33.6	36.6%	32.6	51.9	30.9%

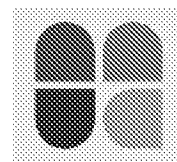
Figure 4.4: Summary of LINSIG Results (Baseline Traffic 2018)

	AM Peak Hour			PM Peak Hour		
	Mean Max Queue (PCU)	Ave. Delay per PCU (s)	Deg. Sat (%)	Mean Max Queue (PCU)	Ave. Delay per PCU (s)	Deg. Sat (%)
Northbound	24.3	31.8	30.0%	74.6	71.6	59.6%
Southbound	39.8	35.0	40.8%	36.8	53.2	34.2%

Figure 4.5: Summary of LINSIG Results (2031 Traffic + Proposed Development)

4.3.11 The addition of the proposed development traffic in the AM peak increases degree of saturation on the southbound arm of Lidsey Road to 40.8% and delay up to 35.0 seconds per PCU as shown in **Figure 4.5**. The addition of the proposed development traffic in the PM peak increases degree of saturation on the northbound arm of Lidsey Road to 59.6% and delay to 71.6 second per PCU as shown in **Figure 4.5**.

4.3.12 The results demonstrate that saturation across the AM and PM peak hours would be within capacity with the addition of the development traffic and would not exceed the 85% threshold at which point potential capacity improvements should be considered.

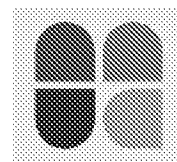


5 SUMMARY AND CONCLUSIONS

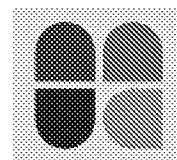
5.1.1 This TS has been commissioned by Thakeham Client Limited on behalf of Southern Housing Group Limited to support a planning application for the development of 81 residential dwellings and associated access on land to the west of the A29 Lidsey Road, Woodgate, West Sussex.

5.1.2 The findings from this report are as follows: -

- i. The site is accessibly located within walking distance of Woodgate and Westergate's local services, amenities and bus stops which can be accessed via the footway network. Westergate, Eastergate, Fontwell, Walberton, and Barnham Station are within a cyclable distance of the site.
- ii. Improvements to bus stop facilities, pedestrian crossings and footways would be provided as per the approved planning application AL/32/19/OUT. The improved sustainable infrastructure provides a betterment to local accessibility credentials.
- iii. An assessment of PIA data showed no pattern of incidents in terms of distribution, frequency or severity that would be of concern in terms of highway safety on the local road network.
- iv. The site would be served from 2 vehicle accesses formalising existing access points adjoining the A29 Lidsey Road.
- v. The Primary access would take the form of a priority T-junction arrangement supported by a DMRB CD 123 compliant right turn lane on the A29 Lidsey Road.
- vi. A vehicle swept path analysis has been undertaken demonstrating the negotiation of the accesses by cars, service vehicles, and emergency vehicles.
- vii. The proposed vehicle accesses provide visibility splays in accordance with DMRB TD 9/93 requirements based on the recorded 85th percentile design speeds.
- viii. The proposed vehicle / pedestrian access arrangements and offsite works have been subject to a Stage 1 RSA according with the GG119 guidance.
- ix. The site's internal carriageways have been subject to vehicle swept path analysis demonstrating appropriate operation. The site's internal carriageways would not be offered for LHA adoption.
- x. Bin carry distances between properties and refuse collectors would be within the maximum thresholds set out in MfS. Refuse collection for the dwellings at the north east corner of the site would take place from Lidsey Road.
- xi. Pedestrian access would be served via footways flanking the site's vehicle access tying in with the existing local footway network. The secondary access would provide pedestrian access via a shared surface arrangement.
- xii. Car and cycle parking would be provided in accordance with Arun District Council's 'Parking Standards Supplementary Planning Document' (January 2020).
- xiii. A WSCC approved trip rates have been used to determine the site's vehicle trips. Application of the trip rate suggests that the proposed development would generate 36 vehicle trips during the AM peak period and 39 additional trips during the PM peak period.
- xiv. A PICADY assessment of the site access revealed that the access would operate within capacity in a future 2031 scenario.

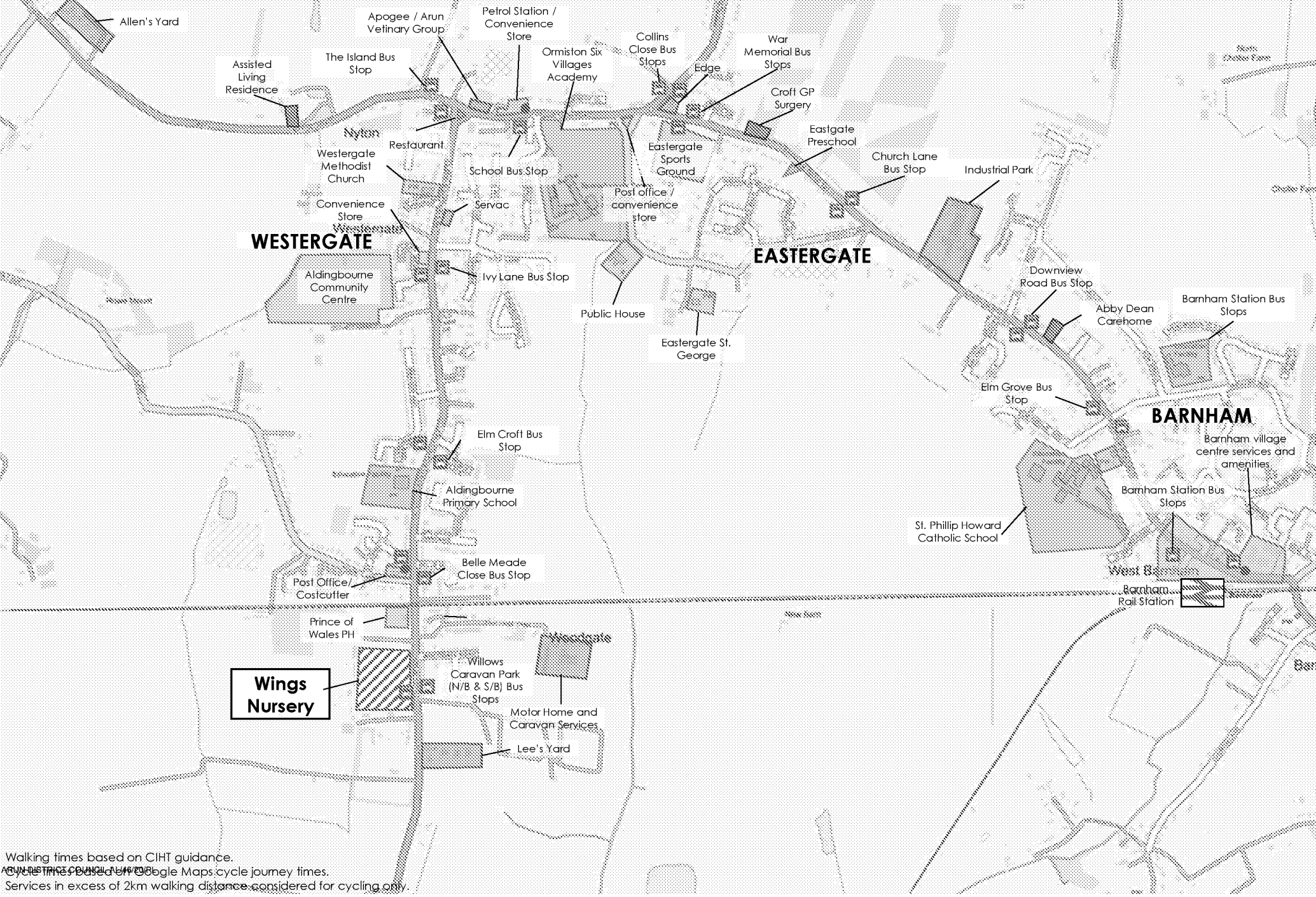


- xv. A LINSIG assessment undertaken in order to assess the impact of development traffic on the Woodgate level crossing revealed that the development would remain within operational capacity in a 2031 scenario.



PLANS

Plan 01 Accessibility Plan

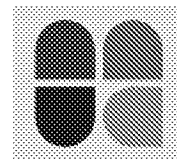


LEGEND

- SITE LOCATIONS
- RAIL STATION
- RAILWAY
- BUS STOPS
- CYCLE ROUTES
- NATIONAL CYCLE ROUTE
- 2KM WALK ISOCHRONE
- RETAIL
- EDUCATION
- LEISURE
- HEALTH CARE
- EMPLOYMENT

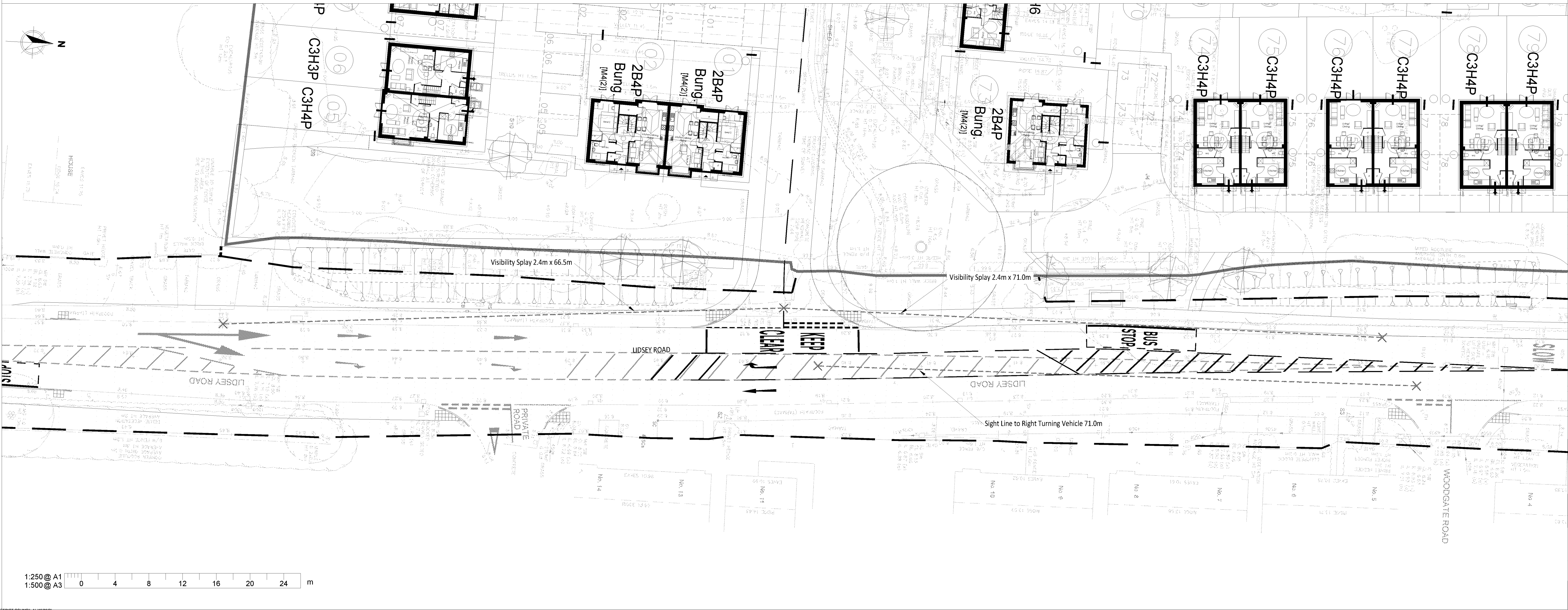
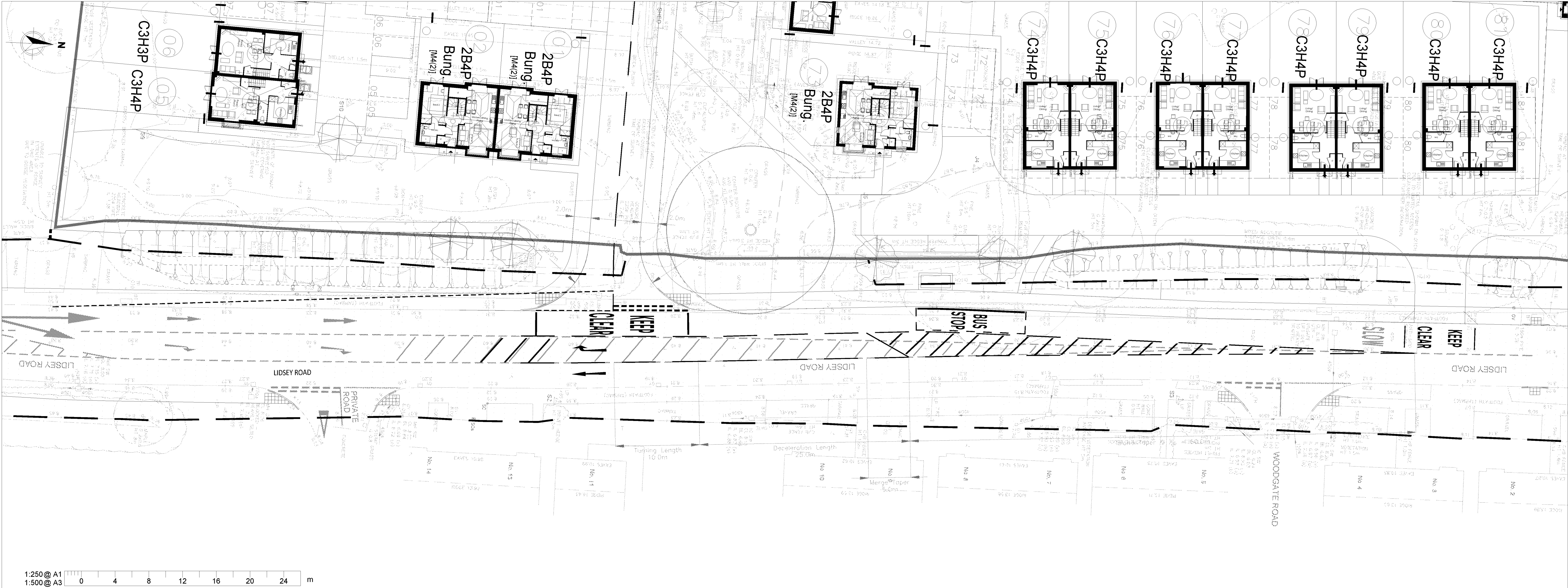
Distances to Amenity's		
Destination	Wings Nursery	
	Distance from Site	Walk / Cycle Time
Convenience Shop	0.27 km	3mins walk
Post Office	0.27 km	3mins walk
GP	2.24 km	7mins cycle
Public House	0.17 km	2mins walk
Bus Stop	0.03 km	<1min walk
Train Station	3.84 km	12mins cycle
ATM	0.27 km	3mins walk
Bus Stop with services to Chichester	1.56 km	19mins walk
Nearest Primary School	0.50 km	6mins walk
Nearest Secondary School	1.65 km	20mins walk

Walking times based on CIHT guidance.
Cycle times based on Google Maps cycle journey times.
Services in excess of 2km walking distance considered for cycling only.



DRAWINGS

- 001** Access Overview and Visibility Splays
- 002** Refuse Vehicle Swept Path Analysis
- 003** Car and Fire Tender Swept Path Analysis
- 004** Secondary Access Visibility Splay and Hook Lane Cycle Parking
- 005** Secondary Access Car and Fire Tender Swept Path Analysis
- 006** Internal Layout Visibility Splays
- 007** Internal Layout Turning Head Swept Path Analysis
- 008** Refuse and Car Passing Swept Path Analysis
- 009** Fire Tender Access Swept Path Analysis
- 010** Car Parking Swept Path Analysis
- 011** NMU Offsite Works Overview



NOTES

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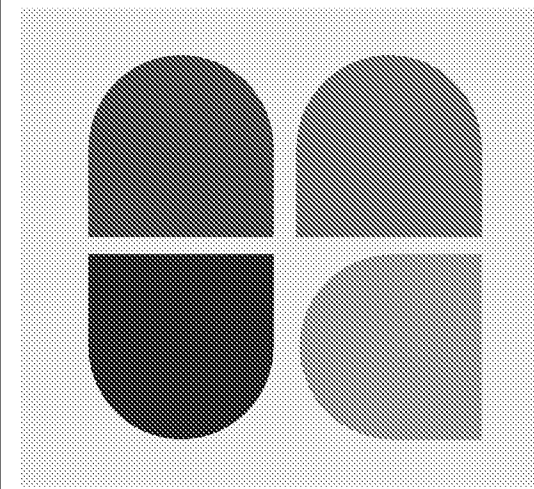
-LEGEND-

- Site Boundary
- Highway Boundary
- Existing Road
- Markings
- Visibility Splays

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F	Revised Layout	20/04/2020
E	Revised Layout	20/04/2020
D	Revised Layout and Bank	13/03/2020
C	RSA Changes	09/03/2020
B	Revised Layout	21/02/2020
A	Revised Access	23/01/2020
-	Original Issue	17/01/2020

Rev.	Amendments	Date
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Drawing Status **FINAL**

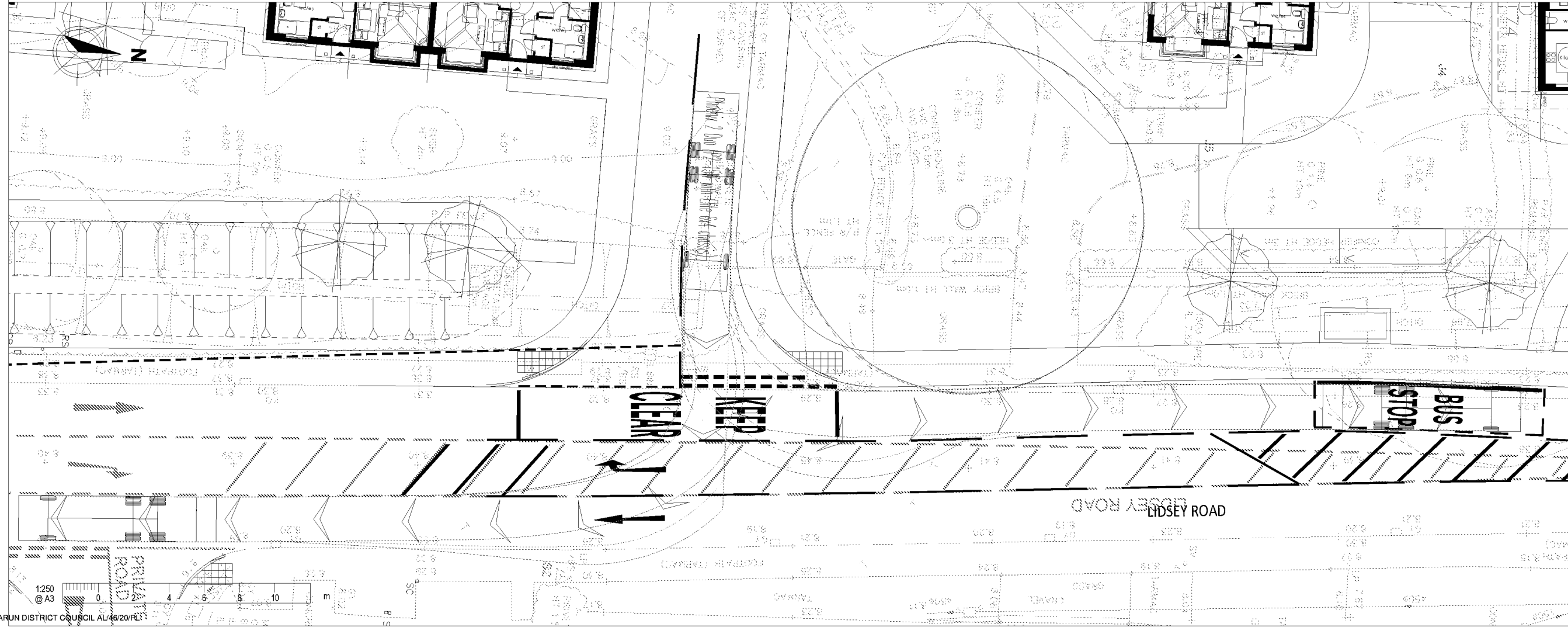
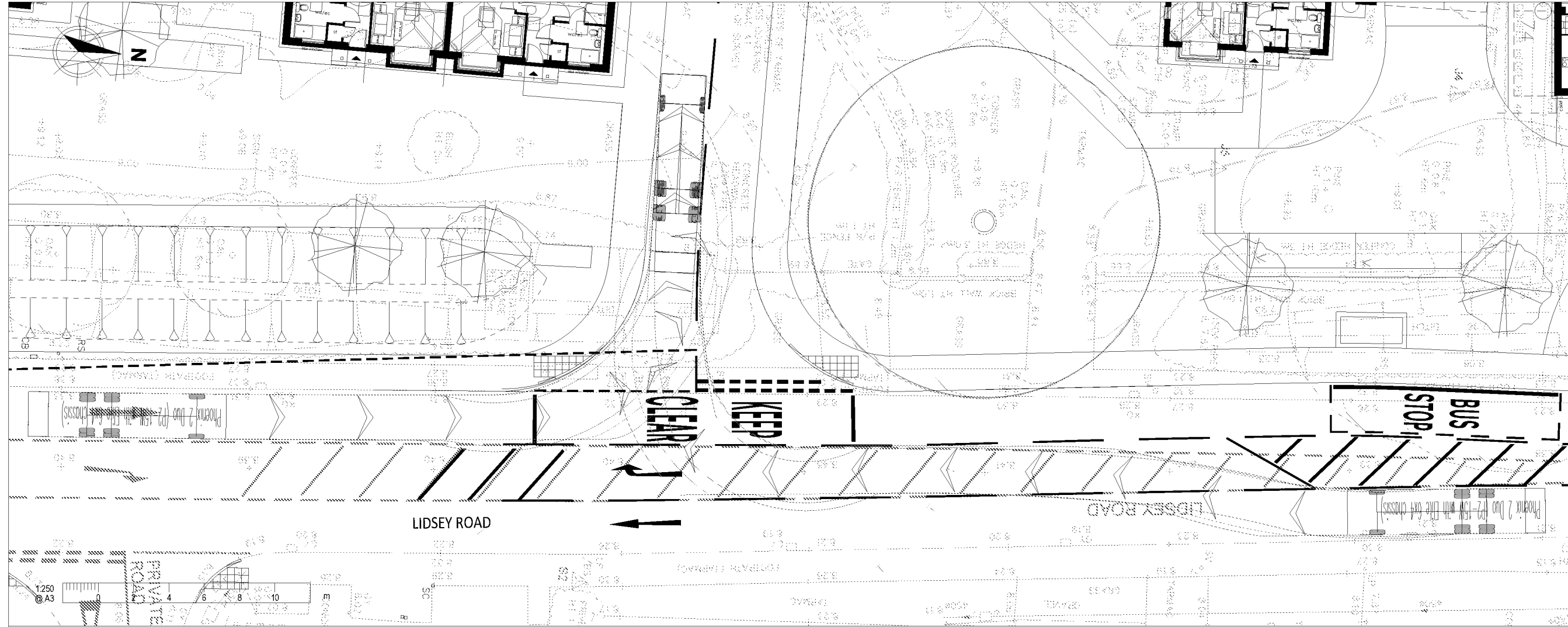
Client **Thakeham Client**

Project **Wings Nirseriy, Woodgate, Chichester**

Drawing Title **Access Overview and Visibility Splays**

Scale **As Shown** Date **June 20** Drawn By **SMO** Checked By **PMR**

Drawing No. **2019-6115-001** Rev. **F**



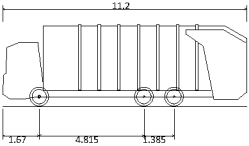
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A3

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-LEGEND-

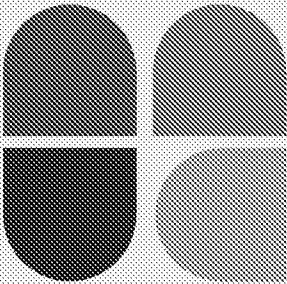
- Existing Road Markings
- Swept Path- Wheel Track Over Swing



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Overall Width	3.751m
Overall Body Height	0.304m
Min Body Ground Clearance	2.500m
Track Width	4.00s
Lock to lock time	9.500m
Kerb to Kerb Turning Radius	

F	Revised Layout	1/06/2020
E	Revised Layout	20/04/2020
D	Revised Layout and Bank	13/03/2020
C	RSA Changes	09/03/2020
B	Layout Update	21/02/2020
A	Layout Update	24/01/2020
-	Original Issue	17/01/2020

Rev.	Amendments	Date
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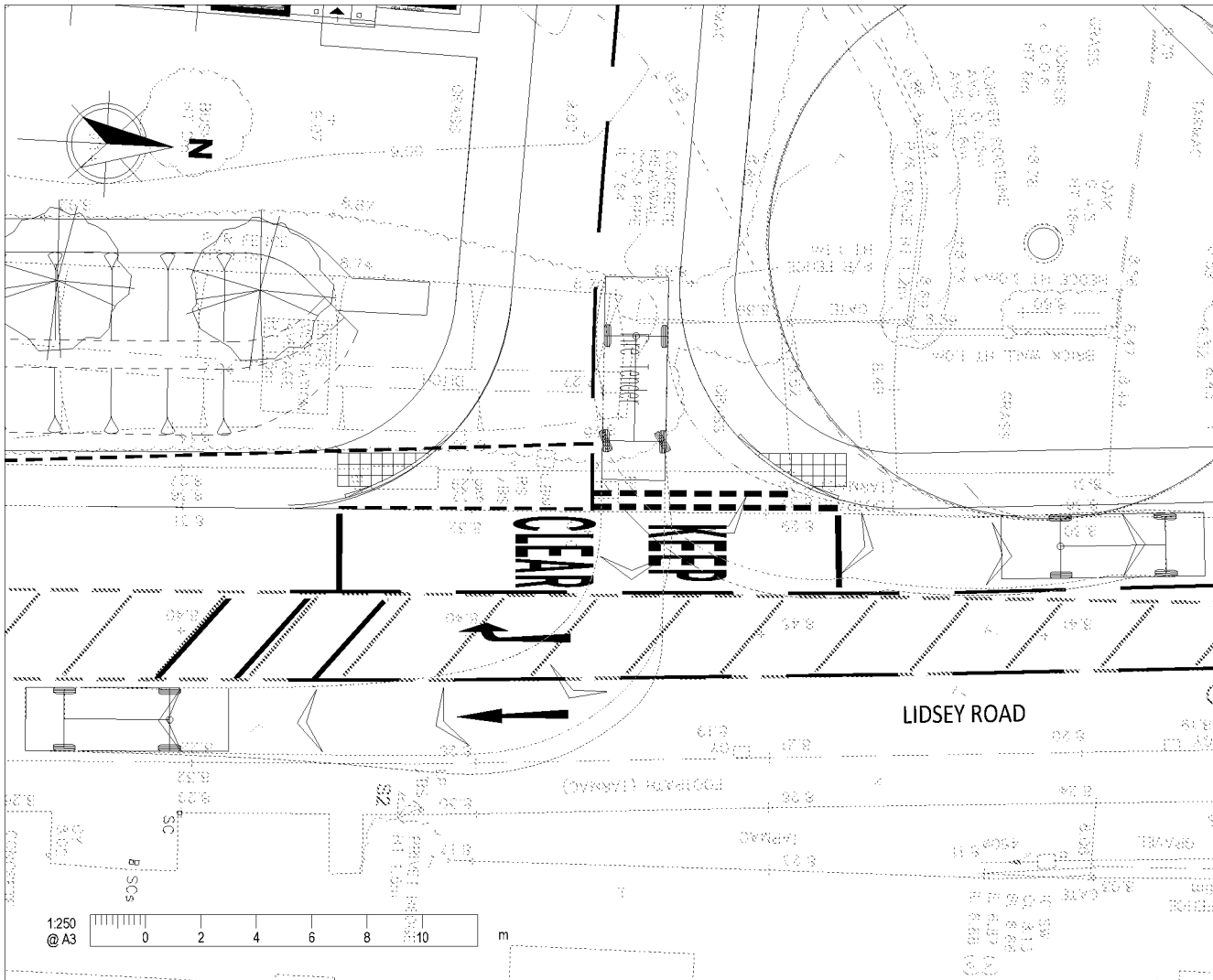
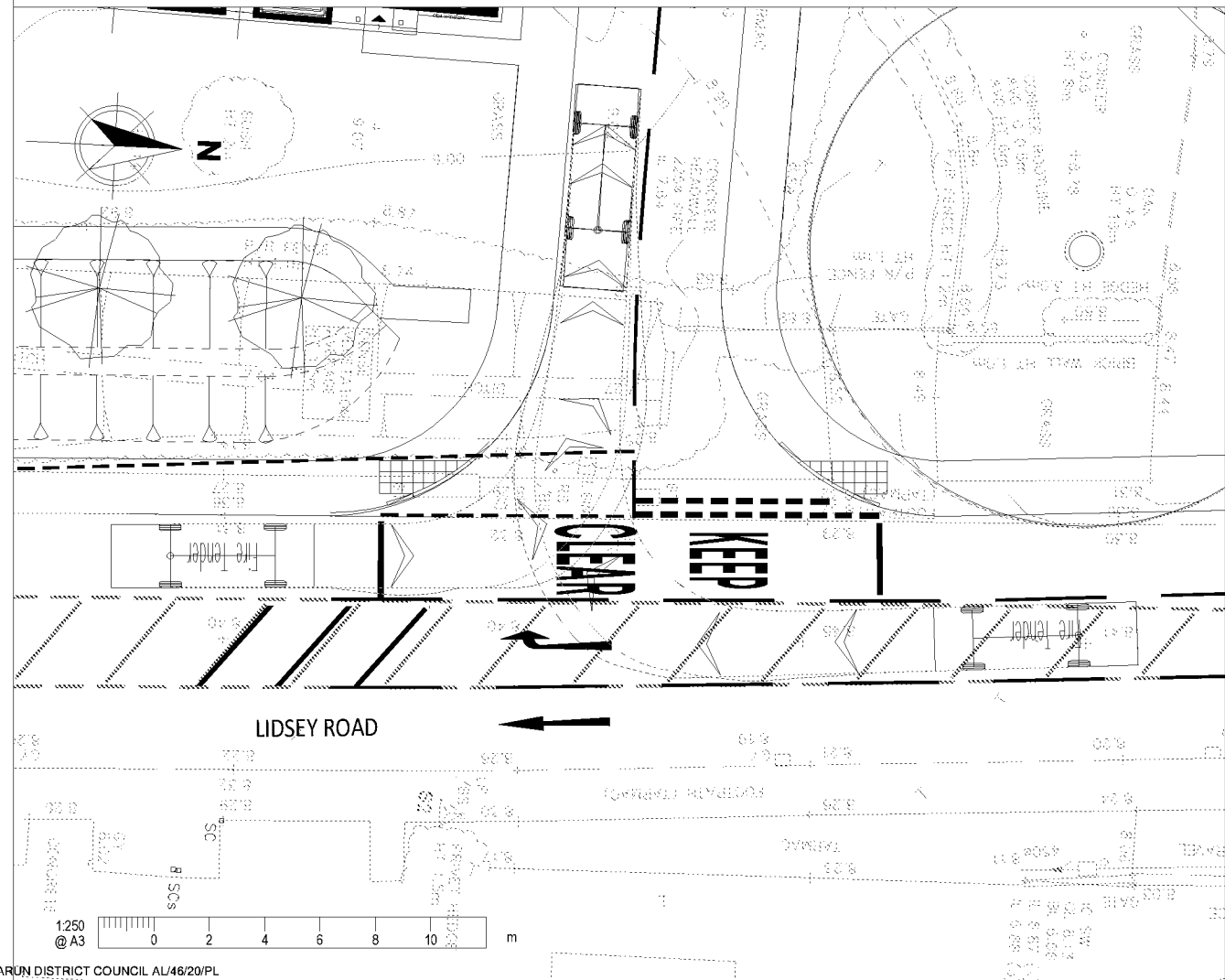
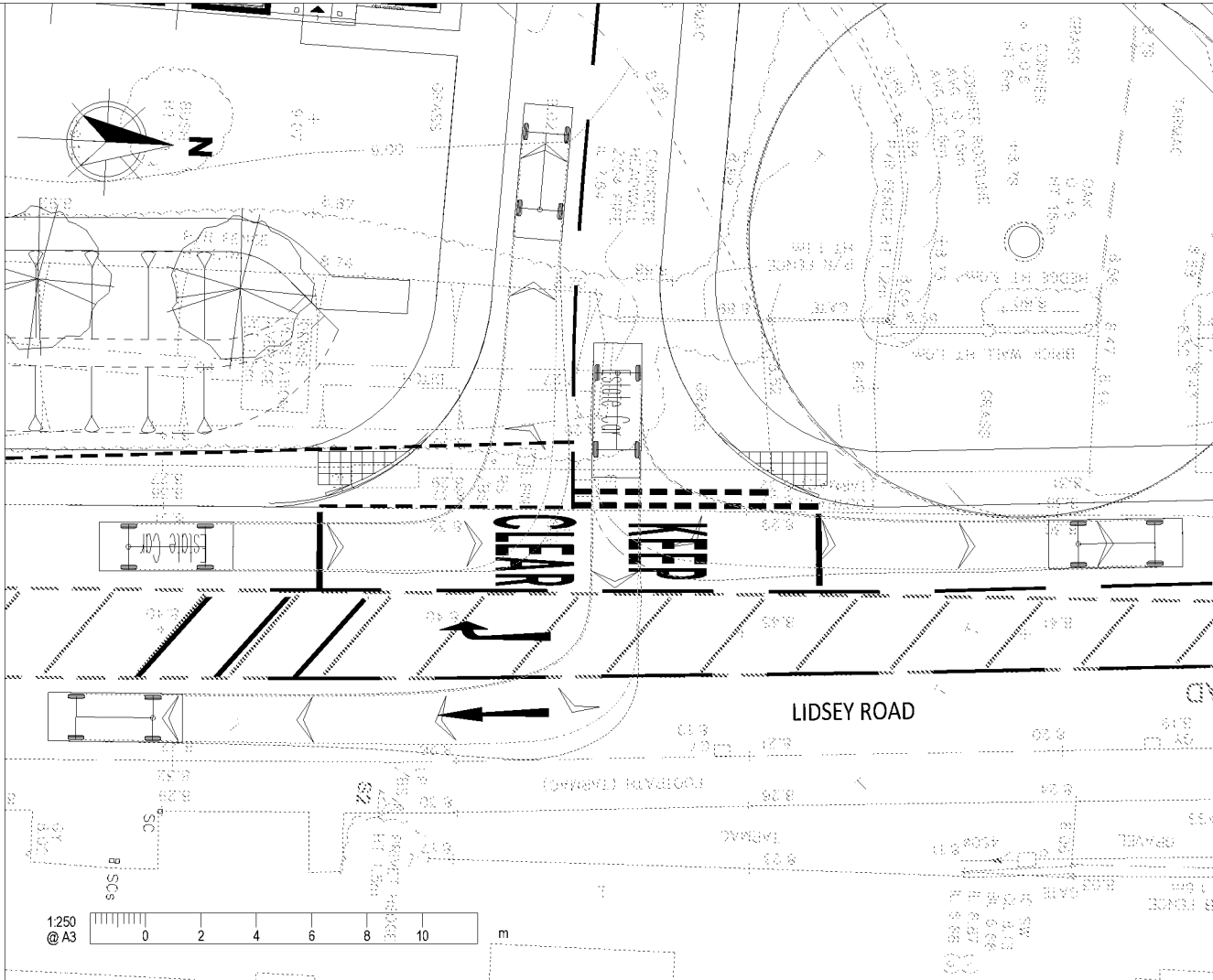
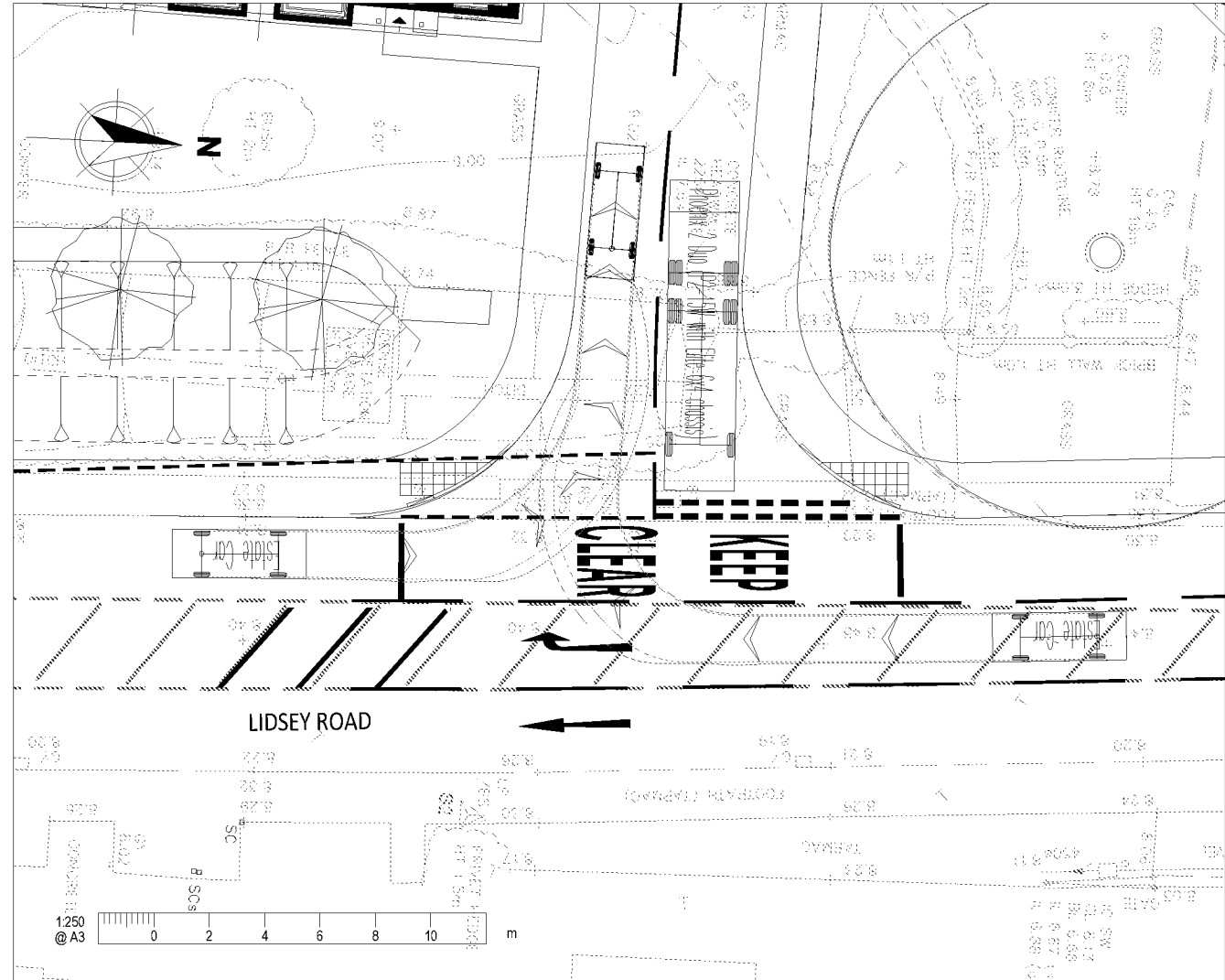
Client	Thakeham Client
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Project	Wings Nursery, Woodgate Chichester
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Drawing Title	Refuse Vehicle Swept Path Analysis
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Scale	Date	Drawn By	Checked By
1:250	June 20	SMO	ALB

Drawing No.	Rev.
2019-6115-002	F



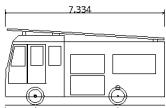
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A3

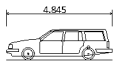
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-LEGEND-

Existing Road
Markings
Wheel Track
Over Swing



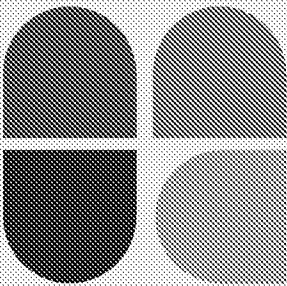
Fire Tender
Overall Length 7.334m
Overall Width 2.286m
Overall Body Height 3.495m
Min Body Ground Clearance 0.380m
Track Width 2.286m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 8.000m



Estate Car
Overall Length 4.845m
Overall Width 1.750m
Overall Body Height 1.424m
Min Body Ground Clearance 0.189m
Max Track Width 1.655m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 4.950m

F	Revised Layout	11/06/2020
E	Revised Layout	20/04/2020
D	Revised Layout and Bank	13/03/2020
C	RSA Changes	09/03/2020
B	Layout Update	21/02/2020
A	Layout Update	24/01/2020
-	Original Issue	17/01/2020

Rev.	Amendments	Date
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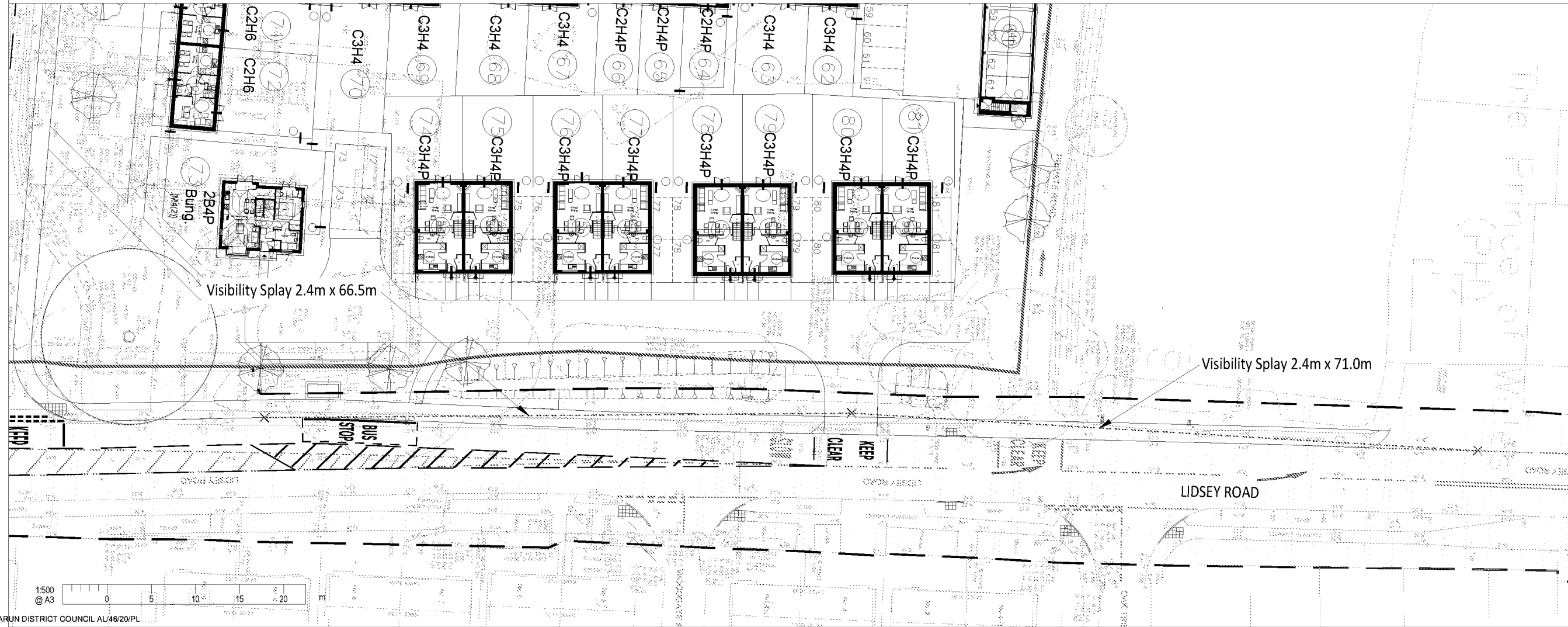
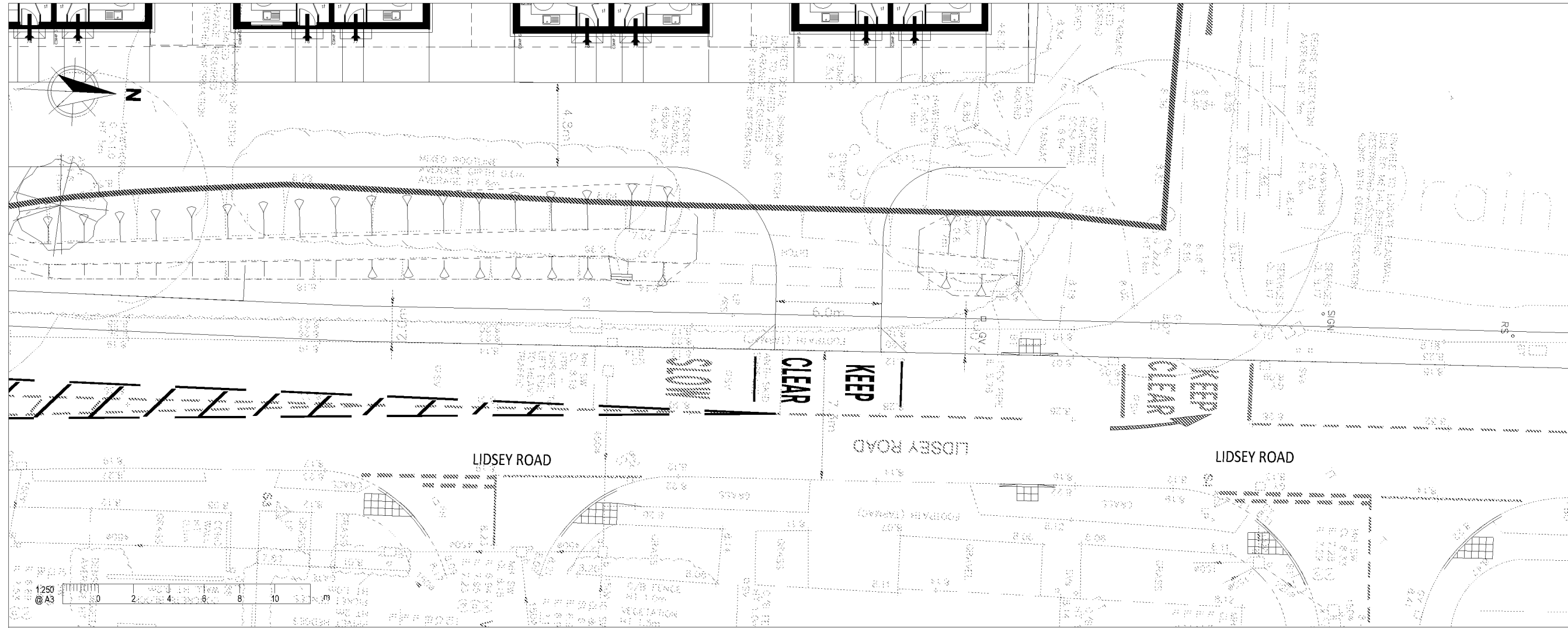
Client **Thakeham Client**

Project **Wings Nursery, Woodgate Chichester**

Drawing Title **Car and Fire Tender Swept Path Analysis**

Scale 1:250	Date June 20	Drawn By SMO	Checked By ALB
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Drawing No. 2019-6115-003	Rev. F
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NOTES

A3

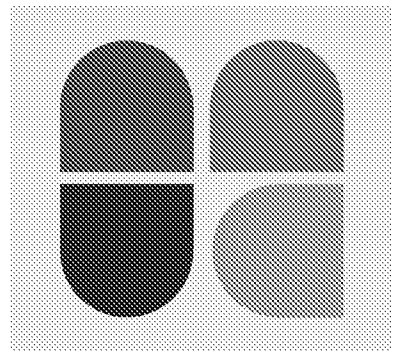
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-LEGEND-

- Site Boundary
- Highway Boundary
- Existing Road Markings
- Visibility Splay

F	Revised Layout	11/06/2020
E	Revised Layout and Bank	20/04/2020
D	Revised Layout and Bank	13/03/2020
C	RSA Changes	09/03/2020
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Rev.	Amendments	Date
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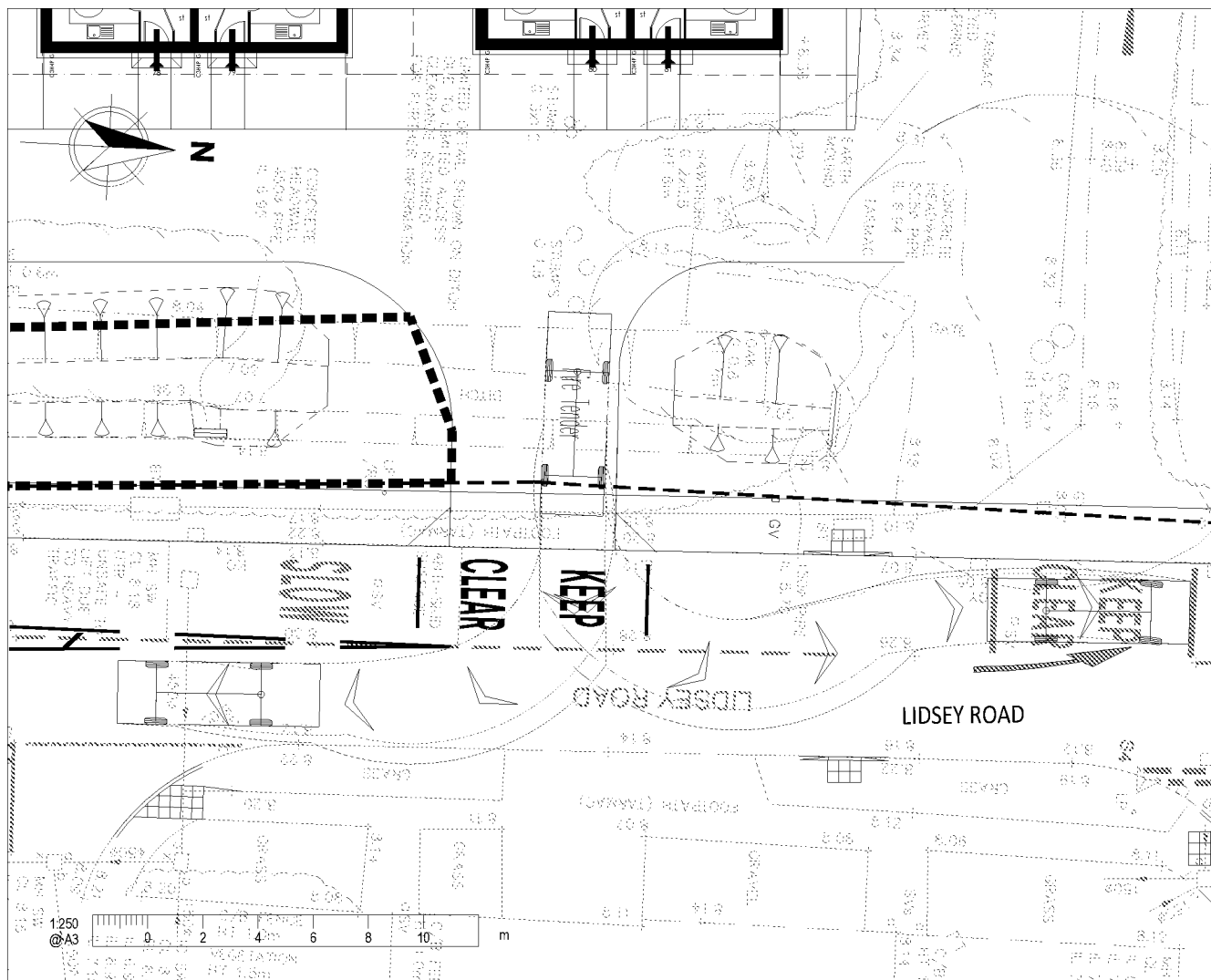
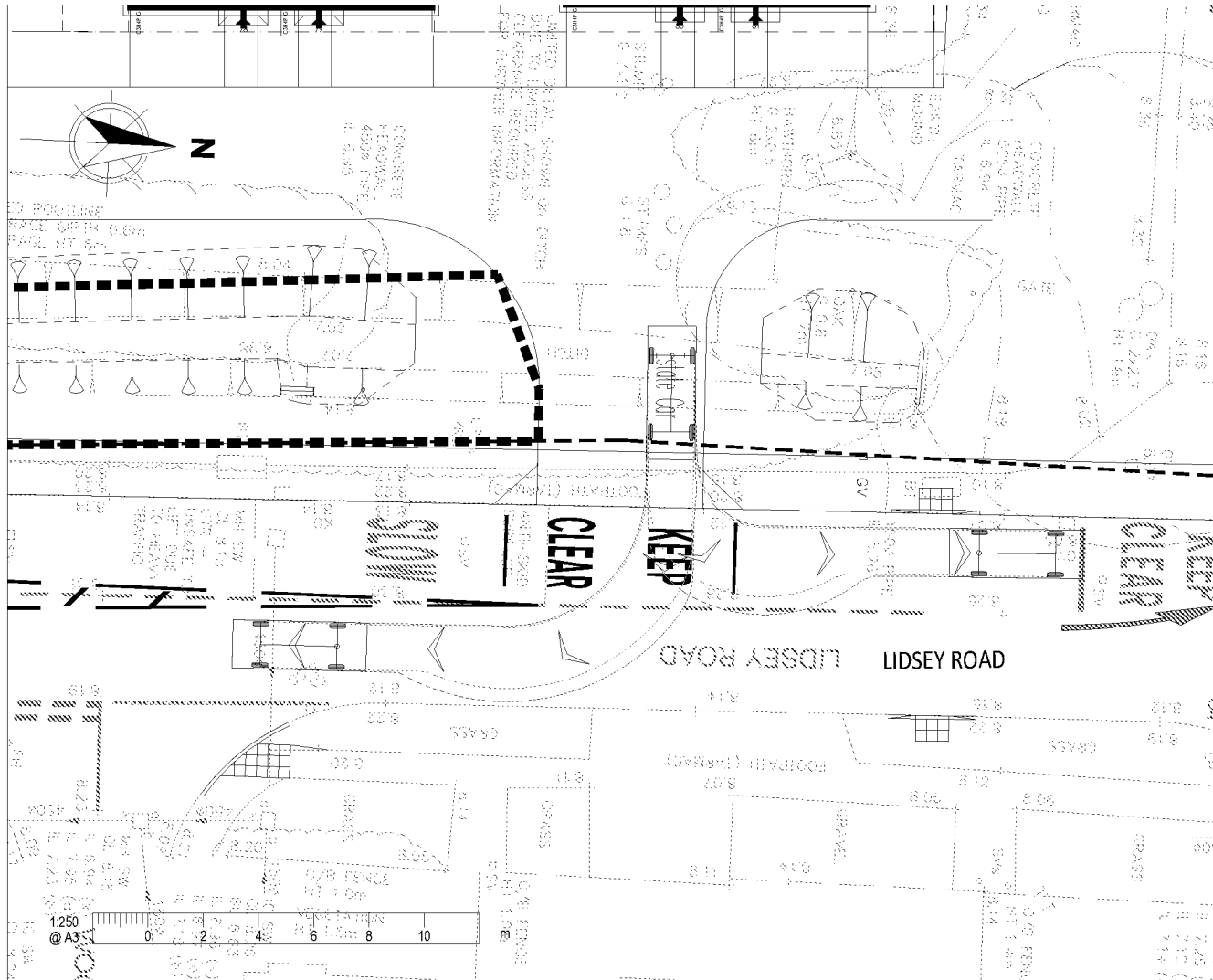
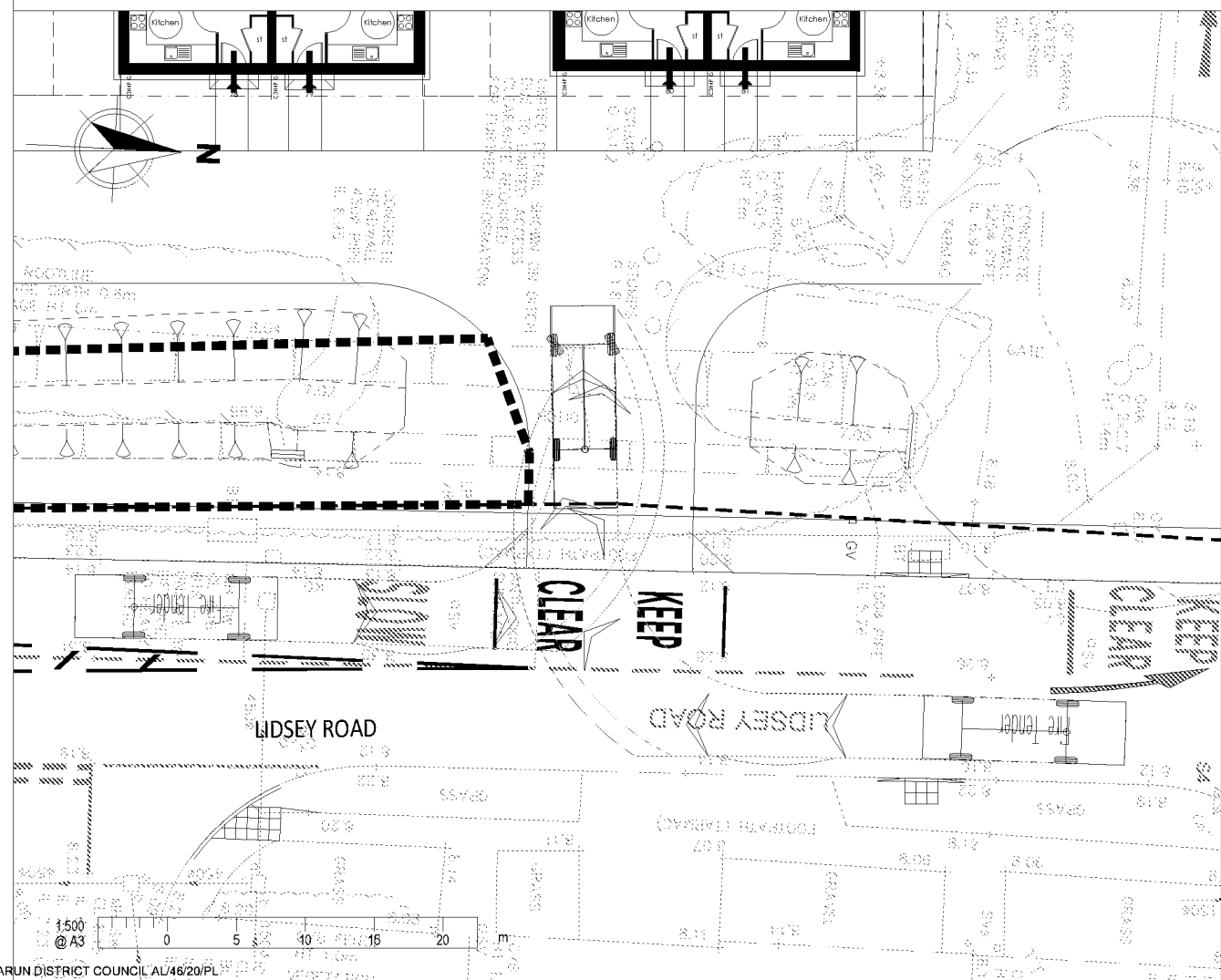
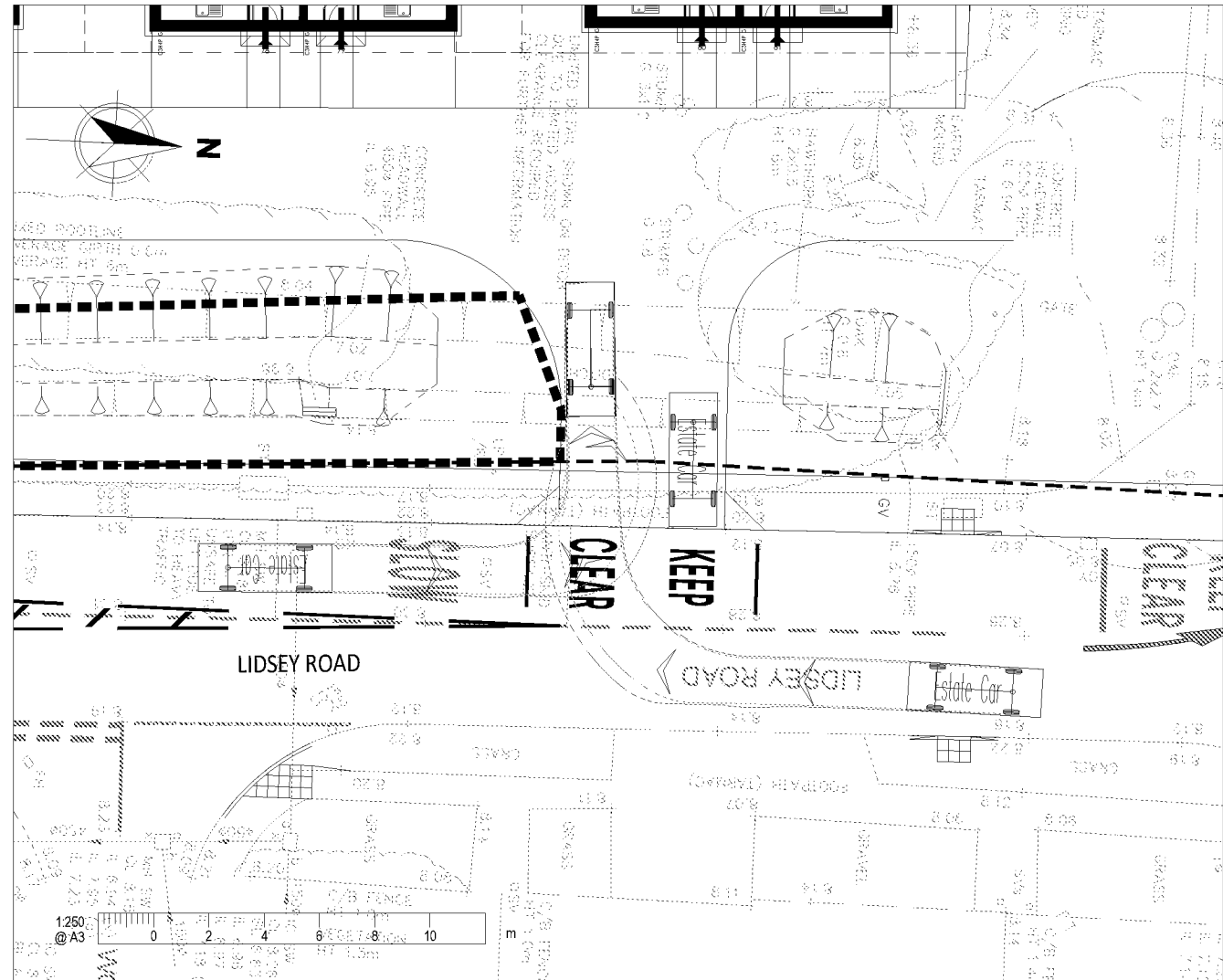
Client	Thakeham Client
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Project	Wings Nursery, Woodgate Chichester
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Drawing Title	Secondary Access Visibility Splay and Hook Lane Cycle Parking
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Scale	As Shown	Date	June 20	Drawn By	SMO	Checked By	ALB
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Drawing No.	2019-6115-004	Rev.	F
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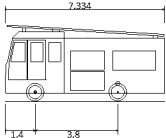


NOTES

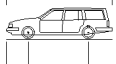
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-LEGEND-

- Existing Road
- Markings
- Wheel Track
- Over Swing



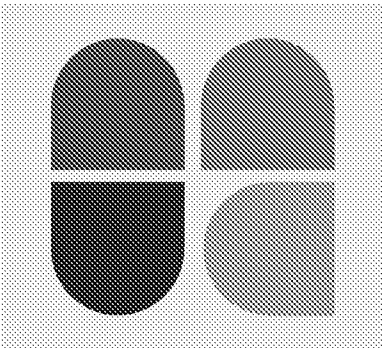
Fire Tender
Overall Length 7.334m
Overall Width 2.286m
Overall Body Height 3.495m
Min Body Ground Clearance 0.380m
Track Width 2.286m
Lock to lock time 5.00s
Kerb to Kerb Turning Radius 8.000m



Estate Car
Overall Length 4.845m
Overall Width 1.750m
Overall Body Height 1.474m
Min Body Ground Clearance 0.189m
Max Track Width 1.655m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 4.950m

E	Revised Layout and Bank	20/04/2020
D	Revised Layout and Bank	13/03/2020
C	RSA Changes	09/03/2020
B	Layout Update	21/02/2020
A	Layout Update	24/01/2020
-	Original Issue	17/01/2020

Rev.	Amendments	Date
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www.bpcivils.co.uk

Drawing Status	FINAL
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Client	Thakeham Client
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Project	Wings Nursery, Woodgate Chichester
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Drawing Title	Secondary Access Car and Fire Tender Swept Path Analysis
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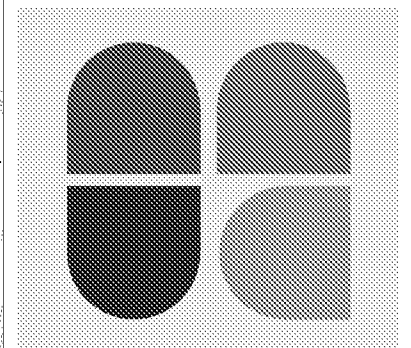
Scale	Date	Drawn By	Checked By
1:250	June 20	SMO	ALB

Drawing No.	Rev.
2019-6115-005	F

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=====	Site Boundary
.....	Existing Road
.....	Markings
XXXX XXXX XXXX	2.4m x 25.0m
	Visibility Splays
=====	25.0m Forward
	Visibility Splay

E	Revised Layout	11/06/2020
D	Revised Layout	20/04/2020
C	Revised Layout and Bank	13/03/2020
B	RSA Comments	09/03/2020
A	Revised Layout	02/03/2020
-	Original Issue	13/02/2020
Rev.	Amendments	Date



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Drawing Status		FINAL	
Client			
Thakeham Client			
Project		Wings Nursery, Woodgate Chichester	
Drawing Title			
Internal Layout Visibility Splays			
Scale	Date	Drawn By	Checked By
As Shown	June 20	SMO	ALB
Drawing No.			Rev.
2019-6115-006			E

NOTES

1.

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2.

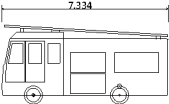
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3.

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4.

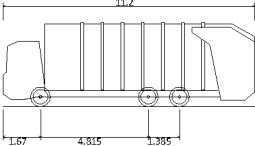
Any information given regarding existing underground services is given in good faith after consultation with the relevant authority, however accuracy is not certain.

-LEGEND-

- Site Boundary
- Existing Road Markings

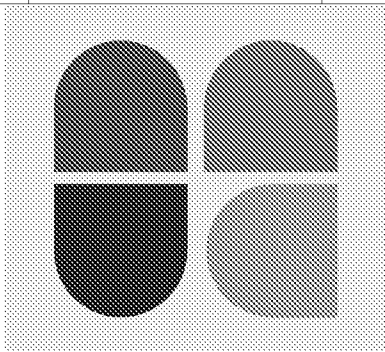


Fire Tender	7.334m
Overall Length	2.286m
Overall Width	3.495m
Min Body Ground Clearance	0.380m
Track Width	2.286m
Lock to lock time	5.00s
Kerb to Kerb Turning Radius	8.000m



Phoenix 2 Duo (P2-15W with Elite 6x4 chassis)	11.200m
Overall Length	2.530m
Overall Width	3.751m
Min Body Ground Clearance	0.304m
Track Width	2.500m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	9.500m

E	Revised Layout	11/06/2020
D	Revised Layout	20/04/2020
C	Revised Layout and Bank	13/03/2020
B	RSA Changes	09/03/2020
A	Layout Update	02/03/2020
-	Original Issue	13/02/2020
Rev.	Amendments	Date



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Drawing Status	FINAL
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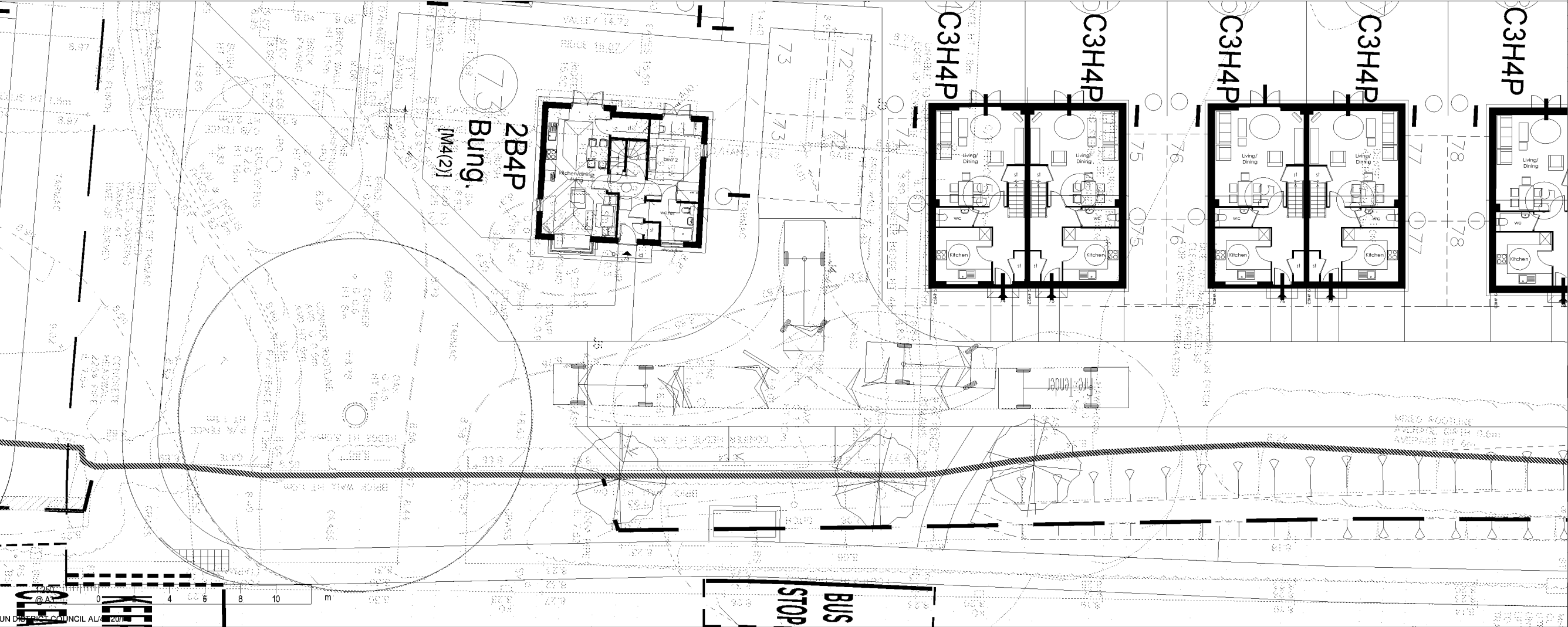
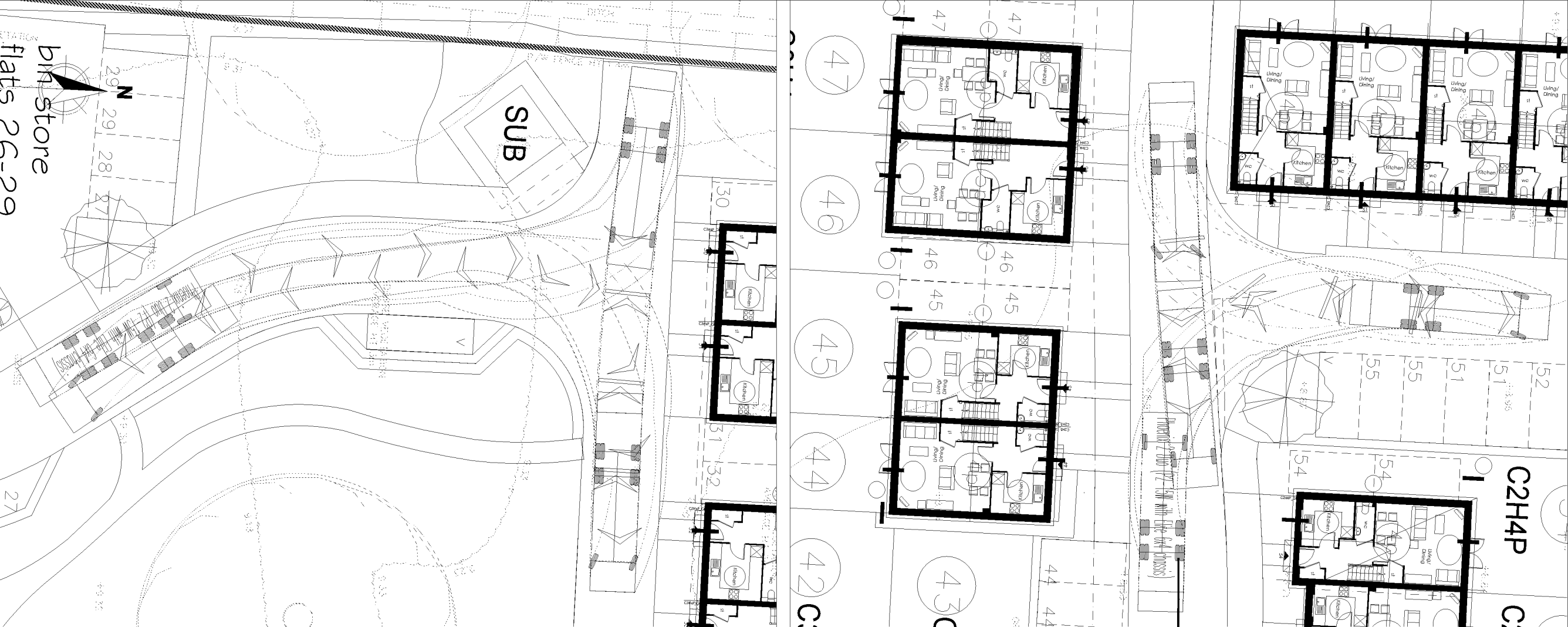
Client	Thakeham Client
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Project	Wings Nursery, Woodgate Chichester
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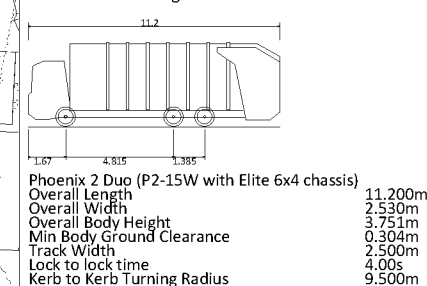
Drawing Title	Internal Layout Turning Head Swept Path Analysis
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Scale	Date	Drawn By	Checked By
As Shown	June 20	SMO	ALB

Drawing No.	Rev.
2019-6115-007	E



- LEGEND-**
- | | |
|---|---------------|
| | Existing Road |
|  | Markings |
| | Wheel Track |
|  | Over Swing |



Drawing Status	FINAL
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Project Wings Nursery, Woodgate
Chichester

Scale As Shown	Date June 20	Drawn By SMO	Checked By ALB
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Drawing No. 2019-6115-008	Rev. E
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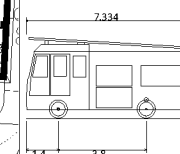
NOTES

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-LEGEND-

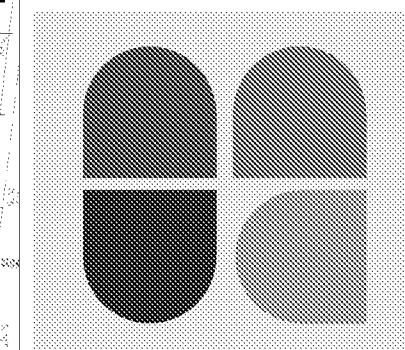
Existing Road
Markings

Wheel Track
Over Swing



Fire Tender	
Overall Length	7.334m
Overall Width	2.286m
Overall Body Height	3.495m
Min Body Ground Clearance	0.380m
Track Width	2.286m
Lock to lock time	5.00s
Kerb to Kerb Turning Radius	8.000m

E	Revised Layout	11/06/2020
D	Revised Layout	20/04/2020
C	Revised Layout and Bank	13/03/2020
B	RSA Changes	09/03/2020
A	Layout Update	02/03/2020
-	Original Issue	13/02/2020
Rev.	Amendments	Date



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Drawing Status	FINAL
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Client
Thakeham Client

Project **Wings Nursery, Woodgate
Chichester**

Drawing Title

Fire Tender
Access Swept Path Analysis

Scale As Shown	Date June 20	Drawn By SMO	Checked By ALB
Drawing No. 2019-6115-009			Rev. E