



Transport Assessment

Land at Woodgate Centre, Oak Tree Lane, Woodgate

20-061-004 Rev B

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Charles & Associates

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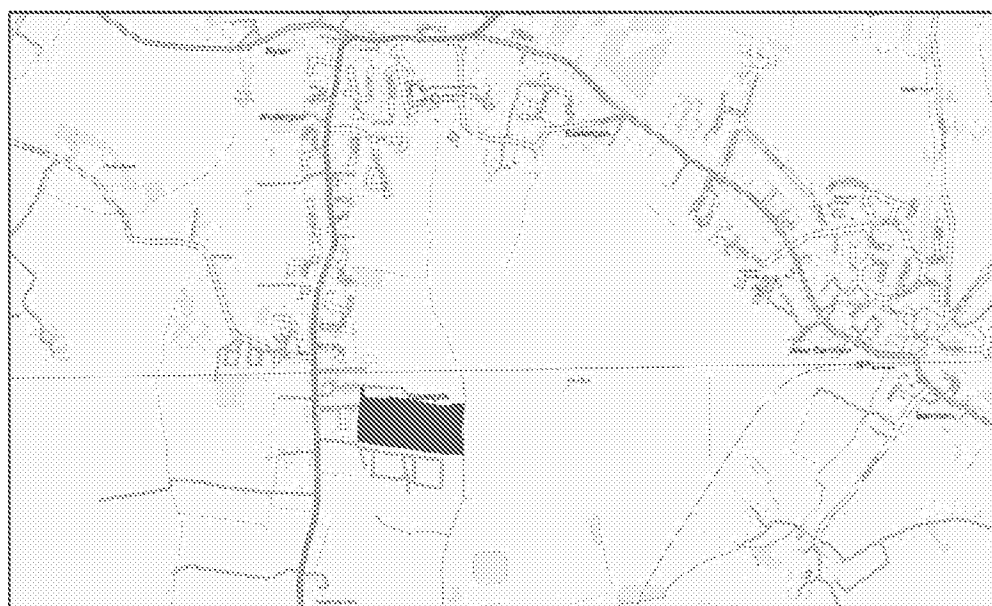
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1 Introduction

1.1 Introduction

- 1.1.1 Charles & Associates Consulting Engineers Ltd. (C&A) have been commissioned by PYE Homes in relation to Land at Woodgate Road, Aldingbourne, West Sussex, hereafter referred as the “the site”.
- 1.1.2 C&A have prepared a Transport Assessment (TA) and a Residential Travel Plan (TP) in support of a detailed planning application for up to 180 dwellings on the site.
- 1.1.3 The site is located to the east of the A29 Lidsey Road and to the south of the existing railway line running east – west through the Woodgate village and is accessed via Woodgate Road. The site’s location is illustrated in red in Figure 1.1.

Figure 1.1: Site Location



- 1.1.4 This report has been prepared in accordance with the National Planning Practice Guidance (NPPG) for Travel Plans, Transport Assessments and Statements, March 2014 and the National Planning Policy Framework (NPPF) 2021.
- 1.1.5 West Sussex County Council (WSCC) is the local highway authority for the area, having responsibility for the roads under consideration in this TA. Therefore, at regional level, the report also references and accounts for WSCC’s Local Transport Plan 2011-26 (LTP3).
- 1.1.6 Considering the site’s geographical context, this report will give due consideration to the policies relevant to the current development plan for Arun District Council (ADC). At the time of writing, these comprise of:

- ADC Adopted Local Plan 2011-2031
 - Aldingbourne Neighbourhood Development Plan (2014-2034)
 - ADC Parking Standards Supplementary Planning Document January 2020
 - ADC BEW Framework Masterplan
- 1.1.7 The site forms part of the wider strategic allocation referred to as Barnham, Eastergate and Westergate (BEW) under Policy H SP2c (SD5) within the adopted ADC Local Plan 2011-2031.
- 1.1.8 This TA considers the travel implications of the proposed development; in particular, its accessibility to the surrounding facilities and sustainable forms of transport, and its potential impact on the existing highway network.
- 1.1.9 A Residential Travel Plan (TP) has also been prepared for the proposed development to be submitted with this TA as part of the planning application. The TP presents measures that would be implemented to encourage future residents to adopt non-car modes of transport.

1.2 Pre-Application Discussions

- 1.2.1 Several comprehensive transport notes were submitted to the WSCC Highway Authority as a precursor to pre-application discussions and to agree key parameters and the scope of the TA to support the planning application. Two further technical notes were also submitted detailing the proposed modelling scenarios and sustainable footpath/cycleway access opportunities from Woodgate Road.
- 1.2.2 These reports and the subsequently received comments from WSCC form the basis of this TA and for completeness, these are provided in **Appendix A**.

1.3 Report Structure

- 1.3.1 The structure of the remainder of the report is as follows:
- Chapter 2 – Policy Context
 - Chapter 3 – Existing Conditions
 - Chapter 4 – Development Proposals
 - Chapter 5 – Development Traffic
 - Chapter 6 – Traffic Impact Assessment
 - Chapter 7 – Sensitivity Test
 - Chapter 8 – Summary and Conclusions

2 Policy Review

2.1 National Policy

National Planning Policy Framework (NPPF) 2021

- 2.1.2 The revised National Planning Policy Framework (NPPF), published in July 2021, recognises the need to pursue sustainable development in a positive way, summarised in NPPF paragraph 9 which states *“Planning policies and decisions should play an active role in guiding development towards sustainable solutions, but in doing so should take local circumstances into account, to reflect the character, needs and opportunities of each area.”*
- 2.1.3 The NPPF indicates in paragraph 104 that *“Transport issues should be considered from the earliest stages of plan-making and development proposals”*. In NPPF paragraph 105, the active management of patterns of growth is advocated as it can *“help reduce congestion and emissions and improve air quality and public health”* whilst recognising that *“opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making.”*
- 2.1.4 In considering development proposals, NPPF recommends in paragraph 112 that applications for development should *“give priority first to pedestrian and cycle movements”* and *“create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles”*.
- 2.1.5 This document addresses the requirement in Paragraph 113 of the NPPF that *“All developments that will generate significant amounts of movement should be required to provide a travel plan and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed.”*
- 2.1.6 The NPPF paragraph 114 highlights that *“Advanced, high quality and reliable communications infrastructure is essential for economic growth and social well-being”*. Providing this within the development proposals will potentially encourage home working for new residents and reduce business mileage for new businesses on the site.

Planning Practice Guidance

- 2.1.7 The NPPF is complemented by a web-based resource 'Planning Practice Guidance' which was launched in March 2014. The relevant section of this guidance is entitled 'Travel Plans, Transport Assessments and Statements in decision-taking'. It provides advice on when Transport Assessments and Transport Statements are required, and what they should contain. The following TA has been prepared in accordance with this guidance.

2.2 Regional Policy

West Sussex Local Transport Plan 2011-26

- 2.2.2 The West Sussex Transport Plan 2011-2026 details the strategy for transport in the region. The four main strands of this strategy are to:

- Promote economic growth;
- Tackle climate change;
- Provide access to services, employment and housing;
- Improve safety, security & health.

- 2.2.3 The TP comprises a long-term strategy which sets out the vision for transport strategy in West Sussex and an implementation plan which identifies what infrastructure is required and any available options to achieve the Council's main objective both in the short and long-term.

- 2.2.4 The strategy for the Arun area in particular is to "ensure that all new schemes and developments contribute and support, in some way to the following:

- *Increasing use of sustainable travel modes of transport*
- *Improving network efficiency in order to improve journey times and air quality*
- *Improving safety for all road users*
- *Discouraging HGVs from using sustainable roads*
- *Improving accessibility between communities within the District."*

Guidance on Parking at New Developments, June 2020

- 2.2.5 "West Sussex County Council - Guidance on Parking at New Developments (September 2020)" defines the principles for parking demand within new residential and non-residential developments in the county. This document also sets out methodology for the calculation of parking spaces for new developments which is based on the Parking Behaviour Zones (PBZ).

2.2.6 Considering the site lies in Barnham ward, the car parking provision, within the proposed development, should be provided to meet the parking demand relevant to PBZ2 as set out below:

- 1 bedroom (1-3 habitable rooms) – 1.4 spaces per dwelling;
- 2 bedrooms (4 habitable rooms) – 1.7 spaces per dwelling;
- 3 bedrooms (5-6 habitable rooms) – 2.1 spaces per dwelling;
- 4+ bedrooms (7 or more) – 2.7 spaces per dwelling.

2.2.7 The minimum levels of cycle provision required are set out below:

- 1 & 2 bedroom houses (up to 4 rooms) – 1 space per unit;
- 3+ bedroom houses (5+ rooms) – 2 spaces per unit;
- 1 & 2 bedroom flats (up to 3 rooms) – 0.5 spaces per unit (if communal storage, otherwise same as 1 & 2 bed house);
- 3+ bedroom flats (4+ rooms) – 1 space.

2.2.8 Appendix B of the guidance document sets out the yearly Electric Vehicle (EV) provision indexes which are to be used as a guide to the level of 'active' EV spaces to be provided in the year of development construction. Remaining spaces should be provided as 'passive' provision.

2.3 Local Policy

Arun Local Plan 2011-2031

2.3.2 The Arun Local Plan covering the period 2011-2031 was adopted on the 18th of July 2018. The Plan sets out the vision of Arun, by the end of plan period, to be “a safer, more inclusive, vibrant and attractive place to live, work and visit” and its residents to be “healthier and better educated, with reduced inequalities between the most and least affluent”.

2.3.3 It also highlights that the purpose of the plan is to “encourage sustainable development and manage future growth whilst ensuring that change across the District is appropriate to meet local need”.

2.3.4 The site forms part of the Barnham/Eastergate/Westergate – (BEW) (SD5) Strategic Allocation under the Local Plan Policy H SP2c which will provide at least 2,300 dwellings over the plan, and up to 3,000 in total (a further 700 beyond 2031). The key design and infrastructure requirements related to transport for the allocation under this policy are set out below.

- *“A new A29 route through the allocation which provides all necessary linkages and routing between the A259 (Bognor Regis Relief Road) to the south and the A27 to the north and includes a bridge over the railway to the east of the current Woodgate Crossing;*
- *Provision of an east-west route north of the railway line that will join the existing A29 route to the new A29 route and continue eastwards to Barnham railway station;*
- *Access to Barnham railway station shall be maximised through the provision of direct and attractive routes for all transport modes;*
- *Regular bus services linking BEW with Bognor Regis (A29 route) and local facilities and employment; and*
- *Westergate Link cycle scheme, in addition to further cycle routes to/from Bognor Regis and linkages.”*

2.3.5 The strategic objectives of the Arun Local Plan for transport to be achieved are:

- *“Reduce the need to travel and promote sustainable forms of transport;*
- *Plan for climate change and work in harmony with the environment to conserve natural resources and increase biodiversity;*
- *Create vibrant, attractive, safe and accessible towns and villages.....;*
- *Promote strong, well-integrated and cohesive communities, through the promotion of healthy lifestyles, provision of good quality accessible community facilities and a safe environment; and*
- *Strengthen Arun’s economic base and provide local job opportunities.”*

2.3.6 A summary of the key relevant policies supporting the above objectives are summarised below:

2.3.7 POLICY T SP1 – Transport and Development

“To ensure that growth in the District strengthens Arun’s economic base, reduces congestion, works to tackle climate change and promotes healthy lifestyles; the Council will ensure that development: provides safe access on the highway network; contributes to highway improvements and promotes sustainable transport, including the use of low emission fuels, public transport improvements and the cycle, pedestrian and bridleway network.”

2.3.8 POLICY T DM1 – Sustainable Travel and Public Rights of Way

“New development must ensure ease of movement, prioritising safe pedestrian and cycle access to the green infrastructure network and access to public transport and community transport services where a need has been identified. Access to alternative modes of transport including public transport services, the public right of way and cycle networks must be available and accessible to all members of the community.”

2.3.9 POLICY T SP3 – Safeguarding the Main Road Network

“To ensure that improvements necessary to enhance the strategic and supporting road network within the District can be carried out, the lines of major road schemes, as shown on the Policies map, will be protected from development.”

Aldingbourne Neighbourhood Development Plan 2014-2034

2.3.10 The Aldingbourne Neighbourhood Development Plan was adopted on the 9th of November 2016. The vision for Aldingbourne Parish set out in the plan is as follows:

“In 2034 Aldingbourne Parish will continue to be an attractive place to live, maintaining its intrinsic semi-rural character whilst allowing for sustainable development, improving connectivity and local services”.

2.3.11 The key objective of the development plan associated with transport is for the Parish to be well connected to its neighbours by “encouraging provision of improvements to traffic management, cycle ways and footpaths” and “promoting greater connectivity to the National Park and the coast”.

2.3.12 The above vision and objective will be supported by plan policies set out below:

- Policy GA1 – Promoting sustainable movement;
Development Proposals that increase travel demand will be supported where they can demonstrate that:
 - ✓ They extend or improve walking and cycling routes;
 - ✓ They are located in places accessible or can improvement the accessibility of the site to public and community transport;
 - ✓ They do not result in loss of any existing footpaths or cycle paths.
- Policy GA2 – Footpath and Cycle Path Network;
Support will be given to proposals that improve and extend the existing footpath and cycle path network, allowing better access to the local amenities and services.

- Policy GA3 – Parking and new development.
Proposals must provide adequate parking in accordance with the standards adopted at the time. Proposals that would result in a loss of parking spaces either on or off street will be resisted.

Parking Standards Supplementary Planning Document January 2020

- 2.3.13 The ADC Parking Standards was adopted on the 15th of January 2020 and takes standards and evidence produced and consulted by the County Council. The SPD specifies the levels of parking, cycle and electric vehicle charging points requirements to be provided within development of different sizes.

2.4 Response to Policy

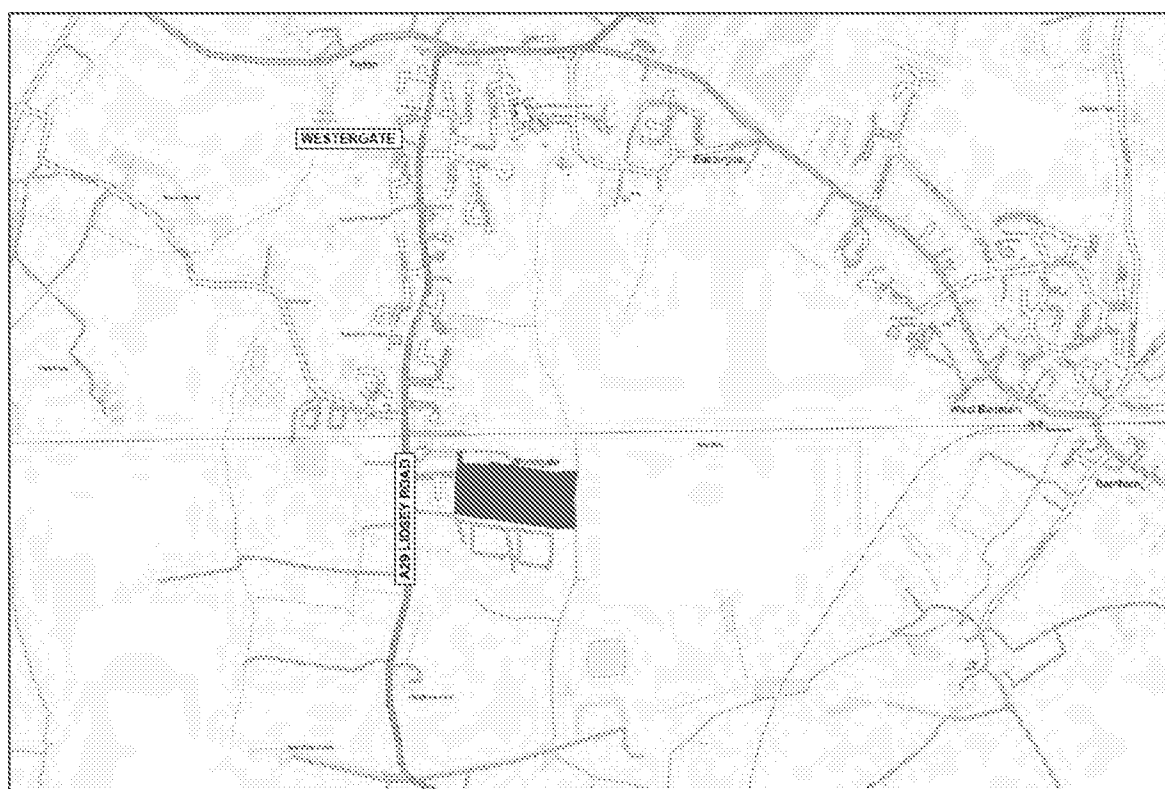
- 2.4.1 In response to the national, regional and local policy above, the proposals are considered to be in line with and support the relevant policies.
- 2.4.2 The proposed development aims to provide pedestrian and cycle facilities which seamlessly link into the adjoining sites and the existing infrastructures leading to various local amenities and services within acceptable walking and cycling distances, thereby encouraging sustainable travel.
- 2.4.3 Furthermore, a bus service is available within reasonable walking distance from the site. Chapter 3 of this report discusses in detail the pedestrian and cyclist facilities, public transport and local amenities available in the vicinity of the site.
- 2.4.4 The traffic impact of the proposed development has been assessed relative to the agreed forecast year traffic flows and it is determined that the impact of development will be immaterial on the operation of the local highway network and the level crossing. Detailed information on this is provided in the later section of this report.
- 2.4.5 Offsite improvements in the form of provision of new shared footway/cycleway on the A29 and Woodgate Road and enhancement to the Willows Caravan Park bus stops are proposed in addition to the financial contribution as part of the BEW allocation for the A29 realignment scheme and other highways improvements as identified in the Arun Local Plan. Additionally, the application includes safeguarded land for the provision of a new pedestrian and cyclist bridge to the east towards the BEW subject to agreement. This will ensure permeability between the BEW allocation sites.

3 Existing Conditions

3.1 Site Description

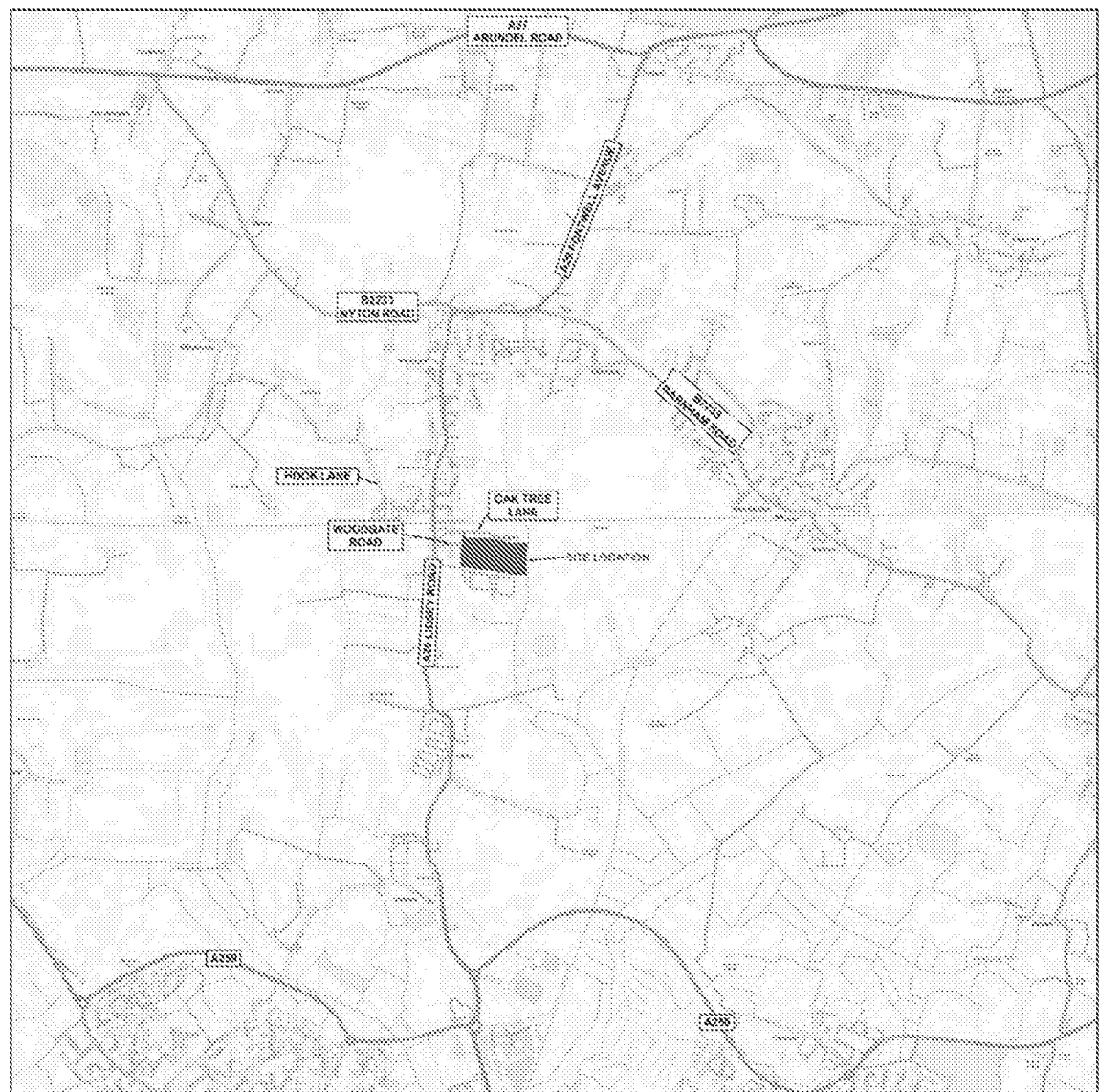
- 3.1.1 The development site is located to the east of the A29 Lidsey Road and to the south of Westergate village as illustrated in **Figure 3.1**. It is bound by single storey bungalows to the west, by Willows Caravan Park to the south and by farmlands to the north and east.

Figure 3.1: Site Location



- 3.1.2 The site comprises a mixed-use premise collectively called the Woodgate Centre which accommodates several small businesses.
- 3.1.3 Currently, access to the development site is through Woodgate Road which also provides direct access to circa 23 bungalows along the road and serves as an access road to Woodgate Close comprising approximately 14 bungalows. It is intended that the proposed development will be served through this existing access.
- #### 3.2 Surrounding Highway Network
- 3.2.1 The surrounding highway network of the site comprises Woodgate Road, Oak Tree Lane, Hook Lane, several residential estate roads, the A29, the B2233, rural lanes and further afield the A27. The location of these roads in relation to the site is illustrated in **Figure 3.2**.

Figure 3.2: Surrounding Highway Network



- 3.2.2 Woodgate Road, as discussed earlier, provides access to the site. It is approximately 5m in width (in some places, the carriageway is narrower than 5m decreasing to circa 4.8m) and has footways and streetlights on both sides of the carriageway. It currently provides access to circa 37 residential dwellings.
- 3.2.3 At present, the road has no parking restriction, and it is observed that some length of the carriageway is utilised for on-street parking by the nearby residents. A parking survey was undertaken over two days which showed that no more than nine vehicles were parked at any single time over the length of the road, and most of these were on the northern side of the carriageway. This level of on-street parking is not judged to be severe, or a safety issue nor impair the operation of its junction with the A29. It is appropriate for the residential nature of the road and acts as a traffic calming feature. For completeness, the parking survey results are provided in **Appendix B**.

- 3.2.4 Woodgate Road to the west links the site to the A29 Lidsey Road which is a local distributor road running north to south. It runs through the Woodgate and Westergate villages and within the vicinity of the site, is approximately 7m in width. There are footways on both sides of the carriageway and streetlights. There are sign posts indicating that the road is subject to 30mph speed limit as it passes through the village.
- 3.2.5 Oak Tree Lane forms a simple priority T junction appropriately 50m north of the A29/Woodgate Road junction. It is a private road and provides access to circa 41 residential dwellings and Woodgate Centre. Within the residential estate, the road is approximately 5m wide and has footways on both sides of the road. As the road extends further to the east and towards Woodgate Centre, the road narrows and has grass verge and hedgerows on either side.
- 3.2.6 Figure 3.3 illustrates the existing access to the Woodgate Centre from Oak Tree Lane. It is intended that a shared emergency access/pedestrian and cyclist access to the proposed development is to be gained through this route. The proposed arrangement is discussed in Chapter 4 of this TA.

Figure 3.3: Oak Tree Lane looking south towards Woodgate Centre



- 3.2.7 Hook Lane approaching from the west forms a simple priority T junction with the A29, approximately 50m north of the Woodgate Level Crossing. The road as it passes through the residential estate is subject to 30mph speed limit. Further east, the road is rural in nature with limited width and is derestricted.

3.2.8 To the north, the A29 forms junctions with Nyton Road and Barnham Road and continues north to provide access to the A27. The A27 leads to Chichester to the west and to the east to coastal towns including Worthing and Brighton. The A29 leads to Bognor Regis to the south.

3.3 Pedestrian and Cyclist Facilities

3.3.1 Walking and cycling are important modes of travel and have the potential to substitute short car trips. Walking offers the greatest potential to replace car trips of up to 2km, or about 25 minutes on foot. Whereas cycling offers alternative means of travel for distances up to around 5km especially for journeys to work. As such, facilities catering for pedestrians and cyclists are crucial to encourage shorter journeys to be undertaken on foot and cycle. Considering this, pedestrian, and cyclist facilities available in the area have been reviewed.

3.3.2 As discussed above, Woodgate Road has provision of footways and streetlights on both sides of the carriageway. Over most of the length, there are grass verges between the footways and the carriageway which provide separation between pedestrians and vehicles. The site will provide connections to these provisions on Woodgate Road.

3.3.3 To the west, these provisions lead to the existing footways on the A29, connecting to the wider pedestrian network through the Woodgate and Watergate villages and local facilities and services, as discussed later in this report.

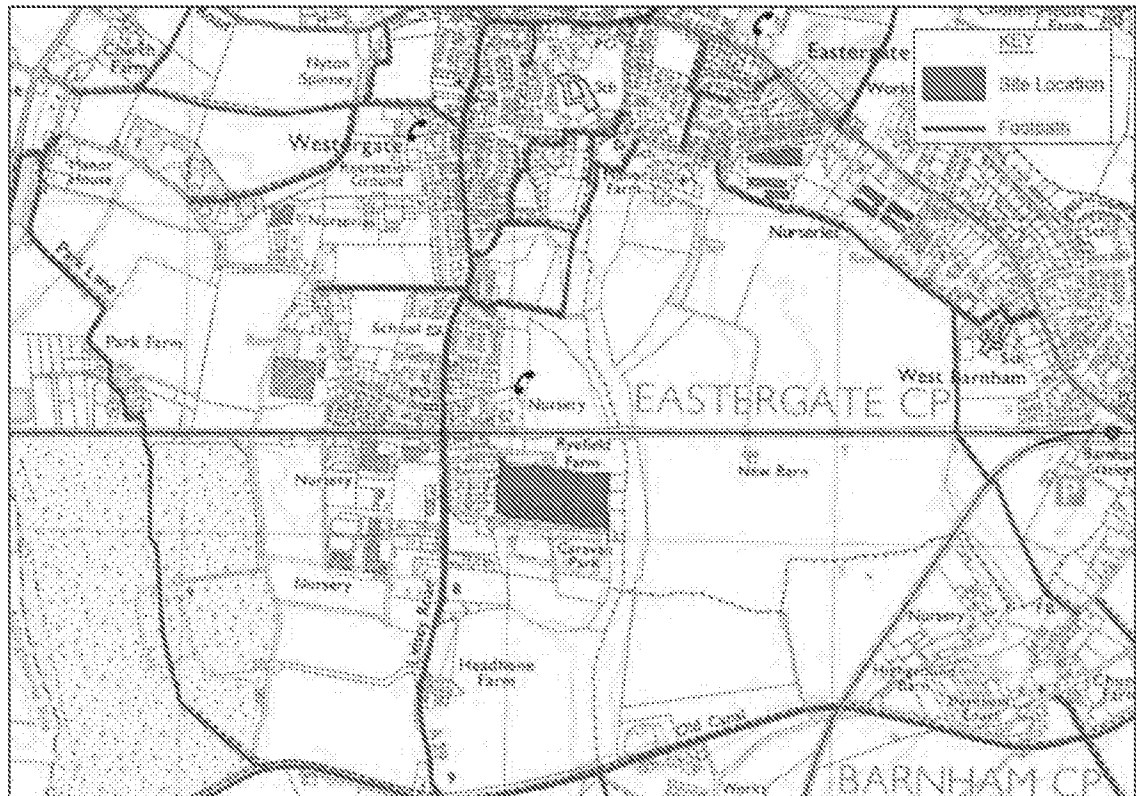
3.3.4 Footway on the western side of the A29 commences approximately 250m south of its junction with Woodgate Road. Heading north, this provision extends on both sides of the carriageway from the access junction to Willows Caravan Park.

3.3.5 It is identified that there are no dedicated infrastructures provided for cycling within the local highway network. However, the speed limit on the local highway network is 30mph and the local topography is relatively flat, which make cycling a realistic option for local journeys.

3.3.6 The villages of Eastergate and Barnham, Barnham railway station and parts of Bognor Regis are within cycling distance from the site.

3.3.7 There are several Public Rights of Ways (PROWs) in the form of public footpaths in the vicinity of the site which could be used for leisure walking. These are illustrated in red in Figure 3.4 below.

Figure 3.4: Public Footpaths



3.4 Local Amenities

- 3.4.1 Planning guidance emphasises the integration of land use, transport and planning decisions. To ensure developments are sustainable, they should be accessible to local amenities, schools and public transport services on foot and cycle.
- 3.4.2 Manual for Streets (MfS) considers 800m to be comfortably accessible distance on foot and states that walking has the potential to replace short car trips of up to 2km. Whereas, CIHT's 'Planning for Walking' document reports that approximately 80% of journeys shorter than 1 mile (1.6 km) are made wholly on foot. Based on these, walking distance of up to 2km and cycling distance of up to 5km to such local amenities are generally considered to be acceptable.

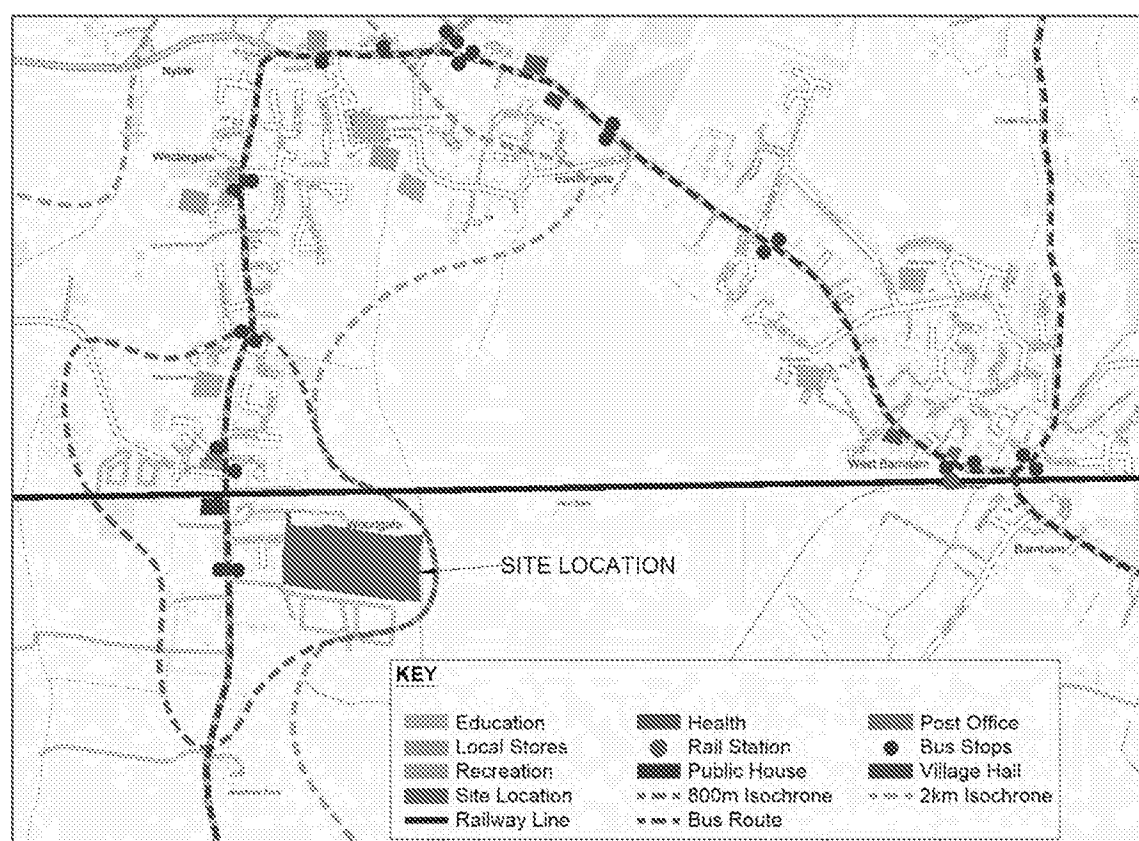
- 3.4.3 The site is located within easy access on foot and cycle to the amenities and services of Woodgate, Aldingbourne and Westergate to the north of the site. In addition, public footpaths are available to the north of the level crossing as illustrated in **Figure 3.4** providing connections between the site and schools and amenities in Eastergate. Furthermore, the shared footway/cycleway proposed as part of this development and the upcoming pedestrian and cyclist provisions that are to come forward as part of the wider BEW allocation will supplement these existing provisions and ensure that the site will have even greater accessibility to the nearby existing and proposed local facilities. These proposals are discussed further in Chapter 4 of this report.
- 3.4.4 A comprehensive list of local amenities available within walking and cycling distances from the site are tabulated in **Table 3.1** below. The location of these amenities relative to the site along with 800m and 2km isochrones are illustrated in **Figure 3.5**. It should also be noted that the BEW allocation site to the east will provide two new primary schools, two local centres which will include shops and library facility, and these will be within easy reach from the site.
- 3.4.1 It is therefore considered that there is an opportunity to promote and encourage the future residents of the site to sustainably travel by walking and cycling to and from these local amenities and services.

Table 3.1: Existing Local Amenities

	Facilities	Approx. Distance	Walking Time	Cycling Time
Education	Aldingbourne Primary School	600 m	8 min	3 min
	Hop Scotch Pre School	1.2 km	15 min	5 min
	Eastergate CE Primary School	1.7 km	21 min	9 min
	Ormiston Six Villages Academy	1.8 km	23 min	8 min
	St Philip Howard Catholic School	3.0 km	37 min	12 min
	Barnham Primary School	3.3 km	42 min	12 min
Health	The Croft Surgery	2.2 km	28 min	8 min
	Five Villages Pharmacy	3.3 km	42 min	11 min
Public Transport	Willows Caravan Park Bus Stops	250 m	3 min	1 min
	Barnham Rail Station	3.5 km	44 min	11 min
Retail	Aldingbourne Village Stores	350 m	5 min	2 min
	Hirange Supermarket	1.2 km	15 min	5 min
	Hursts Convenience Store	1.7 km	21 min	6 min
Others	Public House	250 m	3 min	2 min

	Facilities	Approx. Distance	Walking Time	Cycling Time
	Post Office	350 m	5 min	2 min
	Aldingbourne Community Sports Centre	1.4 km	17 min	5 min
	Six Villages Sports Centre	1.8 km	23 min	8 min
	Eastergate Parish Hall	2.3 km	29 min	9 min

Figure 3.5: Local Amenities Plan



3.5 Public Transport

Bus Service

- 3.5.2 The closest bus stops from the site (northbound and southbound) are located on either side of the A29 Lidsey Road just to the south of its junction with Woodgate Road as illustrated in Figure 3.5. These are flagpole bus stops and are within easily walking distance of 250m from the site.
- 3.5.3 It is intended that these bus stops will be equipped with bus shelters and real time information displays as part of development proposals. This is discussed later in the proposed development section.

- 3.5.4 Bus routes 66A and 66C operated by Compass Travel are accessible from these bus stops. Both these routes start at Bognor Regis and serve Barnham, Yapton and Walberton in a circular loop before returning to Bognor Regis. However, 66A travels in anti-clockwise direction via Yapton and Walberton, whereas 66C travel in clockwise direction via Walberton and Yapton.
- 3.5.5 There are six services (66A and 66C combined) on each direction which typically run every two hours Mondays to Saturdays. The timetable is tabulated in Table 3.2.

Table 3.2: Bus Timetables

Direction	Times					
Southbound	07:55	09:07	11:07	13:25	15:33	17:22
Northbound	08:30	10:30	12:49	14:48	16:47	17:52

- 3.5.6 The bus route as it travels through Woodgate, Westergate and Barnham villages is illustrated in Figure 3.5 and the full timetable is provided in Appendix C.

Rail Service

- 3.5.7 Barnham Station is the closest railway station from the site which is located within cycling distance of 4.1km (approximately 13 minutes' cycle) from the site using the A29 and Barnham Road. The station can also be accessed on foot using footways along this route or at a shorter distance of around 3.5km (approximately 44 minutes' walk) using the public footpaths to the northeast of level crossing and along the south of Eastergate nursery and the Springfield site.
- 3.5.8 As discussed further in Chapter 4 of this TA, the development will safeguard land for a new pedestrian/cyclist bridge to the east to provide connectivity with the remainder of the BEW allocation. Therefore, when the remainder of the BEW comes forward, the residents will have a shorter and more direct walking/cycling route to the station through the BEW site to the east. That said there is alternative acceptable route available until this occurs.
- 3.5.9 The rail station is also accessible using bus route 66 described above from the bus stops located along the A29. The typical bus journey time between the site and the station is 10 minutes.
- 3.5.10 The station is managed by Southern Railway and provides services to destinations including London Victoria via Horsham, Bognor Regis, Portsmouth & Southsea, Southampton Central and Brighton via Worthing. Typical weekday frequencies and journey duration of these services are summarised in Table 3.3 below.

Table 3.3: Train Services

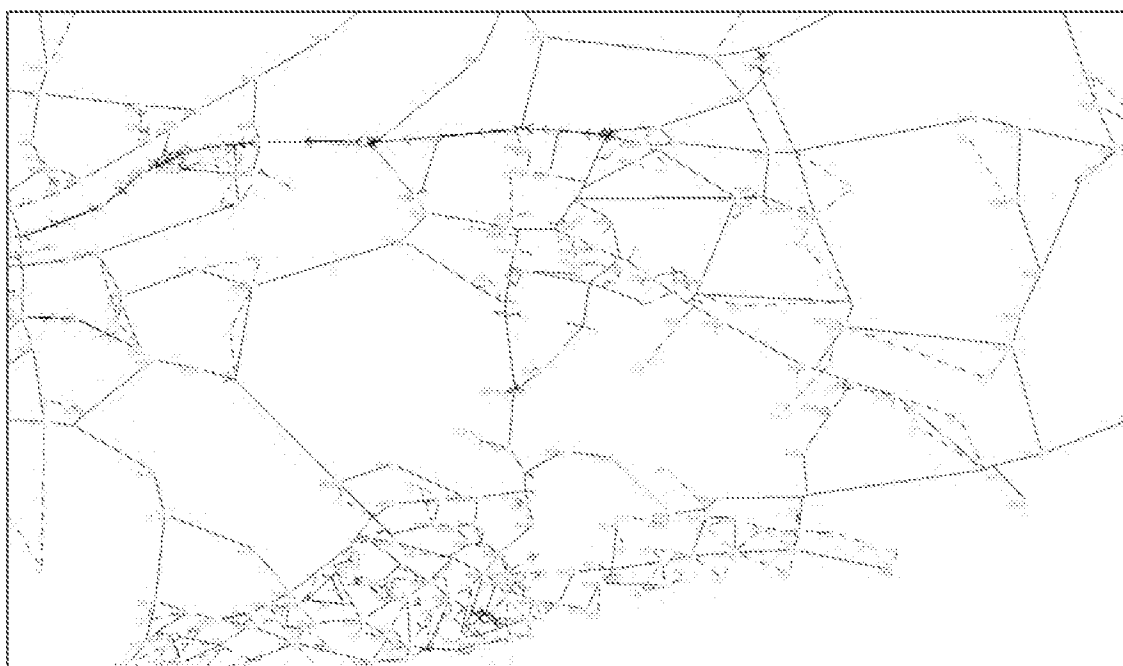
Destinations	Typical Frequency	Typical Journey Duration
London Victoria via Horsham	4 per hour	1 hr 27 min
Bognor Regis	4 per hour	7 min
Portsmouth & Southsea	5 per hour	38 min
Southampton Central	2 per hour	1 hr
Brighton via Worthing	2 per hour	44 min

- 3.5.11 The station has 62 cycle storage spaces and 130 (pay and display) car parking spaces, as well as a taxi rank.

3.6 A29 Realignment SATURN Model

- 3.6.1 During the pre-application discussions, it was agreed with WSCC to use the existing A29 Realignment SATURN model, which was originally developed by WSP on behalf of WSCC for the purposes of the A29 Scheme Transport Business Case.
- 3.6.2 As agreed, the traffic data used for the traffic impact assessment later in this report has been sourced from the 'SATURN' model and no separate traffic surveys were undertaken to obtain the traffic data. The existing SATURN model included 2023 and 2038 forecast years and modelled Phase 1 (Option 1) and Phase 1+2 (Option 2) of the A29 scheme whereby Phase 1 refers to the A29 north of Barham Road and Phase 2 refers to the A29 south.
- 3.6.3 It is identified that the proposed development site has been included within zone 304 of the model and the zone connects to the existing A29 via Woodgate Road in Option 1. In Option 2, it connects to an entry into a junction on the new A29 alignment, however, does not connect to Woodgate Road or the existing A29.
- 3.6.4 **Figure 3.6** below shows the extent of the local highway network coded in the SATURN model in Option 2 when the A29 scheme and the BEW development are complete.

Figure 3.6: SATURN Model (2038 with the A29 Scheme)



3.6.5 It should be noted that the proposed development was originally modelled as a 160-unit scheme within the existing SATURN model. As discussed with WSCC, this has been amended to reflect the current development proposals. Further details are provided later in this report.

3.7 Modal Share

3.7.1 To understand the existing mode share in the area surrounding the site, Census 2011 “Travel to Work” data has been reviewed. Travel data for Middle Layer Super Output Area (MSOA) Arun 003 has been obtained as the site sits in this area. Whilst it is acknowledged that not all trips are travel to work, a large proportion of weekday morning and evening peak hour travel comprises people travelling to work. As such, this data gives an indication of the travel pattern that might be expected from the development site.

3.7.2 The existing mode percentages for Arun 003 are provided in Table 3.4 below. The data shows single occupancy travel constitutes 76% of the mode share followed by 9% train mode share and 5% car share and walking each.

Table 3.4: Travel Mode Share

Travel Mode	Percentage
Car or van driver on their own	76%
Car or van driver with another person	5%
Bus	1%

Train	9%
Motorcycle	1%
Walking	5%
Cycling	3%

- 3.7.3 Considering the location of the site, it is anticipated that the mode share of the site will be similar to the above shown in **Table 3.4**.

3.8 Accident Review

- 3.8.1 It was requested by WSCC, as part of the pre-application discussion, that a review of Personal Injury Accidents (PIA) that have occurred in the local highway network during the latest 10-year period should be included in the TA supporting the application.
- 3.8.2 Therefore, the PIA data was obtained from Wessex Police for the latest available 10-year period covering 01/12/2010 to 30/11/2020. The extent of study area included the A29 corridor between and including the War Memorial roundabout to the north and the A29/A259 roundabout to the south.
- 3.8.3 This data has been reviewed to identify whether there are any locations that show clusters of accidents which are of similar nature and whether the accident risks could be exaggerated by the proposed development.
- 3.8.4 During the 10-year period, there were 93 PIAs over the study area of which 70 were classified as slight in terms of injury severity, 20 as serious and three as fatal. **Table 3.5** below summarises these accidents by year and severity. A plan illustrating the location of these accidents is provided in **Appendix D** whereas the obtained PIA data if required can be made available.

Table 3.5: PIAs by Year and Severity

Year	Severity			Total
	Slight	Serious	Fatal	
2011	8	3	1	12
2012	4	1	0	5
2013	6	2	0	8
2014	7	0	1	8
2015	8	3	1	12
2016	8	3	0	11
2017	4	2	0	6

Year	Severity			Total
	Slight	Serious	Fatal	
2018	8	3	0	11
2019	9	0	0	9
2020	8	3	0	11
Total	70	20	3	93

- 3.8.5 Each of these accidents has been discussed below by location either by road corridor or key junctions to allow a more detailed view of accident locations and any common factors.

War Memorial Roundabout

- 3.8.6 There were two serious injury accidents and two slight injury accidents recorded at this roundabout.
- 3.8.7 Both of the serious injury accidents involved collision between cars and pedal cyclists as the cars failed to look properly/give way to pedal cyclists negotiating the roundabout.
- 3.8.8 Similarly, both slight injury accidents were also recorded to have occurred after failing to give away/look properly. One of which involved collision between two cars and another involved wing mirror of a car lipping a pedal cyclist.

A29 Nyton Road

- 3.8.9 There were two serious injury accidents and six slight injury accident recorded on the A29 Nyton Road between its junctions with Westergate Street and Barnham Road.
- 3.8.10 One of the serious injury accidents occurred when a car slowed due to a vehicle in front stopping to turn right into petrol station, and a motorcycle failed to slow on time and collided with the rear of the car. Another serious injury accident involved collision between a car travelling westbound and a pedestrian who ran across the road from south to north.
- 3.8.11 Four of the six slight injury accidents involved rear end shunts of which two took place at the access to the petrol station due failure to react to the vehicles at front which had slowed or stopped to turn right into the petrol station. Further one of the slight injury accidents occurred when a car exiting the station collided with a pedestrian crossing the road.

- 3.8.12 The other slight injury accident occurred when a car heading west performed a U-turn due to a queue in front of the car and came into the path of a motorcycle filtering the queue which did not react to the indicator of the car.
- 3.8.13 Despite there were four accidents that occurred at the access to the petrol station, reviewing the nature of the accidents indicate that those accidents occurred due to driver errors rather than deficiency in the highway layout.

A29/Nyton Road Junction

- 3.8.14 There were one serious injury accident and five slight injury accidents recorded at this junction.
- 3.8.15 The serious injury accident occurred when a pedestrian walked into the road in front of a motorcycle heading east from the south.
- 3.8.16 Three of the slight injury accidents occurred at the give way when the vehicles exiting Nyton Road pulled out of the junction failing to give way to vehicles travelling on the A29. Whereas the remaining two slight injury accidents involved single vehicles; one of which occurred when a car travelling east lost control failing to negotiate the right-hand bend due to alcohol impairment and another occurred when a pedal cyclist hit a large pothole causing the cyclist to lose the balance and fall off the bike.

A29 Westergate Street

- 3.8.17 Two serious injury accidents and 10 slight injury accidents were recorded along the length of A29 Westergate Road between Hook Land and Nyton Road. These accidents were identified to have occurred at various locations along the A29, and primarily due to human errors, and did not indicate any unusual safety risk in the highway.
- 3.8.18 One of the two serious injury accidents occurred when a pedestrian ran across the road from Alley Way into the path of a taxi travelling northwards in Westergate Street and was hit. Another serious injury accident was recorded involving a single motorcycle in which the motorcycle pulled away however lost control and hit the brick wall.
- 3.8.19 Four of the slight injury accidents involved rear end shunts and were contributed by failure to look properly or judge speed of the other vehicles.
- 3.8.20 Three of the slight injury accidents involved collision between multiple vehicles and one was a single vehicle accident and were due to poor manoeuvre, losing control and not looking properly.

- 3.8.21 Two of the slight injury accidents involved collision between cyclists and cars of which one occurred when a car turned left out of the junction with Meadow Way and clipped the cyclist and another occurred when a car started overtaking and the cyclist suddenly moved to offside to turn right.

A29/Hook Lane Junction

- 3.8.22 There were one serious injury accident and two slight injury accidents at this junction.
- 3.8.23 The serious injury accident occurred when a cyclist heading north was overtaken by a goods vehicle and in the process, due to poor manoeuvring, was struck by the trailer which it had been towing.
- 3.8.24 One of the two slight injury accidents occurred when a car reversed at speed not noticing the car is in reverse gear and collided with a parked car behind. Another slight injury accident involved collision between two cars, both leaving parking spaces.

A29 Lidsey Road

- 3.8.25 One fatal accident, two serious injury accidents and nine slight injury accidents were recorded at different locations along the length of the A29 Lidsey Road during the study period.
- 3.8.26 The fatal accident occurred on the A29 30m north of Sack Lane junction when a car travelling north crossed onto opposite carriageway crashing head on into another car travelling south. The possible cause of the accident was recorded as careless driving and loss of control.
- 3.8.27 Both of the serious injury accidents involving collision between two cars. One of them occurred just north of its junction with Sack Lane due to alcohol impairment and another involved losing control on the right-hand bend at Lidsey bend.
- 3.8.28 Of the nine slight injury accidents, two occurred at the junction with Woodgate Road. One of these two accidents were due to a car exiting Woodgate Road failing to give way to the major road traffic and the other involved a motorcycle overtaking a car turning right into Woodgate Road. The remaining slight injury accidents are spread across the length of the Lidsey Road and no common causation factors could be identified expect human errors.

- 3.8.29 Two minor clusters of between three to four accidents have been identified at the Lidsey bend and near the access to the Lidsey Caravan Park. Following the review of these accidents, it is determined that most of these have occurred due to human errors such as failure to look properly or loss of control, and not due to highway deficiency although it is recognised that visibility at the Lidsey bend is limited. It should also be noted that these accidents occurred over a 10-years period and considering the number of accidents over such a long period, this is perhaps not an unexpected level of risk.

A29 Shripney Road

- 3.8.30 One fatal accident, seven serious injury accidents and four slight injury accidents were recorded along this section of the A29.
- 3.8.31 The fatal accident occurred when a car traveling north at speed undertook two other cars and lost control and struck brick wall.
- 3.8.32 Four of the seven serious injury accidents occurred when the vehicles travelling along the A29 lost control. Three of these were single vehicle accidents resulting in collision with the garden wall whereas one incident involved a vehicle crossing central carriageway line and hitting offside of another car travelling in opposite direction.
- 3.8.33 One of the serious injury accidents occurred when a car exiting Barn Lane failed to give way to a car heading north on the A29 resulting in the collision and another involved rear end shunt accident between two cars.
- 3.8.34 The final serious injury accident occurred when a motorcycle travelling northbound lost control when negotiating the right-hand bend prior to the junction with Shripney Lane and collided with a pedestrian walking south on the pavement.
- 3.8.35 Three of the slight injury accidents were recorded to have occurred because of aggressive driving and losing control. The final slight injury accident occurred when a car travelling north on the A29 turned right into Robin Hood public house came cross path of a motorcycle traveling south on the A29.
- 3.8.36 Although there have been several accidents along this section of the A29, these occurred at different locations over the length of the road which do not indicate any pattern in terms of highway layout which could have contributed to these accidents.

A29/Shripney Lane Junction

- 3.8.37 There were one fatal, one serious injury accident and four slight injury accidents recorded at this junction.

- 3.8.38 The fatal accident occurred when the rear offside of a car heading north made contact with front nearside corner of another car also heading north when moving to the right lane and lost control and left the road and collided with a tree.
- 3.8.39 The serious injury accident occurred when a car travelling northbound, on dual carriageway approaching single carriageway filter on reaching end of dual carriageway, attempted a U turn and on doing so collided with a motorcycle which was overtaking on the offside.
- 3.8.40 Three of the four slight injury accidents involved vehicles exiting Shripney Lane failing to look properly and give way and colliding with vehicles running along the A29. The final slight injury accident involved a goods vehicle and a car, both travelling northbound, in which the car made a U turn directly in front of the goods vehicle.

A29/A259 Felpham Relief Road Roundabout

- 3.8.41 Three slight injury accidents were recorded at this roundabout of which two were rear end shunts both involving multiple cars due to human errors and the third was a single vehicle accident in which the car hit the kerb resulting in loss of control.

Oldlands Way Roundabout

- 3.8.42 There were two serious injury accident and 25 slight injury accidents recorded at this junction.
- 3.8.43 One of the serious injury accidents occurred when two cars travelling in opposite direction on Rowan Way collided offside to offside. A driver of one of the cars was identified to be under the influence of alcohol. In another serious injury accident, a pedestrian after failing to look properly walked out in front of a goods vehicle travelling west on the A259.
- 3.8.44 Six of the slight injury accidents occurred as a result of failing to look properly and failing to give way to vehicles already on the roundabout. Of these six, three involved collision between cyclists and cars, two involved collision between motorcycles and cars and one involved collision between two cars.
- 3.8.45 17 of the accidents that were recorded at this roundabout resulted in slight injury and involved rear end shunts of which majority occurred in the northern, southern and western approaches to the roundabout.
- 3.8.46 One of the slight injury accidents involved a bus and a car in which the bus was reported to have been speeding and almost collided with the car. Another slight injury accident occurred when a car heading east moved out to pass waiting traffic and collided with a motorcycle filtering pass waiting vehicles.

Summary

- 3.8.47 The PIA data obtained from Sussex Police for a 10-year period as agreed with WSCC has been reviewed in detail. During this period, there were three fatal, 20 serious and 50 slight injury accidents recorded over the study period.
- 3.8.48 Following review of the data, it is identified that poor driver/human behaviours such as failure to look properly and aggressive driving were the primary contributing factors in majority of the accidents. Whereas some of the accidents were identified to have occurred due to the drivers being under the influence of alcohol and road defects such as potholes. However, majority of these accidents have occurred at different locations throughout the study area which do not indicate any recurring safety risks on the road network that could have resulted in these accidents except poor driver/human behaviours.
- 3.8.49 Two main clusters of accidents are identified at the Oldlands Way Roundabout and the A29/Shripney Way junction. Review of these accidents suggests that poor driving behaviours such as failure to look properly and give way were the primary causation factors in these accidents which resulted in numerous rear end shunts and collisions at give way. This level of accidents over 10-year period and at a busy network is perhaps not an unexpected level of risk. It is however also recognised that the A29 changes from two lane double carriageway into one lane single carriageway at its junction with Shripney Way and this could have influenced the poor driving behaviours, although this is not considered to be a safety risk.
- 3.8.50 Two more minor clusters of relatively few accidents (3 to 4 accidents) are identified at Lidsey bend and access to Lidsey Caravan Park. Similar to the previous clusters, driver behaviours such as failure to look properly and slow down were the primary factors in these accidents. The Lidsey bend has limited forward visibility; however, this is unlikely to be a safety risk as there are speed warning signposts and 'SLOW' road markings on both approaches to the bend, and continuous solid double lines throughout.
- 3.8.51 Following the above, it is concluded that there is no indication of any unusual levels of accident risks generally; nor is there any localised pattern of accidents that might indicate a highway safety issue for which remedial action would be required. Furthermore, it is also considered that the development would not have a material impact upon the level of accident risk on the local highway network. It should also be noted that ultimately the introduction of the realigned A29 will change the travel patterns in the surrounding local highway network for the better.

4 Development Proposals

4.1 Proposed Development

- 4.1.1 The development proposals include demolition of the Woodgate Centre buildings including residential properties and the construction of 180 residential dwellings, with the creation of new vehicular access with footways and cycleways and ancillary road infrastructure and emergency access arrangements, associated parking, public open space, including children's play space, landscape planting, surface water attenuation and drainage and other associated infrastructure.
- 4.1.2 A site layout plan prepared by ECE Architecture is provided in **Appendix E**.
- 4.1.3 The proposed development will comprise a mixture of 1-bedroom, 2-bedroom, 3-bedroom and 4-bedroom dwellings. 70% of the total number of dwellings will be private and the remaining 30% will be affordable. The accommodation schedule of the development is provided in **Table 4.1** below.

Table 4.1: Proposed Development Accommodation Schedule

Dwelling Type	Private	Affordable	Both
1-Bed Flats	0	15	15
2-Bed Flats	19	3	22
2-Bed House	30	19	39
3-Bed House	54	13	67
4-Bed House	24	3	27
Total	127	53	180

- 4.1.4 As forementioned, the site forms part of the wider strategic allocation for housing referred to as BEW under Policy H SP2c (SD5) within the adopted ADC Local Plan 2011-2031. The policy also sets out the key design and infrastructure requirements that the development proposals within the allocation must demonstrate compliance with.
- 4.1.5 The BEW Framework Masterplan, dated November 2020, was prepared by the Church Commissioners for England (CCE) and Hanbury Properties in consultation with other landowners within the allocation. It sets out how the requirements for the site as set out in the Policy H SP2c SD5 can be delivered. These requirements include building of up to 4,300 new dwellings, of which only 2,300 would be delivered in the Local Plan period to 2031; two new Primary Schools, two local centres which will include shops and a library facility.

- 4.1.6 The Framework Masterplan which provides an indication of the broad layout of the entire Strategic Allocation is provided in **Appendix F**. The proposed development has given due regards to the masterplanning principles set out in the BEW Framework Masterplan and will seek to ensure the delivery of the envisioned new high-quality neighbourhood.

4.2 Vehicular Access Arrangements

- 4.2.1 As illustrated in the Framework Masterplan, the proposed development will be accessed through the extension of Woodgate Road to the west of the site. A further access for emergency vehicles only will be provided through Oak Tree Lane from the northern site boundary. This emergency access will also serve as a pedestrian and cyclist access.
- 4.2.2 It is proposed that the simple priority T junction between the A29 Lidsey Road and Woodgate Road to the west will be upgraded to a right turn ghost island arrangement as illustrated in **Drawing No. 20-061-014**. The new arrangement will provide 3m wide lanes for through traffic in both directions and 3m wide right turn lane with queuing capacity of approximately 5 cars. The proposals can be delivered within highway land, as shown by the highway boundary information obtained from WSCC in **Appendix G**.
- 4.2.3 The A29 is subject to 30mph speed limit and is under the authority of WSCC. However, as it is a strategic route, it is considered appropriate to apply the Design Manual for Roads and Bridges (DMRB) standards at this junction.
- 4.2.4 DMRB CD 123 para 2.3.1 states that *"the selection of priority junction and major road central treatment for single carriageway roads should be determined based on the standard of major road and traffic flows on both the major and minor roads"*. DMRB CD 123 Figure 2.3.1 suggests that where the Average Annual Daily Traffic (AADT) traffic flows are above 13,000 on the major road or above 300 on the minor road, then provision of ghost island treatment is appropriate.
- 4.2.5 Department for Transport's (DfT) Road traffic statistics database estimated the AADT on the A29 to be 12,216 in 2019 which is just below the threshold of 13,000 for major roads. However, with the proposed development traffic, the AADT flow on Woodgate Road is anticipated to exceed the threshold of 300 for minor roads.
- 4.2.6 It is therefore considered that the proposed arrangement as illustrated in the **Drawing No. 20-061-014** will enable drivers from the south to access Woodgate Road without causing any delays to the through traffic along the A29 Lidsey Road. This arrangement is suitable and appropriate for the level of development proposed and is considered to improve highway safety at the junction.

- 4.2.7 Swept path analysis has been undertaken to demonstrate that a large refuse vehicle can manoeuvre at the junction in forward gear and access the site. This is illustrated in **Drawing No. 20-061-022**.
- 4.2.8 The proposals will not affect visibility at the junction. The visibility recommended by the MfS for residential roads is 59m for 37mph speed. As illustrated in **Drawing No. 20-061-014**, the visibility splays of 2.4m x 59m are clearly achieved at this junction. Furthermore, due to the straight road alignment, longer visibility splays in excess of 120m (to the DMRB standards) can also be achieved if required.
- 4.2.9 In addition to the main access through Woodgate Road, an alternative access for emergency vehicles only will be provided through Oak Tree Lane subject to reaching appropriate agreement for rights of access with the landowners. Bollards will be installed to prevent usage by unauthorized vehicles, however access for pedestrians and cyclists will be maintained. **Drawing No. 20-061-032** illustrates the emergency access and swept path analysis using a fire appliance.
- 4.2.10 A site visit was organised to inspect the suitability of this route with a West Sussex Fire and Rescue Service officer who has confirmed that this route would give adequate access to the site for emergency vehicles. Email correspondence confirming this is provided within **Appendix A**.

Woodgate Road Constraints

- 4.2.11 During the pre-application discussion, WSCC raised concerns with regards to the limited width of Woodgate Road to serve the development and the on-street parking issue occurring along the length of the road.
- 4.2.12 A technical note was submitted to WSCC to address these concerns raised and this is summarised below. For completeness, the technical note is also provided in **Appendix A**.
- 4.2.13 Woodgate Road is relatively straight road approximately 5m in width along majority of its length. However, the width narrows down to around 4.8m at some points of the carriageway.
- 4.2.14 MfS Figure 7.1 illustrates that a 4.1m road width along a straight road is sufficient for two cars to pass each other, whereas 4.8m road width can facilitate a large heavy good vehicle and a car to pass each other. Finally, 5.5m road width can accommodate two large vehicles to pass each other.

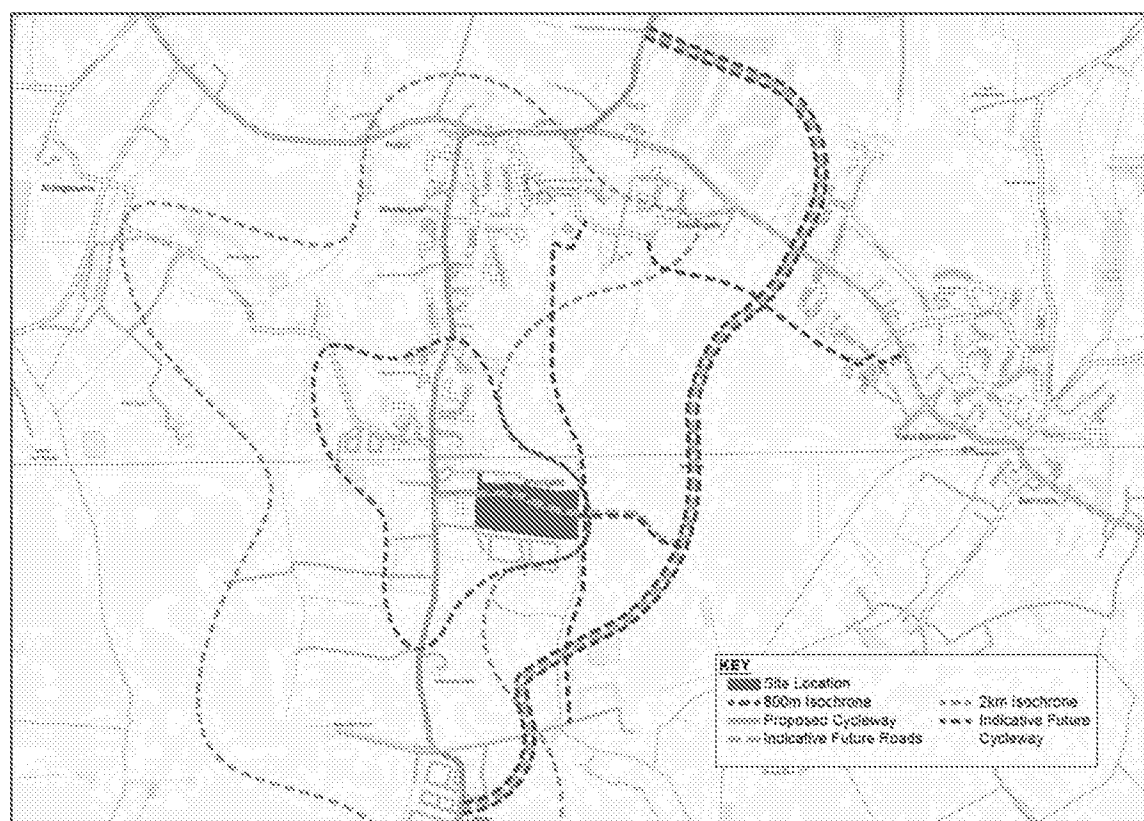
- 4.2.15 Due to the residential nature of the development, most of the trips associated will be car based. It is also recognised that there will be occasional need for large vehicles such as refuse and delivery vehicles to access the site, and to negotiate the road with passing cars which can be accommodated by the road width of 4.8m. However, it is considered unlikely that two large vehicles will come across each other considering the nature of the development.
- 4.2.16 Although the existing road width is sufficient to serve the surrounding area and the proposed development, due to limited availability of highway land along this road, it not feasible to provide road widening without significantly compromising pedestrian provision.
- 4.2.17 It has therefore been determined appropriate to maintain the current width of Woodgate Road and instead upgrade the existing footway on the northern side of the road into a shared footway/cycle to facilitate the pedestrian and cyclist demand. This is discussed further in later section.
- 4.2.18 With regards to on-street parking, a parking survey was undertaken over two consecutive weekdays (at both morning and evening peaks and midnight) to understand the extent of on-street parking that occurs along Woodgate Road.
- 4.2.19 The results showed that up to 9 vehicles parked on Woodgate Road at any one time. Most vehicles parked on the north side of the road resulting in short sections of the road operating as one way. This would not result in any access issues with the proposed development in place.
- 4.2.20 It is considered that due to the residential nature of the surrounding area, this level of on-street parking is to be expected. The on-street parking acts as traffic calming, requiring drivers to drive slowly giving way to each other ensuring highway safety. This is evident as no personal injury accidents were recorded on this road as discussed in the previous section.

4.3 Pedestrian and Cyclist Access Arrangements

- 4.3.1 The proposals also include a shared footway/cycleway along Woodgate Road and the A29 Lidsey Road heading north across the level crossing leading to Hook Lane.
- 4.3.2 The provision has been provided to comply with the WSCC Cycling Design Guide which state that the desirable minimum effective width of shared footway/cycleway is 3m whereas the absolute minimum effective width is 2.5m.

- 4.3.3 As illustrated in **Drawing No. 20-061-014** and considering the WSCC Cycling Design Guide, a shared footway/cycleway with 2.5m width is proposed on the northern edge of Woodgate Road due to the limited highway land availability along Woodgate Road and 3m width is proposed on the eastern edge of the A29 Lidsey Road which crosses on the other side just before the level crossing. The shared provision along the A29 is separated by approximately 1m wide grass verge from the carriageway to ensure pedestrian and cyclist separation from vehicles. Technical Note 003 (provided within **Appendix A**) detailing this was submitted during the preapplication discussion to WSCC. The site access proposals drawing has been updated to reflect the comments received from WSCC.
- 4.3.4 The crossing points will be provided with appropriate dropped kerbs and tactile paving. With this, it is intended that the proposals along with the footways proposed by Wings Nursery site will provide high quality facilities for pedestrians and cyclists in the area.
- 4.3.5 The shared provision on Woodgate Road will continue through the site on the southern edge of the spine road as a 3m shared facility. The shared footway/cycleway will encourage and facilitate the future residents of the site and the existing residents in the area to use sustainable methods of travel to the local facilities identified in the previous section.
- 4.3.6 As part of the application, land will be safeguarded for the provision of a new foot/cycle bridge which will link with the BEW allocation to the east of the development when it comes forward. It is envisioned that the shared facility on spine road through this bridge will ensure permeability between the BEW sites and provides access to local facilities proposed by the BEW allocation and also provides a shorter route to the Barham Railway station to the east.
- 4.3.7 **Figure 4.1** below shows how the shared footway/cycleway proposed by this development will sit alongside the pedestrian and cyclist provisions that are to be brought forward as part of the BEW development to the east. As shown the BEW proposals include new shared provision running on both sides of the realigned A29 for its entire length and upgrading of the existing north/south leisure foot/cycleway through the existing railway culvert alongside the Rife.

Figure 4.1: Proposed and Indicative Future Shared Footway/Cycleway



4.4 Road Safety Audit

- 4.4.1 The access arrangements illustrated in **Drawing No. 20-061-014** have been subject to an independent Stage 1 Road Safety Audit (RSA).
- 4.4.2 The audit team's recommendation was that the shared use facility should be 3.0m across its entire length to meet the current national standard and to incorporate appropriate dropped kerbs and signage where the cyclist re-join the A29 carriageway before its junction with Hook Lane or to terminate the shared use facility south of the level crossing.
- 4.4.3 Given WSCC's guidance for cycling states that 2.5m is absolute minimum effective width for shared facility, the proposed facility is considered to be appropriate along Woodgate Road wherein due to highway land limitations, 3m shared use facility is not feasible. 3m wide shared use facility is provided along the A29 where this is not limited by available highway land. Whereas the second comment regarding cyclists re-joining the carriageway has been incorporated in the **Drawing No 20-061-014**.
- 4.4.4 For completeness, the RSA report and the designer's response are provided within **Appendix H**.

4.5 Internal Site Layout

- 4.5.1 A plan illustrating the internal site layout is provided within **Appendix E**. As illustrated, the 5.5m wide main spine road runs through the site in east to west direction. Land will be safeguarded for the provision a new foot/cycle bridge linking to the east as illustrated in the wider BEW Masterplan.
- 4.5.2 Within the site, 3m wide shared footway/cycleway is provided on the southern side of the main spine road along its entire length. 2m footway runs on the northern side of the road for majority of its length.
- 4.5.3 The residential streets leading off the spine road will have shared surfaces to prioritise pedestrian and cycle movements within the site. The highway review plan provided in **Appendix I** illustrates 2.4m x 25m junction visibility splays appropriate for 20mph where the shared surfaces meet the main spine road.
- 4.5.4 On-site visitors parking and unallocated parking spaces are provided to meet the relevant standards and conveniently placed to minimise parking occurring in inappropriate locations with aesthetic, health and safety implications. The proposed parking provision is discussed in detail in the following section.
- 4.5.5 The site layout has been planned to accommodate the path of large vehicles including delivery and refuse vehicles and to ensure all dwellings are within an acceptable distance of refuse vehicle collection points. The apartments will be provided with communal waste stores located adjacent to parking areas for the storage of household refuse and recycling. An assessment of the swept path of the largest vehicles expected to use the site was carried out and the relevant drawings are provided in **Appendix I**.
- 4.5.6 In terms of emergency vehicle access, all proposed dwellings are within 45m of the carriageway and so comply with MfS guidance that all dwellings should be within length of the hose from the fire appliance.

4.6 On-Site Parking and EV Charging Provision

- 4.6.1 The requirements for parking and electric vehicle (EV) charging provision applicable to the site are set out in ADC's Parking Standards Supplementary Planning Document (SPD) January 2020 and WSCC's Guidance on Parking September 2020.
- 4.6.2 **Table 4.2** below provides the comparison of ADC's parking standards and WSCC's parking standards appropriate for the parking behaviours zone the site sits in as set out in respective guidelines. It should however be noted that ADC's SPD has rounded the standards to whole numbers when compared to WSCC's standards for ease of interpretation and implementation.

Table 4.2: ADC and WSCC Parking Standards

Number of bedrooms	Number of habitable rooms	ADC Standards	WSCC Standards
1	1 to 3	2	1.4
2	4	2	1.7
3	5 to 6	2	2.1
4+	7 or more	3	2.7

- 4.6.3 Furthermore, visitor parking will be required to be provided at a ratio of 20% of the total number of residential units and accessible bays are required to a minimum of 5% of overall provision. A garage should be at least 6m x 3m internally to be regarded as an allocated parking space and each single garage will be counted as 0.5 allocated parking space.
- 4.6.4 The proposed on-site allocated and unallocated parking and EV charging provision are summarised below and these are provided to meet the ADC and WSCC parking standards. Where there is shortfall in the allocated parking spaces, additional unallocated parking spaces are provided to supplement this as discussed below, and therefore, in overall, the proposed parking provision meets the requirement of both guidance documents. It is considered appropriate to provide a mixture of allocated and unallocated spaces as unallocated spaces tend to provide more flexible solution where spaces are then available to both visitors and residents.
- 1 allocated no. space per 1-bedroom and 2-bedroom flats;
 - 2 allocated no. spaces per 2-bedroom FOG, 2 FOGs have 1 no. space;
 - 2 allocated no. spaces per house;
 - 20 single garages and 10 double garages are provided in addition to the above spaces;
 - 37 unallocated parking spaces are provided;
 - 36 visitor spaces (20%)
 - All units with two allocated parking spaces will have one space equipped with an EV charging socket;
 - 4 additional unallocated spaces with EV charging socket, one each on four blocks of flats.
- 4.6.5 The proposed parking provision is tabulated in **Table 4.3** below. Parking provision required as per the ADC and WSCC standards are also provided alongside for comparison. Parking breakdown by accommodation is provided in **Appendix J**.

Table 4.3: Proposed Parking Provision

House Type	No. of Dwelling	Proposed No. of Spaces	Spaces Required as Per	
			ADC Standards	WSCC Standards
1-Bed Flat	15	15	30	21
2-Bed Flat	15	15	30	21
2-Bed Flat Over Ground	7	12	14	10
2-Bed House	49	98	98	83
3-Bed House	67	134	134	141
4-Bed House	27	54	81	73
Garages ¹	-	20	-	-
Total Allocated Spaces + Garages	-	348	387	349
Unallocated Spaces²	-	37	-	-
Unallocated Spaces with EV Charging Provision^{2,3}	-	4	-	-
Overall Provision (Allocated + Unallocated)		389	387	349
Visitor Spaces @20%	-	36	36	36

¹In total 20 single garages and 10 double garages are provided. As one single garage is counted as 0.5 allocated space, 20 spaces are shown.

²Additional unallocated spaces are provided to offset the shortfall in allocated spaces.

³One unallocated space with an EV charging point for each block of flat. There are four blocks of flats on site.

- 4.6.6 As shown in Table 4.3 above, the development proposals include a total number of 348 allocated parking spaces including garages.
- 4.6.7 To offset the shortfall in the number of allocated spaces, additional 37 unallocated spaces and 4 unallocated spaces with EV charging provision are provided. When these unallocated spaces are taken into account, the proposed development will provide a combined total of 389 parking spaces which meets the ADC and WSCC standards. Moreover, it is considered that unallocated spaces are more efficient and flexible compared to allocated parking spaces, for example by allowing the spaces to be used by both residents and visitors. Therefore, it is considered appropriate and potentially more beneficial to offset the shortfall in allocated spaces by providing unallocated spaces. Additional visitor spaces are also provided to meet the standard of 20% of total units proposed.

- 4.6.8 With regards to EV charging provision, the dwellings with at least two allocated spaces will be equipped with one EV charging point. Whereas each block of flats will be provided with one unallocated space equipped with an EV charging point.
- 4.6.9 It should also be noted that out of the total provision, 56 dwellings (31%) comply with Building Regulations Part M4(2) - Accessible and adaptable dwellings & M4(3) - Wheelchair user dwelling i.e. these parking spaces are either 3.3m wide or have the ability to be widened to 3.3m.
- 4.6.10 Cycle parking will be provided at the rates of 1 space per 1 bedroom flat and 2 spaces per 2-, 3- and 4-bedroom dwellings. The cycle storages will be provided within garages, rear garden sheds or communal cycle stores.
- 4.6.11 Following the above, although the proposed parking and EV charging provision vary slightly from the ADC and WSCC standards, the proposals are still considered to be appropriate to meet the parking demand and EV charging requirement of the development.

4.7 Bus and Offsite Highway Improvements

- 4.7.1 The proposals also include improvements to the nearest northbound and southbound bus stops at Willows Caravan Park on the A29 Lidsey Road.
- 4.7.2 The planning application of the adjacent Wings Nursery site, to the west, has proposed to relocate and provide the northbound and southbound bus stops with new bus shelters. This is shown in their Drawing 2019-6115-011 within the relevant TA supporting the application. It is proposed that appropriate financial contribution will be provided as part of this development to undertake these improvement works and further enhance by including provision of Real Time Information (RTI) displays.
- 4.7.3 As part of the Strategic Allocation, the development will also help bring forward offsite infrastructure via S106 contributions, as required by the Local Plan. These include the east to west pedestrian/cyclist link road; the new A29 route which will have a high-quality footway and cycleway running along the carriageway on either side; and several pedestrian and cycle routes and links within the wider BEW site.

4.8 Residential Travel Plan

- 4.8.1 A Residential Travel Plan (TP) has also been prepared as part of the planning application. It sets out site specific initiatives and measures aimed at improving the availability and choice of travel models and encourage future residents to adopt non-car modes of travel. Together with this TA, the TP will aim to be the mechanism by which overall travel demand will be managed and monitored.

5 Development Traffic

5.1 Trip Generation

5.1.1 In order to assess the impact of the proposed development on the transport network, it is first necessary to forecast the travel demand. It is a standard practice to interrogate the TRICS database whilst selecting parameters consistent with the development site to derive trip rates. These trip rates will then be used to estimate the AM peak and PM peak trip generations from the proposed development.

5.1.2 In this case, significant traffic modelling work has already been carried out by WSP on behalf of WSCC as part of the A29 Realignment Scheme including interrogating TRICS database to derive trip generation and distribution of the traffic. Therefore, it was agreed during the pre-application discussions that this existing modelling work will be utilised to forecast traffic flows, and thus inform the impact assessment of the proposed development on the local highway network.

5.1.3 To understand the magnitude of trip generation from the proposed development, trip rates have been extracted from the WSCC Traffic Forecasting Report December 2018. These are provided in Table 5.1 below. As per the report, the following selection criteria were chosen within TRICS for the purposes of generating trip rates for developments:

- Trip rates for vehicles;
- Regions in England, Scotland and Wales excluding Greater London;
- Weekdays – excluding Monday and Friday;
- Location types included suburban area and edge of town centre.

Table 5.1: Trip Rates

Development Type	AM Peak (8am to 9am)		PM Peak (5pm to 6pm)	
	ARR	DEP	ARR	DEP
Mixed private / affordable housing	0.124	0.324	0.312	0.161

5.1.4 The anticipated trip generation from the proposed development is tabulated in Table 5.2 below.

Table 5.2: Proposed Development Trip Generation (180 Dwellings)

Development Type	AM Peak (8am to 9am)		PM Peak (5pm to 6pm)	
	ARR	DEP	ARR	DEP
Mixed private / affordable housing	22	58	56	29

- 5.1.5 As shown in Table 5.2 above, it is anticipated that the proposed development will result in increases of 80 and 85 two-way vehicle movements on Woodgate Road in the AM and PM peak hours respectively. These movements would then distribute north and south along the A29.

5.2 Trip Distribution

- 5.2.1 For consistency with the Transport Business Case, WSCC suggested to make use of the trip distribution as found in the existing A29 scheme SATURN model. As such, no changes have been made to the distribution in the model.

6 Traffic Impact Assessment

6.1 Introduction

- 6.1.1 New development of any significant scale will inevitably lead to a level of additional vehicular traffic on the local and wider road networks. It is therefore necessary to examine the traffic impact of the development on the capacity of local junctions by testing the forecast year.
- 6.1.2 The methodology adopted for the traffic impact assessment and the results of assessment are discussed in this section of the TA.

6.2 Forecast Year and Scenarios

- 6.2.1 The SATURN model provided by WSCC had modelled 2023 and 2038 forecast years. As the highway authority requested assessment of the scenario, when the whole BEW allocation development and the A29 realignment scheme are complete, it was considered appropriate that the 2038 model would be used for the purposes of the assessment as it is unlikely that the A29 realignment scheme and the BEW development would be complete by 2023.
- 6.2.2 Considering the above, the following two scenarios in the forecast year 2038 have been derived for the assessment, one of which is without the proposed development, and another includes the proposed development. This allows assessment of the relative impact of the proposed development in relation to the without the development scenario.

Scenario 1 – 2038 Do Minimum (DM)

- 6.2.3 The 2038 Do Minimum represents the 2038 future year scenario when the A29 realignment scheme is complete (both Phase 1 and 2) and the whole BEW allocation is built, with the exception of the proposed development. This will allow the assessment of the impact of the proposed development relative to the 'without the development' scenario.
- 6.2.4 It has not been considered necessary to interrogate the background growth and the committed developments that were included in the SATURN model, as the model was prepared on behalf of WSCC to support their Transport Business Case and have included all relevant background growth and the committed developments in the first instance.
- 6.2.5 The proposed development was previously modelled within the SATURN model in zone 304 as a 160-unit scheme, connecting eastwards to/from a junction on the new A29 alignment.

- 6.2.6 However, due to changes in the proposals, the proposed development along with the 44 units Church Commissioners site (to the north of the proposed development site) will now be served through Woodgate Road to/from the west, without a link to the new A29.
- 6.2.7 To reflect this in the model, the traffic flows associated with the 160 units proposed development site and the 44 units Church Commissioners site have been calculated using the trip rates in Table 5.1 (obtained from WSCC Forecast Report) and removed from zone 304 which connects with the new A29.
- 6.2.8 The trips associated with the 44 units from the Church Commissioners site were added to zone 253 (which connects westwards to the existing A29) to derive the 2038 Do Minimum flows.
- 6.2.9 The 2038 Do Minimum flows for AM and PM peak hours are provided in Traffic Flow Figures 1 and 2 respectively within Appendix K. The SATURN network for the 2038 Do Minimum scenario is provided in Appendix L.

Scenario 2 – 2038 Do Something (DS)

- 6.2.10 In 2038 Do Something scenario, the new A29 (both Phase 1 and 2) is complete and the whole BEW allocation including the proposed development is built. 2038 Do Something traffic flows have been derived by adding the proposed development trips (Table 5.2) on to the 2038 Do Minimum scenario trips in zone 253.
- 6.2.11 The 2038 Do Something flows for AM and PM peak hours are provided in Traffic Flow Figures 3 and 4 respectively within Appendix K. The SATURN network for the 2038 Do Something scenario is provided in Appendix L.

6.3 Junctions Reviewed

- 6.3.1 During the pre-application discussion, WSCC requested the following junctions to be considered within the modelling, albeit detailed capacity assessment of all may not be necessary subject to the level of increase in traffic at these junctions due to the proposed development.
1. A29/Woodgate Road
 2. A29/'CALA Homes' junction
 3. A29 /Nyton Road junction
 4. A29/B2233 War Memorial Junction with Barnham Road
 5. A29/New A29 Northern Section junction
 6. A29/Eastergate Lane Junction
 7. A29/Wandleys Lane Junction
 8. A29/A27 Junction

9. A29/A259 (Rowan Way)
 10. A29/A259 (Felpham Relief Road)
 11. A29 – Proposed new Shripney Road connection
- 6.3.2 It is generally accepted that detailed capacity assessment of a junction is necessary when the development leads to a predicted increase in total entry flows of 30+ Passenger Car Units (PCUs) in the peak hours.
- 6.3.3 Therefore, it was considered appropriate to only undertake the detailed assessment of the junctions which experience an increase of 30+ PCUs from the Do Minimum to the Do Something scenario, in either or both of the peak hours.
- 6.3.4 The comparison of the traffic flows at these junctions in 2038 Do Minimum and Do Something scenarios are provided in Table 6.1. The junctions with an increase of 30+ PCUs are highlighted in red.

Table 6.1: 2038 Do Minimum & Do Something Comparison

Junctions	AM Total Vehicles PCU			PM Total Vehicles PCU		
	DM	DS	Diff	DM	DS	Diff
1. A29/Woodgate Road	493	566	+73	438	504	+66
2. A29/Hook Ln Junction	592	651	+58	543	595	+52
3. A29/'CALA Homes' junction	760	790	+30	488	459	-29
4. A29/Nyton Rd Junction	1555	1606	+51	1214	1206	-8
5. A29/B2233 War Memorial Roundabout with Barnham Road ¹	1194	1220	+27	1039	1033	-7
6. A29/New A29 northern section Junction	2016	2001	-15	2097	2107	+11
7. A29/Eastergate Lane Junction	2008	1993	-15	2071	2082	+11
8. A29/Wandleys Lane Junction	1997	1983	-14	2039	2049	+11
9. A29/A27 Junction	5022	5021	-1	5317	5318	+1
10. A29/A259 (Rowan Way)	3814	3812	-2	4039	4035	-3
11. A29/A259 (Felpham Relief Road)	3756	3760	+5	4032	4037	+5
12. A29 – Proposed New Shripney Road connection	2118	2126	+8	2050	2044	-6

¹War Memorial Roundabout has been shown as red because of the sensitive location of the junction.

6.4 Junction Capacity Assessments

6.4.1 Capacity assessments have been carried out of the following five junctions in the local highway network:

1. A29/Woodgate Road
2. A29/Hook Lane
3. A29/'CALA Homes' access
4. A29/Nyton Road triangular junction
5. A29/B2233 War Memorial Roundabout with Barnham Road

6.4.2 The industry standard computer programs PICADY and ARCADY as part of the Transport Research Laboratory (TRL) Junctions 9 have been used to model and assess the capacity of the junctions. These assess the traffic capacity, queues and delays at roundabouts and priority junctions.

6.4.3 The War Memorial Roundabout was modelled using the ARCADY module of the Junctions 9 software. The remaining four priority junctions were modelled using the PICADY module.

6.4.4 The results of the assessments are provided in terms of the predicted Ratio of Flow to Capacity (RFC), queue lengths and delays for each arm of the junction.

6.4.5 The RFC provides a basis for judging the acceptability of junction designs and indication of the likely performance of a junction. Typically, an RFC value of less than 0.85 is considered to indicate satisfactory performance, although this depends on the context of the study. An RFC of 1 or above indicates that the junction is above capacity.

6.4.6 The junction assessments also estimate the maximum queue lengths in Passenger Car Units (PCU) and average delays in seconds (s).

6.4.7 Ordnance Survey (OS) mapping and aerial photography were used to measure the junction geometries.

6.4.8 The capacity assessment results of each of the junctions are discussed below and the full PICADY and ARCADY output reports are provided within **Appendix M**.

A29 / Woodgate Road Junction

6.4.9 As mentioned in the previous section, the proposed development will be served through this junction. The existing layout is a simple priority T-junction with Woodgate Road as the minor arm, and this has been used for the 2038 Do Minimum scenario.

6.4.10 The development proposals include upgrading this junction to include a right turn ghost island. Therefore, the 2038 Do Something scenario has been modelled with this layout.

6.4.11 The capacity assessment results of this junction are summarised in Table 6.2 below.

Table 6.2: A29/Woodgate Road Junction Capacity Assessment Results

Arm/Movement	AM Peak			PM Peak		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
2038 Do Minimum – Existing Layout						
Woodgate Road	0.15	0.2	9.20	0.08	0.1	8.24
A29 Lidsey Road	0.02	0.0	5.37	0.03	0.0	5.47
2038 Do Something – Proposed Layout						
Woodgate Road	0.30	0.4	11.79	0.15	0.2	9.47
A29 Lidsey Road	0.03	0.0	6.10	0.04	0.0	6.12

6.4.12 The results indicate that the junction will experience RFCs well below the threshold of 0.85. It will operate within capacity and with minimal queues and delays in the AM and PM peak hours in both scenarios.

A29 / Hook Lane Junction

6.4.13 This is a simple priority T-junction to the north of the Woodgate level crossing. Hook Lane to the east forms the minor arm of the junction and the A29 heading north to south forms the major road.

6.4.14 The capacity assessment results of this junction are summarised in Table 6.3 below.

Table 6.3: A29/Hook Lane Junction Capacity Assessment Results

Arm/Movement	AM Peak			PM Peak		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
2038 Do Minimum						
Hook Lane	0.27	0.4	10.44	0.47	0.9	12.68
A29 Lidsey Road North	0.15	0.2	6.64	0.05	0.1	5.93
2038 Do Something						
Hook Lane	0.31	0.5	11.33	0.54	1.2	14.91
A29 Lidsey Road North	0.16	0.2	6.84	0.05	0.1	5.96

- 6.4.15 The results indicate that the junction will experience RFCs well below the threshold of 0.85. It will operate within capacity and with minimal queues and delays in the AM and PM peak hours in both scenarios.

A29 / CALA Homes Site Access Junction

- 6.4.16 The CALA Homes site lies to the north of the proposed development site and the Woodgate level crossing and also forms part of the BEW allocation. As per the TA supporting the planning application of the site, it was intended that the access to the site is taken off the existing junction between the A29 and Meadow Way by converting the existing layout into a signalised crossroad.
- 6.4.17 Although, a planning application for the development of the site was refused (ADC reference: AL/15/17/PL), given the site forms part of the BEW allocation and the Framework Masterplan includes an East to West link through this site connecting the existing A29 and the new realigned A29, this site is anticipated to come forward once the reasons for refusal are resolved by the applicant.
- 6.4.18 Therefore, it was considered appropriate to assess the layout of this junction as proposed by the CALA Homes site (AL/15/17/PL). However, WSCC highlighted that the traffic signal-controlled junction was only seen as a temporary solution until such time as the full A29 was constructed and when the A29 is complete, the signal junction will be replaced with a simple priority junction (without signals).
- 6.4.19 As the assessment being carried out is for the scenario when the A29 complete, it was only seen reasonable to model the final priority junction. The junction measurements are based on the proposed site access drawing in the TA supporting the application.
- 6.4.20 The capacity assessment results of this junction are summarised in Table 6.4 below.

Table 6.4: A29/CALA Homes Site Access Junction Capacity Assessment Results

Arm/Movement	AM Peak			PM Peak		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
2038 Do Minimum						
CALA Homes Access	0.55	1.2	16.57	0.03	0.0	6.23
A29 North	0.07	0.1	6.96	0.10	0.1	7.10
Meadow Way	0.24	0.3	9.67	0.18	0.2	8.14
A29 South	0.04	0.0	6.48	0.13	0.2	6.66
2038 Do Something						

Arm/Movement	AM Peak			PM Peak		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
CALA Homes Access	0.61	1.5	19.35	0.03	0.0	6.14
A29 North	0.08	0.1	6.98	0.10	0.1	7.13
Meadow Way	0.23	0.3	9.70	0.18	0.2	8.09
A29 South	0.04	0.0	6.47	0.12	0.1	6.55

- 6.4.21 The results indicate that the junction will experience RFCs well below the threshold of 0.85. It will operate within capacity and with minimal queues and delays in the AM and PM peak hours in both scenarios.

A29 / B2233 Nyton Road Junction

- 6.4.22 This junction is made up of three linked priority junctions between the A29 Nyton Road, A29 Westergate Road and B2233 Nyton Road in the centre of Westergate village. For ease of reference, these three linked junctions are referred as eastern, southern and western junctions.
- 6.4.23 With the existing A29 alignment, the critical movements at this linked junction are the east to south and south to east flows and the priority arrangements reflect this. However, once the A29 realignment is complete, the balance of flows will change as set out below.
- 6.4.24 This junction has been assessed using PICADY in the Lane Simulation mode as this is the recommended way of modelling linked junctions and will consider the effect of blocking back between the linked junctions. However, RFCs for each arm are not calculated in the Lane Simulation mode and therefore, the queues and delays are the most useful measure of performance.
- 6.4.25 The capacity assessment results of each of three junctions are summarised in Tables 6.5, 6.6 and 6.7 below. As mentioned above, RFCs are not calculated.

Table 6.5: A29/Nyton Road Eastern Junction Capacity Assessment Results

Arm/Movement	AM Peak			PM Peak		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
2038 Do Minimum						
A29 Nyton Road South	-	0.0	0.00	-	0.0	0.00
B2233 Nyton Road West	-	0.6	8.51	-	1.8	13.61
A29 Nyton Road East	-	47.5	223.00	-	0.9	7.47
2038 Do Something						

Arm/Movement	AM Peak			PM Peak		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
A29 Nyton Road South	-	0.0	0.00	-	0.0	0.00
B2233 Nyton Road West	-	0.5	8.45	-	1.9	13.43
A29 Nyton Road East	-	52.9	255.35	-	0.7	6.86

- 6.4.26 In the 2038 Do Minimum scenario in the AM Peak, the A29 Nyton Road east approach to the junction would operate above capacity with a queue of 48 PCUs. The critical movement is the Nyton Road east to west flow – in the existing layout this flow gives way to the south to east flow.
- 6.4.27 It should be noted that the development would not add traffic to the critical movement in the AM Peak.
- 6.4.28 In the PM Peak the junction would remain within capacity. The critical movement is the Nyton Road west to east flow, which must also give way to the south to east flow.
- 6.4.29 In the 2038 Do Something scenario in the AM Peak, the A29 east approach queue would increase slightly to 53 PCUs, although this is not considered to be a severe impact relative to the 2038 Do Minimum scenario.
- 6.4.30 Again, in the PM Peak the junction would continue to operate within capacity.

Table 6.6: A29/Nyton Road Southern Junction Capacity Assessment Results

Arm/Movement	AM Peak			PM Peak		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
2038 Do Minimum						
A29 Westergate Road South	-	1.4	7.53	-	0.0	0.00
B2233 North	-	0.2	8.79	-	0.5	9.35
A29 Nyton Road North	-	0.0	0.00	-	0.0	0.00
2038 Do Something						
A29 Westergate Road South	-	4.1	18.34	-	0.0	0.00
B2233 North	-	0.2	8.89	-	0.4	9.30
A29 Nyton Road North	-	0.0	0.00	-	0.0	0.00

- 6.4.31 The results indicate that the southern junction will experience a marginal increase in queues of up to 3 PCUs and delays of around 10 seconds in the AM peak in the 2038 Something scenario. However, this level of impact is not considered to be severe that would require mitigation.

Table 6.7: B2233/Nyton Road Junction Capacity Assessment Results

Arm/Movement	AM Peak			PM Peak		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
2038 Do Minimum						
B2233 Nyton Road East	-	0.0	0.00	-	0.0	0.00
B2233 South	-	3.0	23.56	-	0.7	8.40
B2233 Nyton Road West	-	0.5	5.60	-	1.9	8.44
2038 Do Something						
B2233 Nyton Road East	-	0.0	0.00	-	0.0	0.00
B2233 South	-	3.6	26.42	-	0.4	8.12
B2233 Nyton Road West	-	0.5	5.29	-	1.3	8.29

- 6.4.32 The results indicate that the western junction will experience negligible increase in queues and delays in the 2038 Something Scenario. Again, this level of impact is not considered to be severe and would not require mitigation.

A29 War Memorial Roundabout

- 6.4.33 This junction is a three-arm roundabout between Nyton Road to the west, Barnham Road to the east and Fontwell Avenue to the northeast. There are two entry lanes on the approach from Nyton Road arm and the remaining two arms (Barnham Road and Fontwell Avenue) are one lane entries.
- 6.4.34 The capacity assessment results of this roundabout are summarised in **Table 6.8** below.

Table 6.8: A29 War Memorial Roundabout Capacity Assessment Results

Arm/Movement	AM Peak			PM Peak		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
2038 Do Minimum						
Barnham Road	0.44	0.8	4.41	0.19	0.2	3.14
Nyton Road	0.22	0.3	2.49	0.30	0.4	2.65
Fontwell Avenue	0.33	0.5	7.98	0.49	1.0	12.51
2038 Do Something						

Arm/Movement	AM Peak			PM Peak		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
Barnham Road	0.46	0.8	4.53	0.18	0.2	3.12
Nyton Road	0.23	0.3	2.50	0.29	0.4	2.64
Fontwell Avenue	0.33	0.5	7.98	0.49	1.0	12.66

- 6.4.35 The results indicate that the roundabout will experience RFCs well below the threshold of 0.85. It will operate within capacity and with minimal queues and delays in the AM and PM peak hours in both scenarios.
- 6.4.36 In overall, following the capacity assessments discussed above, the local highway junctions are expected to operate well within capacity with minimal queues and delays in the 2038 Do Something scenario without the need of any mitigation measures, with the exception of the A29 Westergate/Nyton Road priority junction in the AM peak which as the results suggest will operate over capacity even in the 2038 Do Minimum scenario with queues.
- 6.4.37 As mentioned above, it is suggested that WSCC should investigate whether to realign this junction to better serve the west-east ahead flows. This would mean that Nyton Road forms the major arm from west to east, with Westergate Street to the south forming the minor arm.

6.5 Woodgate Level Crossing Assessment

- 6.5.1 The Woodgate level crossing is located approximately 130m north of the junction between the A29 and Woodgate Road and currently experiences significant queues and delays when the level crossing is closed. By the implementation of the A29 realignment scheme, it is intended to improve the queues and delays observed at the crossing by reducing the level of traffic on the existing A29.
- 6.5.2 The proposed development will increase traffic along the A29 and hence, expected to have an impact on the queueing at the level crossing.
- 6.5.3 The traffic impact of the proposed development on the Woodgate level crossing has been assessed using a LinSig model by comparing the 2038 Do Minimum and Do Something scenarios. This is considered as an appropriate method as LinSig is used for modelling conflicting movements which are separated by signal control.
- 6.5.4 The LinSig output expresses the results in terms of degree of saturation (DoS) associated with each stream. A DoS 90% indicates potential capacity improvements should be investigated. The output also provides mean maximum queues lengths in PCU and delays in seconds.

- 6.5.5 The typical level crossing open and closure durations and frequencies are based on traffic survey observations that were provided as part of the approved adjacent Wings Nursery site's TA (ADC reference: AL/32/19/OUT).
- 6.5.6 In the AM peak, the crossing closed 8 times, resulting in a typical cycle of 307 seconds with the barriers open to traffic and 123 seconds with the barriers closed to allow trains to pass. This has been modelled in LINSIG as a 450 second signal cycle, including 10 second intergreen periods at the start and end of the barrier closure.
- 6.5.7 Similarly in the PM peak, the crossing closed 9 times, resulting in a typical cycle of 222 seconds with the barriers open to traffic and 158 seconds with the barriers closed. This has been modelled in LINSIG as a 400 seconds signal cycle, with the same 10 seconds intergreen periods.
- 6.5.8 The mean maximum queue and average delay per PCU outputs from the model are tabulated in **Table 6.9** below and the full LinSig output is provided within **Appendix L**.

Table 6.9: Woodgate Level Crossing Assessment Results

Arm/Movement	AM Peak			PM Peak		
	DoS	Mean Max Queue (PCU)	Av. Delay Per PCU (s/PCU)	DoS	Mean Max Queue (PCU)	Av. Delay Per PCU (s/PCU)
2038 Do Minimum						
A29 Lidsey Road North	15.6%	9.1	26.7	20.5%	12.3	46.3
A29 Lidsey Road South	18.7%	12.3	27.2	15.2%	9.7	44.6
2038 Do Something						
A29 Lidsey Road North	16.5%	9.8	26.9	23.5%	14.5	47.3
A29 Lidsey Road South	21.7%	14.6	27.9	17.1%	11.0	45.1

- 6.5.9 As can be seen above, the level crossing will experience the queues of up to 12 PCUS in both the AM and PM peak hours in the 2038 Do Minimum scenario when the new A29 is in place. This demonstrates that the A29 scheme, which the proposed development will be contributing towards, will bring significant improvements in comparison to the current delays and queues.

- 6.5.10 Furthermore, the results indicate that maximum queues of up to 15 PCU will occur at the level crossing with the proposed development. However, when compared against the Do Minimum scenarios, the increase in DoS, queues and delays are marginal. The maximum increase in the modelled queues is 3 PCUs in both the AM and PM peak hours.
- 6.5.11 This demonstrates that the increase in queuing at the level crossing in the Do Something scenario relative to the Do minimum scenario is negligible and the impact of the proposed development on the operation of the level crossing is immaterial.

7 Sensitivity Test

7.1 Sensitivity Test

- 7.1.1 The Traffic Impact Assessment (TIA) in the previous chapter of this TA has been undertaken for the “core test” scenario in which there is no link between the existing A29 and the new realigned A29 through Woodgate Road and the proposed development.
- 7.1.2 However, the WSCC Highway Authority have requested that a “sensitivity test” scenario is carried out with the east to west link providing vehicular connection between the existing and the new realigned A29 through Woodgate Road and the proposed development as envisioned within the BEW Framework Masterplan.
- 7.1.3 The Technical Note (TN) (Reference: 20-061-010) provided within **Appendix O** of this TA presents the sensitivity test that was undertaken and demonstrates that having the east to west link would be contrary to the objectives of the A29 realignment i.e. to reduce the level of traffic on the existing A29 and the congestion particularly at the Woodgate Level Crossing which experiences significant queueing and delays at present.
- 7.1.4 The sensitivity test indicates that having the link will result in increases in traffic along the existing A29 corridor between and including Woodgate Road and Hook Lane junctions due to the re-routing of traffic through Woodgate Road which otherwise would have travelled through Cala Homes site. However, the impact on the wider road network junctions will be imperceptible.
- 7.1.5 In the forecast year, the queues and delays at the level crossing would be exacerbated relative to the scenario presented in Chapter 6 of this TA, should the east to west link be introduced, even with the new realigned A29 in place. Thus, reducing the benefit that would be enjoyed by the existing A29 by the introduction of the new A29 realignment.
- 7.1.6 The TN was submitted to the WSCC Highway Authority as part of the pre-application discussion. Therefore, reference should be made to the TN for detailed review of the sensitivity test results and the magnitude of the impact on the operation of the local highway junctions and the Woodgate Level Crossing.
- 7.1.7 Following the submission, the WSCC Highway Authority affirmed that the absence of the vehicular access link from the proposed development site eastwards into BEW will not give rise to a negative material impact traffic-wise elsewhere on the network. Furthermore, the Highway Authority stated that they would have no fundamental objection to a planning application coming forward on this basis. For completeness, the relevant correspondence is provided within **Appendix O**.

8 Summary and Conclusions

8.1 Summary

- 8.1.1 Charles & Associates Consulting Engineers Ltd. (C&A) have been commissioned by PYE Homes in relation to Land at Woodgate Road, Aldingbourne, West Sussex, hereafter referred as the “the site”.
- 8.1.2 C&A have prepared a Transport Assessment (TA) and a Residential Travel Plan (TP) in support of a detailed planning application for up to 180 dwellings on the site. The scope of these documents was discussed and agreed with WSCC during the pre-application discussion.
- 8.1.3 The development site is located to the east of the A29 Lidsey Road and to the south of Westergate village. It forms part of the wider strategic allocation referred to as Barnham, Eastergate and Westergate (BEW) under Policy H SP2c (SD5) within the adopted ADC Local Plan 2011-2031.
- 8.1.4 The report has been prepared in a manner consistent with current policy including that set out in the Revised National Planning Policy published in July 2021 and in accordance with regional and local policy as set out in Section 2. The application has also drawn from relevant national and local design guidance found in MfS, and DMRB.
- 8.1.5 The report considers the existing local highway network in the context of the proposed development. The PIA data for the local highway was obtained from Wessex Police for a 10-year period and reviewed as agreed with WSCC. Following the review, it was concluded that there is no indication of any unusual levels of accident risks generally; nor is there any localised pattern of accidents that might indicate a highway safety issue for which remedial action would be required.
- 8.1.6 Local amenities including schools and shops are identified within reasonable walking and cycling distance from the site in Woodgate and Westergate villages. Furthermore, the BEW allocation proposals include two new primary schools, two local centres which will include shops, and a library facility to the east of the site.
- 8.1.7 The development proposal includes upgrading footways along Woodgate Road and the A29 heading north into a shared footway/cycleway. To the east, pedestrian and cyclist provisions are to be brought forward as part of the BEW development which include shared provision running on both sides of the realigned A29 for its entire length and upgrading of the existing north/south leisure foot/cycleway through the existing railway culvert alongside the Rife. Overall, the site is located appropriately to promote and encourage the future residents of the site to sustainably travel to and from the local amenities and services.

-
- 8.1.8 The main vehicular access is proposed through the extension of Woodgate Road to the east and into the site. Concerns were raised initially by WSCC with regards to the limited width of Woodgate Road and the on-street parking along the length of Woodgate Road.
- 8.1.9 Woodgate Road is approximately 5m in width and narrows to 4.8m width at some points for short distance. There is some on-street parking which is to be expected for a minor residential road. The narrowing of carriageway and on-street parking perhaps act as traffic calming, requiring drivers to drive slowly giving way to each other ensuring highway safety.
- 8.1.10 It is proposed that the existing simple priority junction between the A29 Lidsey Road and Woodgate Road will be upgraded to a right turn ghost island arrangement as illustrated in **Drawing No. 20-061-014**. The new arrangement will provide 3m wide lanes for through traffic in both directions and 3m wide right turn lane with queuing capacity of approximately 5-6 cars. Additionally, proposals also include improvements to the Willows Caravan Park northbound and southbound bus stops on the A29.
- 8.1.11 Parking provision including EV charging, and visitor parking will meet the parking demand of the proposed development in compliance with the relevant ADC and WSCC parking standards.
- 8.1.12 Section 6 provides a comprehensive assessment of the operation of the local highway junctions and the Woodgate level crossing in the 2038 Do Minimum and Do Something scenarios. The assessment is informed by the traffic flows from the A29 Realignment SATURN model obtained from WSCC.
- 8.1.13 The results demonstrate the junctions will operate within capacity and with marginal increase in queues and delays in the Do Something scenario with the development. The A29/B2233 Nyton Road junction is identified to operate over capacity even in the Do minimum scenario and therefore, is not attributable to the proposed development. The relative increase in queue length at this junction due to the development is considered not be severe. The realignment of this junction to better serve the west-east movements could provide mitigation here. The assessment of the Woodgate level crossing also demonstrates that the proposed development will result in marginal increases in queues of 3 PCUs in both the AM and PM peak hours in the forecast year relative to the without the development scenario. This level of impact is considered to be non-severe.

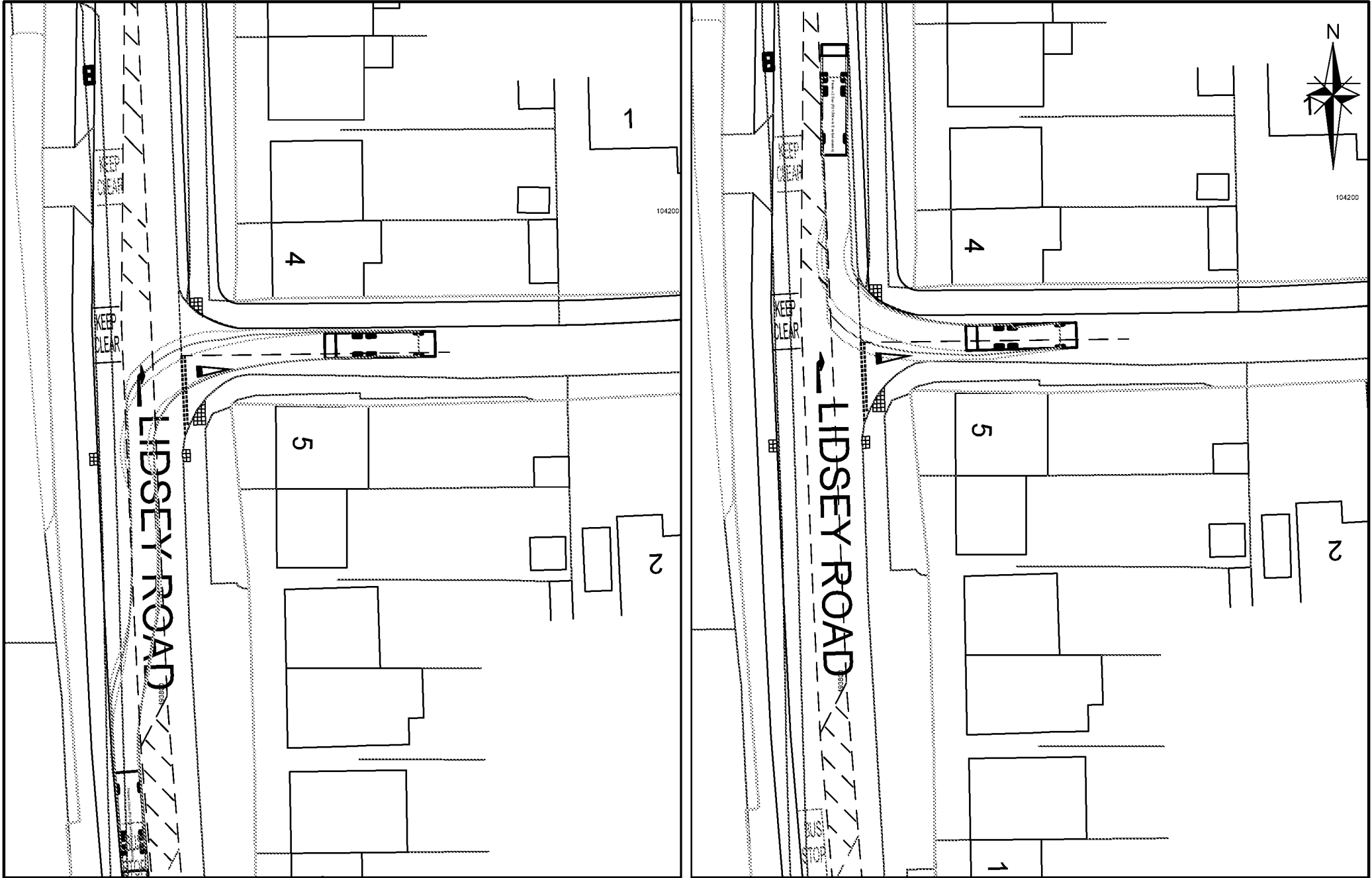
- 8.1.14 Sensitivity test has also been undertaken to assess of the impact on the local highway network in the presence of the east to west link through the proposed development and Woodgate Road. The results indicated that having the link will result in increases in traffic along the A29 corridor between and including Woodgate Road and Hook Lane and therefore, would be contrary to the objectives of the A29 realignment i.e. to reduce the level of traffic on the existing A29 and the congestion particularly to the south and specifically at the Woodgate Level Crossing which experiences significant queueing and delays at present.
- 8.1.15 Furthermore, the absence of the vehicular access link from the proposed development site eastwards into BEW will not give rise to a negative material impact traffic-wise elsewhere on the network.

8.2 Conclusions

- 8.2.1 In conclusion, this TA demonstrates the suitability of the proposed site for a development of up to 180 dwellings via the access arrangements proposed. The development proposals include access for all sustainable modes of travel including facilitates for pedestrians and cyclists as well as general traffic.
- 8.2.2 The development traffic can be accommodated without detriment to the operation of the local highway network. Given this, it is therefore, considered that is acceptable on highway and transport grounds in the context of the national, regional, local planning policy and design guidance.

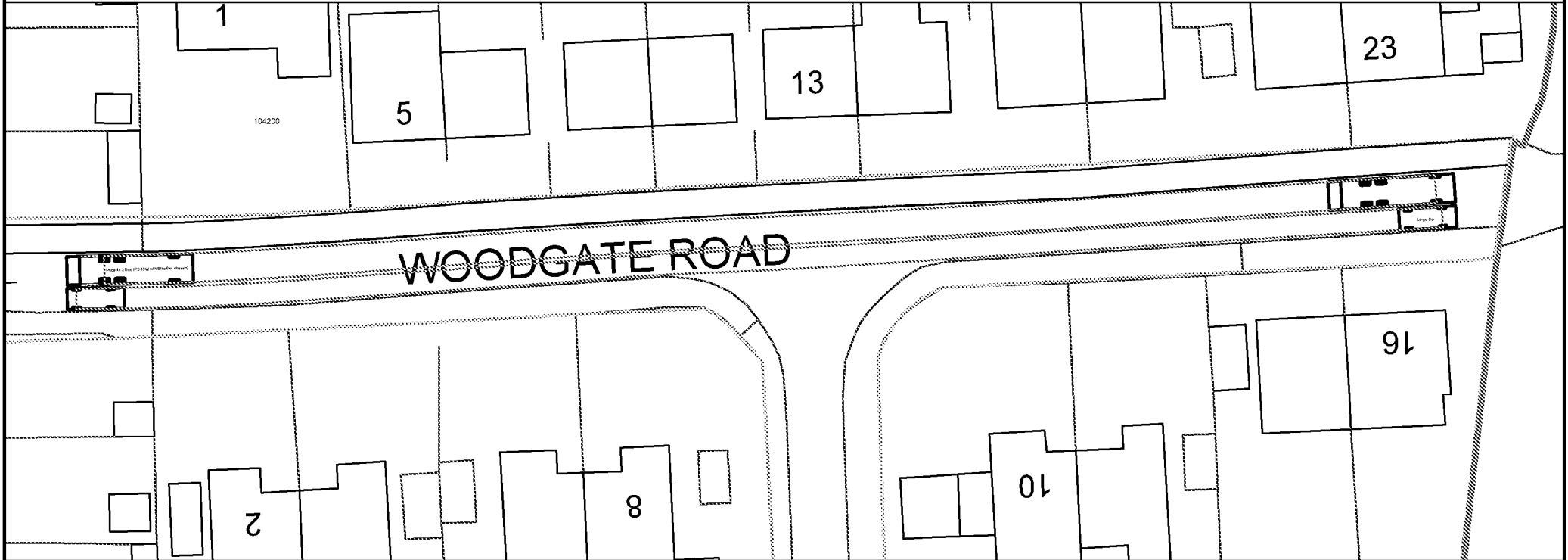
Drawings





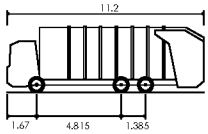
Right turn entry into Woodgate Road

Left turn entry into Woodgate Road



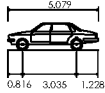
Woodgate Road - refuse and large car passby

VEHICLE PROFILES



Refuse Truck

Overall Length
Overall Width
Overall Body Height
Min Body Ground Clearance
Track Width
Lock to Lock Time
Kerb to Kerb Turning Radius



Large Car

Overall Length
Overall Width
Overall Body Height
Min Body Ground Clearance
Max Track Width
Lock to Lock Time
Kerb to Kerb Turning Radius

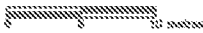
KEY



Highway Boundary



Site Boundary



A	Junction & text updated	SC	PL	GAC	Apr 2021
Rev	Amendments	Drm	Chk	App	Date



Charles & Associates

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Landmark House
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☐

Park House, Park Farm
East Malling Trust Estate
Bradbourne Lane
Aylesford, Kent ME20 6SN
01732 448120

Job Title

Land East of Woodgate Lane

Drawing Title

Refuse Swept Path Analysis (Sheet 1 of 2)

Client

Pye Homes

Scale

1:500 @A3

Date

April 21

Designed

SC

Drawn

SC

Checked

PL

Approved

GAC

Job No

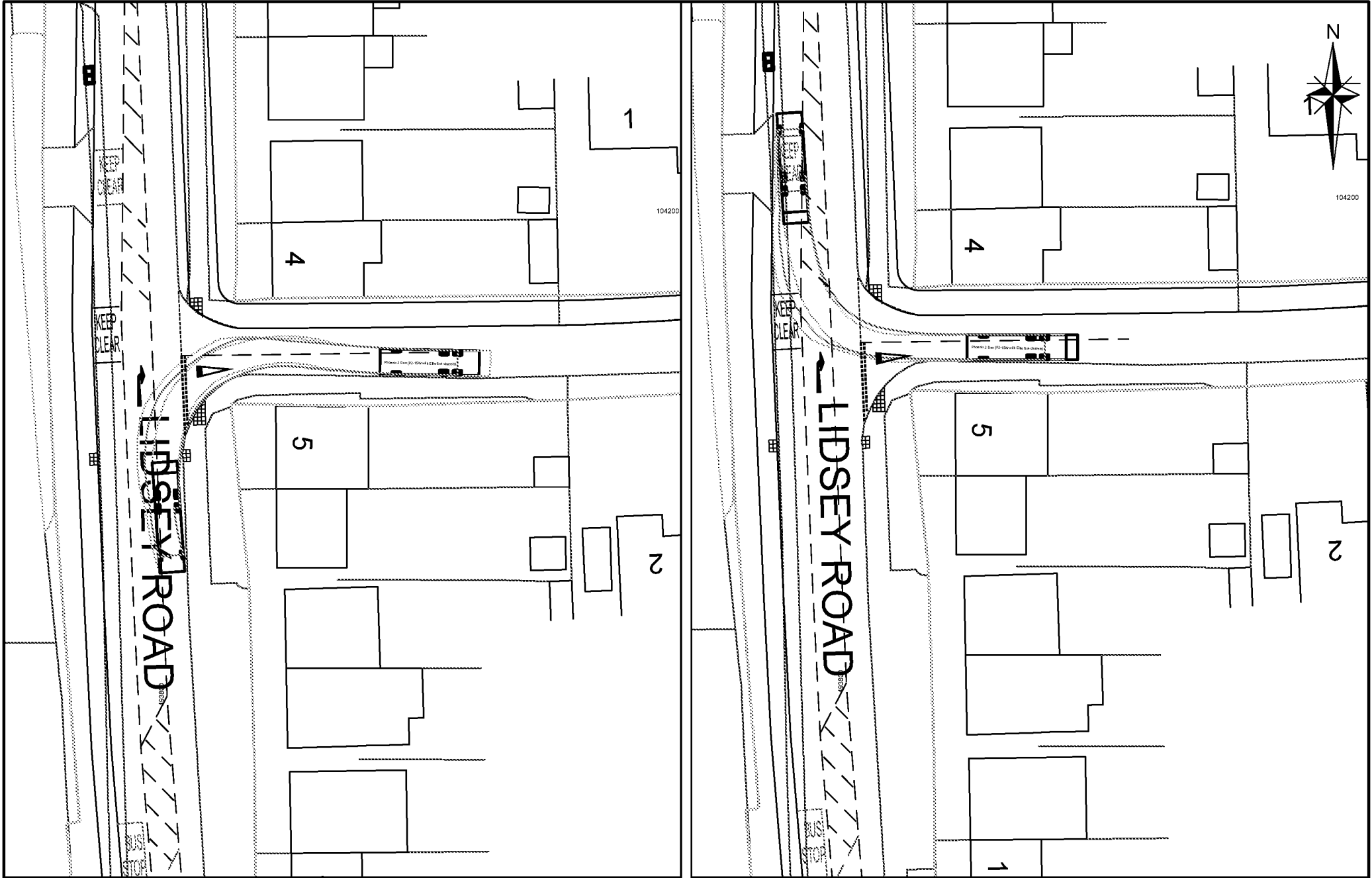
20-061

Drawing No

20-061-022

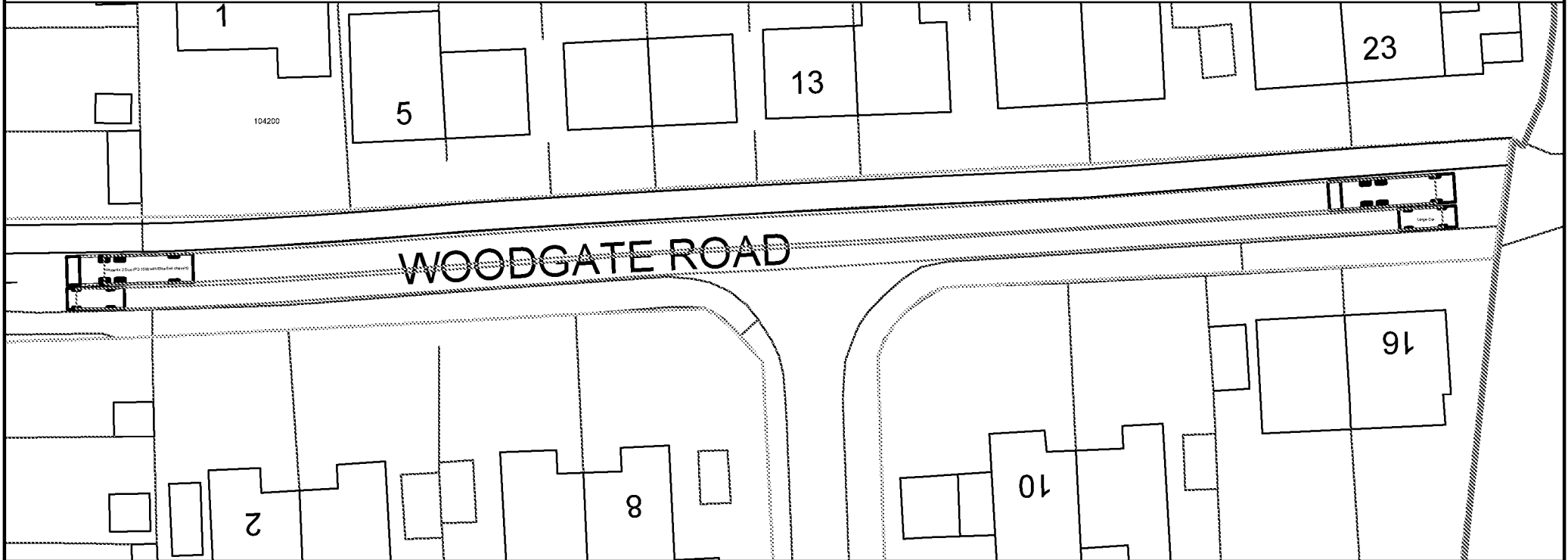
Rev

A



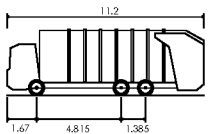
Left turn exit into Lidsey Road

Right turn exit into Lidsey Road

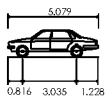


Woodgate Road - refuse and large car passby

VEHICLE PROFILES



Refuse Truck
Overall Length 11.200m
Overall Width 2.530m
Overall Body Height 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



Large Car
Overall Length 5.079m
Overall Width 1.872m
Overall Body Height 1.525m
Min Body Ground Clearance 0.310m
Max Track Width 1.831m
Lock to Lock Time 4.00s
Kerb to Kerb Turning Radius 5.900m

KEY

- Highway Boundary
- Site Boundary

A	Junction & text updated	SC	PL	GAC	Apr 2021
Rev	Amendments	Dm	Chk	App	Date



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Landmark House
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Park House, Park Farm
East Malling Trust Estate
Bradbourne Lane
Aylesford, Kent ME20 6SN
01732 448120

Job Title

Land East of Woodgate Lane

Drawing Title

Refuse Swept Path Analysis (Sheet 2 of 2)

Client

Pye Homes

Scale

1:500 @A3

Date

April 21

Designed

SC

Drawn

SC

Checked

PL

Approved

GAC

Job No

20-061

Drawing No

20-061-023

Rev

A



 Charles & Associates	Issued by ☒ Landmark House Station Road Hook Hampshire RG27 9HA 01256 630420	Job Title	Land East of Woodgate Lane		Client	Pye Homes		Scale	1:250	Date	Jul 21	Designed	-
	☐ Park House, Park Farm East Malling Trust Estate Bradbourne Lane Aylesford Kent ME20 6SN 01732 448120	Drawing Title	Emergency Access - Fire Tender Tracks			Drawn	LW	Checked	PL	Approved	GAC		
			Job No	20-061		Drawing No	20-061-032	Rev	-				
			Rev	Amendments		Drn	Chk	App	Date				