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SW EXETER
URBAN EXTENSION
MATFORD BARTON

TRANSPORT ASSESSMENT

PREPARED FOR

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NOTICE

This document and its contents have been prepared and are intended solely for Bovis Homes information and use in relation to a proposed application for the SW Exeter Urban Extension – Matford Barton.

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NON-TECHNICAL SUMMARY

FMW Consultancy have been appointed by Bovis Homes Group PLC to prepare a Transport Assessment (TA) to support the development of residential properties and an education site on land south of Alphington, south west of Exeter. The site has been identified as part of policy SWE1 within the Adopted Teignbridge Local Plan (May 2014).

This report has been prepared following extensive discussions and collaborative consultation with Devon County Council, as local highway authority, on the highways and transportation issues associated with the proposed development of the site.

The site is located to the south west of Exeter and is divided into three parcels of developable land by highway. The northwest element of the site is bounded by Chudleigh Road to the east, the A30 to the west, Waybrook Lane to the south and Markham Lane to the north. Chudleigh Road provides a link from the A379 to the village centre of Alphington. As part of the off-site measures proposed alongside this development Chudleigh Road will be closed at the junction with the A379. The site has no direct access to the A30 which runs in a highway cutting to the west. Waybrook Lane runs to Shillingford Abbot in the west, whilst Markham Lane runs between Chudleigh Road and Shillingford Road.

The larger northern and southern elements of the site are split by the A379. To the west of the northern element the site is bounded by Chudleigh Road, whilst to the northeast the site is bounded by Dawlish Road. Trood Lane runs through the southern element of the site and provides access to a number of existing properties. To the east of the site Old Matford Lane provides the boundary, whilst the southern boundary is Greenfield.

The pedestrian and cycle facilities provided on the roads adjacent to the development site are limited. However, the national and local network can be accessed approximately 2 km to the east. Whilst there are a number of bus routes

that serve Exeter City centre and numerous commuter satellite towns that run along both the A379 and in Alphington, existing public transport provision to the site is currently limited.

The most recent five years of traffic accident data was obtained from Devon County Council. A review of this data demonstrates that 85 recorded accidents are distributed over a wide study area, with the majority of accidents due to driver error. The junctions within the study area are not considered to have an identifiable highway safety problem.

The development proposals have been designed to accord with the principles and policies identified within the emerging Teignbridge Local Plan.

The development will comprise of at least 1,350 homes, and additionally a primary school, land set aside for a possible secondary school, a local centre and both formal and informal parkland. The assessment has been undertaken based upon a worst case scenario detailed within the accompanying Environmental Statement which allows for the possibility of an additional 150 homes coming forward should the secondary school not be required. In addition, the assessment has also made allowance for a possible 2,000m2 of B1 Office sited within the local centre and also the provision of a 40 space car park serving the Suitable Alternative Natural Green Space (SANGS).

The site will be accessed via three new junctions from the A379, three new junctions from Chudleigh Road and one new junction from Dawlish Road.

The proposed development will generate 750 vehicle movements in the morning peak hour and 750 vehicle trips in the evening peak hour. These trips have been assigned across the local highway network using an agreed distribution based on 2011 Census data for the ward of Alphington. The outputs of this transport modelling were used to undertake a detailed assessment of the surrounding junctions. This junction modelling has demonstrated that the majority of the existing junctions

assessed as part of this will be able to accommodate the proposed development traffic. Where junctions are shown to operate over capacity as a result of the development, the developer will make an appropriate contribution to Devon County Council to enable suitable highway improvements or to positively affect modal shift.

In order to improve the sustainable transport links to the site, the development will provide and contribute towards a package of bus improvement measures for the area, the Marsh Barton Rail Halt and the Ide Park & Ride facility.

Along with the aforementioned, a contribution towards a new foot / cycle bridge across the A379 will be provided. An approximate location and alignment of the new foot / cycle bridge has been established through a consultation process with Devon County Council.

The site is well located for future sustainable travel to local facilities and services such as education centres, food and convenience shopping, employment opportunities, health facilities and Exeter city centre.

This report demonstrates that there are no transportation reasons why the site should not be developed providing the range of transport measures identified in this report are implemented.

1 INTRODUCTION

Brief

1.1 FMW Consultancy have been appointed by Bovis Homes Group PLC to prepare a Transport Assessment (TA) to support a planning application for a proposed residential development of up to 1,350 dwellings, a primary school, and a secondary school on land south of Alphington, Exeter. The location of the site is shown in **Figure 1.1**.

1.2 The site lies within the Teignbridge District Council (TDC) administrative boundary, directly bordering the Exeter City Council administrative boundary to the north.

1.3 The site has been identified as part of SWE1 within the Adopted Teignbridge Local Plan (May 2014). A plan showing the SWE1 site allocation is included as **Appendix A**.

1.4 Devon County Council (DCC) have previously prepared the South West Exeter Transportation Access Strategy (SWETAS) which compiled the results of modelling undertaken to assess the impact of development in the south west of Exeter.

1.5 Given the complexity of the South West Exeter Urban Extension (SWEUE) area the scope of the Transport Assessment work for the entire SWE1 area was agreed at joint DCC / Consultant meetings during an extended scoping period in order to ensure that all sites were assessing the correct level of cumulative impact. Notes from the meetings can be provided upon request.

1.6 The SWEUE land and respective number of units being planned is shown below in **Table 1.1** for reference:

LAND	ACCESSED FROM	NO. OF UNITS
BOVIS	A379 (West of Devon Hotel Roundabout & Chudleigh Road	1,500*
PARR	A379 (East of Devon Hotel Roundabout)	270
WADDETON	A379 (East of Devon Hotel Roundabout)	230
WHITE	Chudleigh Road (S)	200
EXETER CC	Chudleigh Road (N)	400
Total		2,600

*Figure takes account of maximum buildable area should the Secondary School not be built. If the school is built then the total figure reduces to approximately 1,350 units.

Table 1.1: Summary of the Total SWEUE Development

1.7 It should be noted that the Waddeton Park Limited (WPL) TA prepared by PCL Transport was submitted to Teignbridge District Council in November 2013 (13/02729/MAJ) and therefore FMW have had the benefit of viewing comments on this application made by both DCC and the Highways Agency (HA). The WPL application was granted outline approval on 2nd October 2014, and has subsequently been resubmitted to account for TDC becoming a Community Infrastructure Levy (CIL) charging authority.

1.8 The Parr Land, White Land and Exeter City Council (ECC) Land proposals are all at different stages of preparation and consultation, but at present have not been submitted for planning approval.

1.9 This TA aims to outline and assess any transport issues in relation to the proposed site. It will provide an overarching access strategy for the development and determine whether the road network is suitable to accommodate the predicted impact of the new development.

1.10 This report will set out an access strategy for the development of the site which will consider provision for all modes of transport.

Report Structure

1.11 The structure of this report is summarised below:

- **Section 2**: Describes the existing conditions on the transportation network surrounding the development site;
- **Section 3**: Summarises the relevant national, regional and local planning policies which affect the site;
- **Section 4**: Outlines the relevant characteristics of the proposed development including parking provision;
- **Section 5**: Details the access arrangements and transport infrastructure proposed to serve the site;
- **Section 6**: Estimates the number of additional trips that would be generated by the proposed development and identifies where these trips would be travelling to and from;
- **Section 7**: Assesses the impact of these additional trips upon the surrounding road network;

- **Section 8**: Details the facilities proposed to enable travel to and from the site by sustainable modes of transport;
- **Section 9**: Provides an assessment of the ease of accessibility to local facilities from the site by sustainable modes of travel;
- **Section 10**: Presents a summary of the report and identifies the main conclusions that can be drawn from the Transport Assessment.

2 EXISTING CONDITIONS

2.1 The location of the site in relation to the local transport network is described in this section. The local transport network includes facilities provided for cars, buses, cyclists and pedestrians.

Wider Road Network & Context

2.2 As shown in **Figure 2.1**, the site is located to the south west of Exeter. The site is approximately 5km from Exeter city centre.

2.3 Exeter has good links to the M5, which forms the eastern boundary of the city, and to the A30 trunk road which provides the southern boundary of the city. Both of these links serve to provide the city and its local area with excellent access to the Primary Road Network.

2.4 There are four radial routes leading to Exeter from the east and south. The B3212 Pinhoe Road allows access from the north east but has no direct connection with the M5; the B3138 Fore Street / Honiton Road leads to the city centre from the M5 Junction 29 and the east; the B3182 Topsham Road from the south east; and the A377 Alphington Road from the A30(T) to the south of the city.

2.5 The eastern side of the city is additionally served by the A379 which leads from the M5 Junction 30 to the A3015 / A379 partial ring road. From here traffic can join Topsham Road, or head north on the ring road to Honiton Road, or south across Bridge Road to Alphington Road.

2.6 It is known that Exeter currently experiences traffic congestion in peak periods along its radial routes towards the city centre including Topsham Road and the Countess Wear Junction.

Local Road Network

2.7 The site is located on both the north and south of the A379 and east and west of Chudleigh Road. To the north Dawlish Road provides a boundary for part of the development.

2.8 The A379 is part of the ring road around Exeter city centre from its connection with the M5 Junction 30 north to the Sowton employment area. South from Sowton the A379 connects with A3015 Topsham Road at the Countess Wear signal controlled roundabout

2.9 South from the Countess Wear junction, Bridge Road connects with Sannerville Way at the Matford roundabout. The A379 splits providing access to Exminster and onto Dawlish and Torquay.

2.10 East of the proposed site the Devon Hotel roundabout provides access via its northern arm the B3123 Bad Homburg Way to the Marsh Barton industrial estate and onto the city centre. From Bad Homburg Way access to the existing Matford 'Park and Ride' site can be achieved at the Yeoford Way / Matford Park Road roundabout junction.

2.11 In the vicinity of the site the A379 is 12m at its widest as a two lane dual carriageway with a signed speed limit of 40mph. Approaching Chudleigh Road from the east, the road narrows to a single lane before widening to provide a dedicated right hand turning lane into Chudleigh Road (accommodating approximately 20 cars).

2.12 From the south west the A379 crosses the A30 as a single lane of approximately 3.5m in width, directly after Chudleigh Road the A379 becomes a two lane dual carriageway.

2.13 The Devon Structure Plan 2001 – 2016 identifies the A379 as part of the counties Primary Route Network.

2.14 Chudleigh Road is around 7m in width providing a lane northbound into Alphington and southbound forms a priority give way 'T' junction with the A379, at which point the width of the combined total carriageway flares to approximately 40m.

2.15 Chudleigh Road towards Alphington has a speed limit of 40mph until Waybrook Lane where it becomes 30mph. After a further 300m approaching the built up area of Alphington the speed limit reduces further to 20mph demarcated both by traffic signs and carriageway painted markings.

2.16 Dawlish Road is approximately 5m in width and runs from Chantry Meadow, Alphington to the Devon Hotel roundabout junction. It is narrow with traffic signs at both ends banning the use of the road by vehicles over the width of 2m (6ft 6in).

2.17 From the Devon Hotel roundabout Dawlish Road is subject to the National Speed Limit of 60mph until 25m from Chantry Meadow where as it is approaching the Alphington urban area the speed limit becomes 20mph.

Pedestrian and Cycle Facilities

2.18 A shared foot / cycle way is present on the southern side of the A379 approximately 3m in width. The road has street lighting at its junction with Chudleigh Road and its junction with the Devon Hotel roundabout. For approximately 700m between the aforementioned junctions the A379 has no street lighting at present.

2.19 Chudleigh Road has a 2m footpath along its eastern edge running from the A379 junction to the Waybrook Cottages site after which pedestrians need to cross and continue north into Alphington on the western side of the road. Therefore the site frontage along Chudleigh Road has footpath bordering it. In many places along the initial eastern stretch of footway cutting back of vegetation would be required to provide the full width of the footway.

2.20 Dawlish Road has no formal pedestrian or cycle links for its entire length, and although flows are low and predominantly slower due to its width, this road is not recommended for use by pedestrians or cyclists without due care and diligence.

2.21 Information obtained from DCC and included as **Appendix B** shows that there are two existing Public Rights of Way (PROW) within the proposed site area (source: www.devon.gov.uk/prow)

2.22 The first PROW in relation to the proposed site is accessed close to the existing units (light industrial / commercial) on Dawlish Road and runs initially south for around 90m, then turns to run due west for approximately 460m to Chudleigh Road. The route is predominantly flat.

2.23 The second route runs along the south western boundary of the southern element of the proposed site and crosses the A379 before continuing through the northern element of the proposed sign along the same alignment and accessing Chudleigh Road. This route is also predominantly with an increasing gradient north of the A379.

2.24 With the exception of the A379 shared use path there are no cycle routes within the immediate vicinity of the site. The A379 route connects with the established cycle network that has been implemented by Exeter City Council (ECC), DCC and Sustrans, and provides access to the city centre and beyond.

2.25 The National Cycle Routes 2 and 34 are approximately 2km to the east, both accessed via the A379 Bridge Street. Route 2 is a long distance route between (once completed) Dover in the east and St Austell in the west. Route 34 is a local link that connects Exeter St Davids railway station and Route 2.

2.26 The Devon and Torbay Local Transport Plan 3 discusses the potential creation of new cycle routes, one to the south of the development and one in the north west corner as part of the Cycle Exeter Project. This is discussed further within **Section 3** and **Section 8** of this report.

Public Transport

2.27 Given the size of the proposed site, the location of the nearest bus stops to the site is dependent on where in the site you would be starting your journey from and as services do not stop at all stops, where you want to travel to.

2.28 For those located to the north of the site there are stops located on Deacon Close and Fairfield Road / Chantry Meadow. From the centre of the northern area of site these stops are approximately 600m to the north. The Alphington stops provide access to Route A (Alphington – Exeter City Centre – Thornpark Rise).

2.29 If located at the south of the site, currently the nearest stops are opposite Peamore Garden Centre and Peamore lodge, both approximately 700m (from centre of southern site element) to the south along the A379. From these stops the 39, X38, X48 and X64 services can be accessed to destinations such as Newton Abbot, Paignton and Plymouth as well as the city centre of Exeter.

2.30 **Table 2.1** shows that the existing bus services in the area of the proposed development.

2.31 In addition to the main services listed within the table there are also a number of services that run infrequently to areas of employment.

2.32 **Figure 2.2** shows the bus routes in relation to the development site.

2.33 Presently all of the available stops are designated by a pole and flag with no further bus infrastructure available. The stops within Alphington are demarcated on the road, with the stop on Chantry Meadow being adjacent to a functional seating area.

2.34 As shown in the above table, Matford Park and Ride which is approximately 1km to the north east of the site operates a 10 minute frequency of service into the centre of Exeter.

2.35 The nearest railway station to the proposed development is Exeter St Thomas which is approximately 5km to the north from the centre of the proposed development. Whilst the majority of the services from this station are local to Paignton and Exmouth, one service does run directly to London Paddington.

Service	Operator	Route	Closest Stop	Weekday		Saturday		Sunday	
				First	Last	First	Last	First	Last
A	Stagecoach South West	Alphington - Thornpark Rise	Fairfield Road	06:22	08:12	06:37	-	-	-
		Thornpark - Alphington	Fairfield Road	06:41	00:00	06:53	00:00	08:55	23:30
Frequency: 6 an hour during the week in the direction of Alphington									
39	Stagecoach South West	Exeter - Newton Abbot	Peamore Garden	06:09	19:04	06:24	19:04	08:45	18:45
		Newton Abbot - Exeter	Peamore Lodge	07:35	20:45	08:06	20:45	10:26	20:26
Frequency: 2 times an hour during the week									
X38	Stagecoach Devon & South West	Exeter - Plymouth	Peamore Garden	05:20	18:15	05:30	18:15	08:53	16:53
		Plymouth - Exeter	Peamore Lodge	07:59	20:54	08:04	20:54	11:34	19:33
Frequency: 1 every 2 hours									
X46	Stagecoach Devon & South West	Exeter - Paignton	Peamore Garden	07:51	19:30	08:58	19:00	10:18	16:58
		Paignton - Exeter	Peamore Lodge	07:14	18:45	08:04	18:45	09:25	16:06
Frequency: Hourly									
X64	Stagecoach South West	Exeter - Totnes	Peamore Garden	06:10	19:28	08:58	19:28	09:18	15:23
		Totnes - Exeter	Peamore Lodge	07:28	18:39	08:15	18:39	13:16	19:21
Frequency: Hourly									
GREEN	Stagecoach South West	Matford Park and Ride	Matford P&R	06:30	19:00	07:40	18:45	-	-
Frequency: Every 10 minutes									

Table 2.1: Summary of the Existing Bus Services in the local area

Traffic Volumes

2.36 Where possible the most recent the most recently counted traffic data has been used within this TA. A summary of the age of the data is provided below.

2.37 Following extensive scoping discussions with Devon County Council (DCC) the following key junctions are identified for further assessment within **Section 7** of this report:

- Chudleigh Road / Shillingford Road / Chantry Meadow (Date of Data: 2013)
- A379 / Chudleigh Road Priority Junction (Date of Data: 2013)
- Devon Hotel Roundabout (A379 / B3123 Bad Homburg Way) (Date of Data: 2013)
- B3123 Bad Homburg Way / Yeoford Way / Matford Park Road (Date of Data: 2014)
- Matford Roundabout / Bridge Road (Date of Data: 2013)

2.38 The AM and PM peak hour traffic turning movements as shown in **Figure 2.3**. The traffic data used within this TA are included in **Appendix C**.

Accident Analysis

2.39 Personal Injury Accident data covering the local highway network has been obtained from SCC for the period between 01/01/2009 to 31/12/2013 (which represents the most recent five years of data available at time of writing).

2.40 The information is based on STATS19 Police Accident Reports and refers to three categories of accidents:

- A **fatal** accident is an accident in which at least one person is fatally injured;
- A **serious** accident is one in which at least one person is seriously injured, but no-one suffers a fatal injury, and which is in one (or more) of the following categories:

  (a) an injury for which a person is detained in hospital as an in-patient; or

  (b) any of the following injuries (whether or not the person is detained in hospital): fractures, concussion, internal injuries, crushing, severe cuts and lacerations, severe general shock requiring treatment.
- A **slight** accident is one in which at least one person suffers "slight" injuries (i.e. for example, a sprain, bruise or cut which is not judged to be severe, or slight shock requiring roadside attention), but no-one is seriously injured, or fatally injured.

2.41 The full accident data is attached as **Appendix D** in this report. In summary within the relevant study area there were a total of 159 accidents, 143 slight, 15 serious and 1 fatality. The fatal and serious accidents are summarised below in **Table 2.2**.

Date	Location	Severity	Casualties	Vehicles	Casualty Info
15/08/2012	Church Road Roundabout	**Fatal**	1	1	Pedestrian
18/05/2013	Ide Roundabout	**Serious**	1	2	Driver
29/12/2010	Ide Roundabout	**Serious**	1	2	Passenger
09/09/2012	Devon Hotel Roundabout	**Serious**	1	2	Motorcyclist
19/01/2013	Devon Hotel Roundabout	**Serious**	1	2	Cyclist
30/04/2010	A 379 Roundabout	**Serious**	1	1	Motorcyclist
12/12/2011	A 379 Roundabout	**Serious**	1	2	Motorcyclist
03/07/2011	A 379 Roundabout	**Serious**	2	3	Cyclists
31/10/2011	Countess Wear Roundabout	**Serious**	1	2	Driver
28/11/2010	Countess Wear Roundabout	**Serious**	3	2	Drivers and Passenger
26/02/2009	Countess Wear Roundabout	**Serious**	1	1	Cyclist
25/01/2013	Countess Wear Roundabout	**Serious**	1	1	Van driver
17/02/2012	Alphington Road Roundabout	**Serious**	3	2	Drivers and Passenger
27/03/2013	Hennock Road	**Serious**	1	2	Motorcyclist
29/10/2009	Ide Lane	**Serious**	1	1	Pedestrian
19/08/2010	Matford Park Road	**Serious**	1	2	Motorcyclist

Table 2.2: Summary of Fatal and Serious Accidents

2.42 The one fatality occurred when a pedestrian stepped out on to the vehicular carriageway and was hit. This is seen as a rare occurrence and not down to the road design, speed or condition. Whilst it should be acknowledged, it is in no way representative of the severity or type of accidents seen elsewhere within the period.

2.43 As previously stated there were 159 recorded accidents in the study area over the five-year assessment period of which 143 were classified as slight, 15 were classified as serious with one fatal accident. It should be noted that some collisions involved more than one casualty with the 159 collisions resulting in a total of 202 casualties.

2.44 Levels of vulnerable road user involvement within the recorded accidents is summarised below. Of the 202 casualties, 38 were riding a motor cycle, 15 were riding a pedal cycle and 13 casualties were pedestrians.

2.45 As can be seen from the plan attached as **Appendix D**, the numerous accidents are spread widely across the study area. However, to ease the analysis of these accidents and identify any potential deficiencies in the highway network, geographic groups of accidents can be arranged into distinct clusters. Accidents defined in each cluster are generally located within a short distance of each other, such as near to a junction or on a particular stretch of road.

2.46 An analysis of the accident records presented in **Appendix D** shows that clusters of Personal Injury Accidents were observed at the following locations:

- 6 accidents were recorded around the priority junction of the A379 and Chudleigh Road and along the neighbouring stretch of the A30;
- 15 accidents were recorded within 250m of the Devon Hotel Roundabout;
- 3 accidents were recorded within close proximity to the Centre of Alphington;
- 7 accidents were recorded at or near to the Church Road / Alphin Brook roundabout;
- 10 accidents were recorded on the Alphington Road signal gyratory;
- 17 accidents were recorded at the Ide junction;
- 20 accidents were recorded along the approaches and at the A379 roundabout;
- 15 accidents were recorded along a 600m stretch of Bridge Road;
- 21 accidents were recorded at the Countess Wear roundabout and the surrounding approaches.

2.47 The analysis of these clusters below seeks to identify common accident causes in order to determine if there are any improvements that can be made to the highway network to reduce the future number of accidents at these locations.

Cluster 1: A379 / Chudleigh Road and the A30

2.48 The six accidents identified within this cluster are: 12JC4V007, 13JC4V003, 13JC4V025, 13JC4V016, 09JC4V014, and 12JC4T001. These encompass the A379/Chudleigh Road priority T-junction and a short stretch of the A30.

2.49 A detailed analysis of the accident records for this location shows that:

- All of the accidents at this location are of slight severity;
- The accidents are relatively evenly spread across the assessment years, with accidents occurring on three of the five years;
- As would be generally expected, the majority of incidents (83%) occurred on a weekday but the remaining 17% occurring on a Sunday;
- One of the recorded accidents involved a vulnerable road user, a motorcyclist. The motorcycle accident caused by driver error after the user overtaking slow moving traffic;
- Of the remaining accidents, all were attributed to driver error and often involved drivers failing to stop or give way;
- Only three incidents occurred in darkness hours which indicated that there is unlikely to be an issue with street lighting at this location.

2.50 In view of the above, it is considered that there are no major deficiencies with the highway network that are actionable. The position of the junction allows for good visibility for vehicles turning to and from the junction. The A30 does not pose any visibility issues. As very little connection exists between the accidents and road conditions, the existing features are considered to be sufficient to accommodate the majority of users' needs.

Cluster 2: Devon Hotel Roundabout

2.51 The 15 accidents identified within this cluster are: 12JC4V017, 13JC4V002, 10JC4V007, 12JC4V009, 10JC4V012, 12JC4V010, 13JC4V007, 13JC4V009, 11JC4V021, 11KU2E008, 13JC4V012, 11JC4V018, 11JC4V004, 10DE2T013, and 12JC4V008. These accidents encompass the Devon Hotel Roundabout and the approaches.

2.52 A detailed analysis of the accident records for this location shows that:

- The majority of accidents at this location are of slight severity with only two serious accidents;
- The accidents are relatively evenly spread across the assessment years, with between three and four accidents observed in almost each full calendar year (i.e. 2010 and 2013);
- As would be generally expected, the majority of incidents (10) occurred on a weekday with the remaining 5 occurring on Saturday (1) and Sunday (4);
- Around 60% of the recorded accidents (9 of 15) involved vulnerable road users, with six involving a motorcycle and three involving a pedal cycle. Of these, three of the motorcycle accidents and one of the pedal cycle accidents involved the users overtaking slow moving traffic or turning irrationally. The other motorcycle and pedal cycle accidents were a result of driver failing to stop;
- Of the remaining six accidents, four were attributed to driver error and often involved drivers failing to stop, whilst one has been attributed to a Satellite Navigation fault and one without a known cause;
- Only one incident occurred in darkness hours which indicates that there is unlikely to be an issue with street lighting at this location;
- There is no obvious correlation between the weather conditions with only one incident occurring whilst the road conditions were wet.

2.53 With regards to the high level of motorcycles and pedal cycle incidents relating to the overtaking of slow moving traffic, these are relatively common on a congested network with stop-start traffic. Despite this, these type of accidents are generally of slight severity due to the slow traffic speeds – this is reflected in the accidents records (other than the serious motorcycle and pedal cycle incident when the cyclist pulled out to avoid a drain and was subsequently hit). If the cycle accidents are considered to be an issue, the Highways Authority should consider the creation of an off-street cycle lane.

2.54 In view of the above, there are some minor improvements to the junction which could provide benefits and reduce the accident record. However, the congested nature of the area at times may limit the scope of the benefits In view of the above, it is considered that there are no deficiencies with the highway network.

Cluster 3: Alphington Town Centre

2.55 The 3 accidents identified within this cluster are: 09DE2S006, 12DE2S001 and 11DE2S005. These accidents encompass all incidents within the centre of Alphington.

2.56 A detailed analysis of the accident records for this location shows that:

- Of the three recorded accidents, only one was serious with no fatal incidents. The serious accident involved a pedestrian and occurred when a passing car clipped the pedestrian with his wing mirror;
- In total, two accidents involved vulnerable road users, both pedestrians. All of the pedestrian accidents can be noted down to their own error. The second of these pedestrian based accidents resulting from a child walking in to the road directly into the oncoming vehicle;
- Only one of the accidents occurred whilst the road conditions were wet. However, the nature of the incident can be attributed to driver error and not a fault in the road network;
- The accident records show that the accidents are spread apart across the surveyed dates;

2.57 In view of the above, it is considered that there are no major deficiencies with the highway network. The accidents can all be contributed to human error and the number of incidents is negligible over a relatively large site.

Cluster 4: Church Road / Alphin Brook Road roundabout

2.58 The seven accidents identified within this cluster are: 12DE2S007, 12DE2S004, 12DE2S006, 13DE2S004, 11DE2S004, 09DE2TO11 and 12DE2TO25.

2.59 A detailed analysis of the seven accident records for this location shows that:

- Of the seven recorded accidents, one was of a fatal nature and the remainder were slight;
- The fatal incident occurred on the Church Road approach and involved a pedestrian casualty. The pedestrian crossed the road, possibly intending to catch the bus, and has failed to look both ways stepping out into the path of an oncoming vehicle.
- The predominant cause of accidents at this location relates to driver error with 86% of all incidents. Three of these involved a motorcycle with drivers either failing to observe the motorcyclist or attempting to overtake the vehicle;

- Of the seven accidents, one was claimed to be due to slipping on the road and skidding into an oncoming vehicle. However, the road conditions were fine and dry, and are therefore unrelated to the standard of the highway network;
- Of the seven recorded accidents, one occurred whilst it was dark with the remaining six (including the fatal accident) during daylight hours which indicates that there is unlikely to be an issue with street lighting at this location.

2.60 In view of the above, it is considered that there are no major deficiencies with the highway network. The majority of the seven accidents (86%) can be attributed to human error relating to people either losing control of their vehicles, failing to stop or not paying attention. The remaining accident whilst seemingly not caused by driver error does not highlight a deficiency in the highway network.

Cluster 5: Alphington Road Signal Gyratory

2.61 The 10 accidents identified within this cluster are: 10DE2R006, 09DE2R019, 10DE2R034, 10DE2S004, 12DE2R001, 12DE2R013, 09DE2R022, 10DE2R028, 10DE2R026 and 09DE2R003.

2.62 A detailed analysis of the accident records for this location shows that:

- Of the 10 recorded accidents, one was serious and nine were of a slight severity;
- None of the recorded accidents involved a pedestrian or motorcycle but one involved a pedal cycle;
- Two occurred in wet conditions and three during darkness hours which indicates that there is unlikely to be an issue with street lighting at this location;
- There has not been an accident since May 2012. Of the 10 recorded incidents, three were recorded in 2009, four in 2010 and three in 2012.
- The serious accident occurred at the Cowick Lane cross roads, the driver has pulled out into the path of an oncoming vehicle. The signal for the vehicle had turned green and as such the driver was expecting the oncoming traffic to stop. This can be attributed to driver error in misreading the signals.
- Of the slight recorded accidents three related to vehicles driving through the signal junction whilst it was showing red, with another due to the driver unable to control their vehicle; four of the accidents were shunt type accidents;

- The incident involving a pedal cycle was caused by the driver failing to see the cyclist, who in turn dismounted their bicycle to avoid the path of the oncoming vehicle.

2.63 In view of the above, it is considered that there are no major deficiencies with the highway network. Most of the accidents were a direct result of driver or pedestrian error and as such cannot be attributed to a shortcoming in the network.

Cluster 6: Ide Roundabout

2.64 The 17 accidents identified within this cluster are: 13JC4R005, 10DE2S005, 11JC4R003, 10JC4R001, 09JC4R001, 11JC4R002, 10DE2R036, 12JC4R001, 12JC4R002, 13JC4R004, 11DE2S001, 12DE2S005, 13DE2R006, 09JC4R004, 11DE2R020, 10DE2R021 and 12JC4R006.

2.65 A detailed analysis of the accident records for this location shows that:

- Of the 17 recorded accidents, two were serious and the remainder were of slight severity;
- The two serious accidents occurred at different junctions, one was due to the driver failing to stop, and the second due to a driver pulling away too quickly and shunting the car ahead;
- One of the recorded accidents involved a pedal cycle after the driver of the vehicle failed to see the cyclist resulting in slight injuries;
- 29% of the accidents occurred in the wet with four occurring in the dark;
- As would be expected, there were a high number of shunt accidents (12). Five were due to drivers assuming the vehicle ahead had pulled off, and seven failing to stop;
- Three of the recorded accidents involved a driver losing concentration and pulling into the path of another vehicle, one of these events involved a pedal cycle;
- The accidents are relatively evenly spread across the assessment years, with between two and four accidents observed in each full calendar year (i.e. 2009 and 2013);

In view of the above, it is clear that all of the recorded accidents occurred as a result of driver error and as such it can be considered that there are no major deficiencies with the highway network.

Cluster 7: A379 roundabout

2.66 The 20 accidents identified within this cluster are: 10JC4V008, 11JC4V030, 11JC4V014, 11JC4V008, 09JC4V022, 09DE2T002, 11JC4V022, 10JC4V003, 10DE2T005, 13DE2T019, 10DE2T002, 10DE2T020, 13JC4V018, 10JC4V001, 09DE2T023, 10JC4V015, 10DE2U004, 11JC4V005, 13JC4V006 and 09JC4V005.

2.67 A detailed analysis of the accident records for this location shows that:

- Of the 20 recorded accidents, three were of a serious severity with the rest recorded as slight;
- Nine accidents involved vulnerable road users (one pedal cycle, seven motorcycles and one incident involving a pedestrian);
- Two of the severe incidents involved motorcyclists and one involved a cyclist. The first occurred when the rear wheel of a motorcycle locked causing the motorcyclist to fall off; this can be attributed to a mechanical error. The second was due to driver error after the motorcyclist attempted to overtake a vehicle and collided with the trailer of a turning tractor.
- The final severe incident was as a result of a vehicle pulling into the path of a cyclist, requiring for the cyclist to change direction into the path of another cyclist resulting in severe injuries. This can be attributed to driver error.
- The pedestrian casualty had been running on the road when clipped by a car wing mirror which had failed to see the runner due to the glare from the sun, as the pedestrian was running on the road rather than the footway it can be attributed to pedestrian error;
- 15% of the accidents occurred in the wet with 35% occurring in the darkness hours;
- There were eight shunt accidents, spread across the three approaches to the roundabout;
- Two accidents were caused by vehicles failing to give way to oncoming traffic;
- Other reported causes of accidents include skidding on spilt oil (two accidents), overtaking manoeuvres (two), and losing control of the vehicle (two).

2.68 In view of the above, it is considered that there are no major deficiencies with the highway network in this area. The variety of accident causes and locations would indicate that the pattern of accidents is purely random and not related to a specific shortcoming in the highway network.

Cluster 8: Bridge Road

2.69 The 15 accidents identified within this cluster are: 11DE2T016, 09JC4V006, 10DE2T015, 11DE2T005, 12DE2T005, 13DE2T008, 09DE2T001, 10DE2T007, 09DE2T012, 09DE2T009, 09DE2T005, 12DE2T024, 11DE2T017, 12DE2U012 and 09DE2U001.

2.70 A detailed analysis of the accident records for this location shows that:

- All of the accidents were of a slight severity;
- 40% of the accidents involved a vulnerable road user including two motorcycles, two pedal cycle and one pedestrians;
- Only one accident occurred in the darkness hours which indicates that there is unlikely to be an issue with street lighting at this location;
- One accident occurred on Bridge Road when a vehicle slammed on its brakes at a green traffic light causing the following motorcyclist to crash into the rear. The second motorcycle incident was very similar with unexpected braking the cause;
- Two accidents occurred at the signal junction involving pedal cyclists as a result of vehicles running through a red light and failing to give way to oncoming traffic;
- The pedestrian accident occurred when the pedestrian crossed at a toucan crossing and was hit by the wing mirror of a vehicle failing to stop;
- Other reported causes of accidents include medical episodes (two accidents), overtaking manoeuvres (one), glare from the sun (one) and failing to stop (four).

2.71 In view of the above, it is considered that there are no major deficiencies with the highway network in this area. Most of the accidents were a direct result of driver or pedestrian error and as such cannot be attributed to a shortcoming in the network.

Cluster 9: Countess Wear roundabout

2.72 The 21 accidents identified within this cluster are: 09DE2V004, 13DE2U006, 11DE2V024, 10DE2V022, 09DE2U002, 10DE2V012, 12DE2V003, 11DE2U005, 09DE2U005, 09DE2N021, 12DE2U011, 11DE2U014, 13DE2V006, 09DE2V001, 11DE2U016 09DE2U011, 13DE2U010, 10DE2V021, 11DE2V007, 12DE2U006 and 10DE2V003.

2.73 A detailed analysis of the accident records for this location shows that:

- Of the 21 recorded accidents, four were of a serious severity with the rest recorded as slight;
- One of the severe incidents involved a cyclist, who was knocked from their bicycle after a driver had failed to see them cycling across the entrance to a well lit petrol station;
- One severe accident can be attributed to a driver driving under the influence, failing to negotiate the roundabout, and subsequently coming to an abrupt stop on the roundabout;
- Similarly, another severe accident occurred when the driver lost control of the vehicle whilst approaching the roundabout, resulting in a collision with oncoming traffic;
- The final severe incident was due to a driver performing an illegal u-turn manoeuvre resulting in oncoming traffic colliding with the vehicle;
- 33% of the accidents involved vulnerable road users with two involving a motorcyclist, four pedal cyclists and a pedestrian;
- The three other incidents involving pedal cycles, can all be attributed to either a mechanical failure with the signals or a cyclist riding into a lamppost;
- The two incidents involving motorcyclists were both caused by driver error, one when another vehicle drove through a red light and another due to overtaking;
- The pedestrian incident can be attributed to a pedestrian error, after the casualty was running in the road and got clipped by a wing mirror;
- Other reported causes of accidents include medical episodes (one accident), illegal turning manoeuvres (one), drink-driving (one), a ferret escaping (one), running red lights (four) and failing to stop (one);
- Of the 21 recorded accidents, one occurred during darkness hours with the remaining 20 (including the serious accidents) during daylight hours which indicate that there is unlikely to be an issue with street lighting at this location.

2.74 In view of the above, it is considered that there are no major deficiencies with the highway network in this area.

Accident Analysis Summary

2.75 The detailed analysis of accident records outlined previously has examined the various contributory causes of each of the accidents identified within nine distinct cluster areas as shown in **Appendix D.**

2.76 This shows that the areas examined do not contain any significant highway deficiency which contributes to the accidents recorded.

2.77 As such, it is considered that the proposed development should not be required to provide any improvement measures itself due to the level and type of accidents. Despite this, it may be agreed that a S.106 contribution should be paid in order to contribute to some suggested improvement measures if considered necessary by the Highways Authority.

2.78 In conclusion the number of accidents in the immediate vicinity of the proposed site is low. The volume and type of accidents recorded are typical for the study area.

3 TRANSPORTATION POLICY FRAMEWORK

3.1 There is an array of local, regional and national policy documentation, which outlines the planning policy framework for the development of the SW Exeter Urban Extension site. These range from national planning policies, described in the 'National Planning Policy Framework' (NPPF) for example, through to more specific requirements such as in the Exeter Strategy.

National and Regional Policies

3.2 The national and regional planning policies relevant to the transport aspects of this development are set out in the following documents:

- National Planning Policy Framework;
- Manual for Streets;
- Manual for Streets 2;

National Planning Policy Framework

3.3 The National Planning Policy Framework (NPPF) is a key part of the reforms to make planning more accessible and less complex by replacing the previous Planning Policy Guidance (PPG) documents. The purpose of the NPPF is to help achieve sustainable development:

- The government expects the planning system to deliver the homes, business and industrial units, infrastructure and thriving local places that the country needs;
- The primary objective of development management is to foster the delivery of sustainable development, not to hinder or prevent development;
- The objectives of transport policy are to facilitate economic growth by taking a positive approach to planning for development;
- A further objective of transport planning is to support reductions in greenhouse gas emissions and congestion and promote accessibility through planning for the location and mix of development;
- All developments that generate significant amounts of movement, as determined by local criteria, should be supported by a Transport Statement or Transport Assessment; and
- Crucially, NPPF states that development should not be prevented or refused on transport grounds unless the residual components of the development are

severe and the need to encourage increased delivery of homes and sustainable economic development should be taken into account.

Manual for Streets

3.4 Manual for Street (MfS) supersedes Design Bulletin 32 and its companion guide, Places, Streets and Movement. MfS was produced by the DfT in 2007. Its objectives are to promote:

- Creative thinking in the delivery of streets to create high quality places;
- Design which places a high priority on the needs of pedestrians, cyclists and public transport users and not just motor vehicles, so that growth in these modes of transport are encouraged;
- Creation of streets that help build communities and meet the needs of all users;
- Creation of streets that are attractive with a distinct identity whilst forming part of a well connected network, and;
- Creation of streets that are cost-effective in construction and maintenance and safe.

3.5 MfS discourages the building of streets that are:

- Primarily designed to meet the needs of motor traffic;
- Unsafe and unwelcoming to pedestrians and difficult to serve by public transport; and
- Bland, unattractive and poorly designed and constructed.

Manual for Streets 2

3.6 Manual for Streets 2 was published in September 2010. The new document incorporates more recent guidance on car parking, Road Safety Audits and street management as well as reinforcing the messages within MfS. In particular MfS 2:

- Confirms that the document can be applied to many streets in urban and rural settings beyond exclusively residential areas;
- Addresses concerns regarding HGV and bus breaking distances, and
- Provides comfort regarding concerns of litigation.

Local Policies

3.7 At a local level, there are two key policy documents with relevance to transport and development in Teignbridge, Devon, the Local Transport Plan 3 and the Teignbridge Local Plan – Plan Teignbridge 2013 – 2033.

Local Transport Plan 3 – Devon and Torbay Strategy 2011 - 2026

3.8 The Local Transport Plan 3 (LTP3) covers the years 2011 to 2026 and replaces the second Local Transport Plan. The LTP is a long term, strategic-level document explaining how DCC's (and Torbay Council) transport policies impact on the environment and people's lives. The strategy has 5 key objectives:

- Deliver and support new development and economic growth;
- Make best use of the transport network and protect the existing transport asset by prioritising maintenance;
- Work with communities to provide safe, sustainable and low carbon transport choices;
- Strengthen and improve the public transport network;
- Make Devon the 'Place to be naturally active'

3.9 The LTP3 highlights that a large level of growth is expected within the Exeter area with Figure 9 of the LTP3 document showing that 2,500 new homes are proposed for the south west of Exeter area.

3.10 Within the LTP3 paragraph 4.5.13 states that South West Exeter is one of three areas of major development.

3.11 LTP3 also introduces the Devon Metro scheme, the plan to expand the role of railways during the plan period. Devon Metro includes the development of a new priority station at Marsh Mills which is in close proximity to the proposed site and will allow for increased accessibility into the centre of Exeter and to the ten market towns within the Metro area.

3.12 The Cycle Exeter project that has delivered an improved, extensive walking and cycling network within the City is discussed, and the action put forward to keep building on this with the development of new routes that will be developed to cater for local journeys within other parts of the city.

3.13 In the proximity of the proposed site two new cycle routes are proposed as part of the Cycle Exeter project. One to the south of the site along what appears to be its southern boundary and one to the north west which appears to run through the north west parcel of the site west of Chudleigh Road.

Teignbridge Local Plan – Plan Teignbridge 2013 – 2033 (May 2014)

3.14 Policy S4 indicates that 15% of the total distribution of new dwellings within the district (initially 640, then an average of 620 thereafter until 2033) will be built on land at South West Exeter.

3.15 The plan goes on to state that:

> *10.3 Exeter's Adopted Core Strategy identifies the area to the north of Teignbridge District Council's boundary for 500 homes. Teignbridge District Council in partnership with Exeter City Council, Devon County Council and Exeter and East Devon Growth Point commissioned a masterplan for the South West of Exeter. The purpose of the joint masterplan is to help promote and encourage sustainable growth. The proposals put forward in that document have informed polices SWE1……*

3.16 Policy SWE1 is provided below for reference:

> *SWE1 South West of Exeter Urban Extension*
>
> *The South West of Exeter will develop as a sustainable urban extension, resilient to climate change where new and existing residents will be able to access a range of community facilities, shops, jobs, recreation areas and public transport improvements. It will represent a new part of the City, south of the River Exe which will reinforce the importance of the southern approach. The aim is to establish a new area within the natural setting of Exeter, sitting below the ridgeline and benefiting from the backcloth of the hills that enclose the City.*
>
> *A site of approximately 92 hectares is allocated to the south west of Exeter for a mixed use development including:*
>
> *a) delivery of at least 2,000 homes with a target of 25% affordable housing;*
>
> *b) 24 Gypsy and Traveller pitches;*
>
> *c) 20 hectares of green space comprising formal and informal green space, active recreation space, children and young people's space, natural green spaces and allotments;*
>
> *d) land for primary and secondary education;*
>
> *e) a range of community facilities well related and accessible to all, including a multi-purpose community/sports building, youth and children's centre, health, police, library and faith provision, and shops, and small scale employment to provide a focus for neighbourhoods will be provided in mixed use local centres and hubs. The hubs will serve the day-to-day needs of nearby residents and act as the focal point for the community being well connected and permeable;*
>
> *f) opportunities for sustainable travel and lifestyles including a network of safe and convenient green routes and cycling links that bridge the barriers presented*

by transport infrastructure and which promote healthy living and a sense of well-being;

g) public transport and highway improvements as required including an enhanced public transport route, 1,000 space park and ride hub, access to a new rail halt at Marsh Barton, improvements to Bridge Road, enhancements to the A379 from Chudleigh Road to Bridge Road, including improvements to existing junctions and new junctions to serve development and, remodelling of the Devon Hotel junction at the A379 and B3123; and

h) investigation of opportunities of utilising energy from waste from Marsh Barton into the development to comply with reductions in carbon generation as required

Development and required infrastructure will be delivered on a phased basis in line with housing delivery.

Proposals will not be permitted where they would prevent a comprehensive approach to the development and infrastructure of the whole site.

3.17 The Bovis Homes development will provide an approximate maximum of 58% of the anticipated housing allocation of circa 2,600 homes in a sustainable fashion, maximising the sites unique Greenfield location and potential for connection between the other areas of SWEUE and Exeter city centre beyond.

Approach to the Transport Assessment

3.18 In late October 2014, the government withdrew its 2007 publication 'Guidance on Transport Assessment' (GTA) which for the past seven years had provided consultants, local authorities and developers alike with some sort of framework for determining both when a Transport Assessment (or Statement) was required, and, perhaps more importantly, what it should contain.

3.19 The guidance that is still in place following the withdrawal of GTA, amounts to a handful of paragraphs in the Planning Practice Guidance (PPG) and NPPF, and the more recent 'Transport Evidence Bases in Plan Making'; albeit that the latter is more specifically targeted at local authorities.

3.20 The PPG tells us that Transport Assessments and Statements are required "*for all developments which generate significant amounts of movement"*, although no explanation is offered as to what is deemed to be *'significant'* in terms of the number of movements. Instead we are told that "*local planning authorities, developers, relevant transport authorities, and neighbourhood planning organisations should agree what evaluation is needed in each instance"*.

4 PROPOSED DEVELOPMENT

4.1 The proposed indicative development masterplans are shown in **Appendix E**. The development is on a greenfield site and comprises:

- At least 1,350 residential units (potentially 1,500 units);
- Two form entry primary school;
- Potential Secondary school;
- A local centre;
- Formal and informal green space.

4.2 It should be noted that '*Policy SWE1: South West of Exeter Urban Extension'* identifies an allocation of at least 2,600 units, which is at least 1,100 units greater than that proposed. The remaining 1,100 or more units will be provided on land adjacent to the site and will be provided by others through separate applications.

Access Strategy

4.3 The proposed access strategy identifies the vehicular and one 'sustainable modes only' access to serve the site and is in accordance with the information outlined on the Access and Movement Parameter Plan (**Appendix F**). Specific details of each access are discussed in **Section 5**. The Access Strategy is shown on **Figure 4.1**, a summary of the access locations is given below:

- The junction of Chudleigh Road with the A379 is closed to movement accessing and egressing from Chudleigh Road;
- Chudleigh Road (S) Primary Access (incorporating the realigned Chudleigh Road);
- Chudleigh Road (N) Secondary Access - Simple priority T-junction serving circa 280 units in the north western development parcel (adjacent to Markham and Waybrook Lanes);
- A379 New Site Access Junction 1 (S) – Education and Local Centre;
- A379 New Site Access Junction 2 (N) – Realignment of Chudleigh Road / New Link Road;
- A379 New site Access Junction 3 (S) – Old Trood Lane Realignment;
- Pedestrian / Cycle Bridge over the A379 to access the Educational Element and local centre;

- A number of pedestrian linkages from the development site onto the footway of the A379 with pedestrian crossing facilities at the junctions;
- Appropriate allowance for inter site connectivity for public transport, pedestrians and cyclists.

Parking Provision

4.4 Neither DCC nor TDC have definitive parking standards or guidance. As with many local authorities there is a move to adopt a flexible criteria approach that allows development proposals to respond to local circumstances and appropriate parking provision be provided on a site by site basis. Given this flexible approach, the following parking provision is suggested as part of the development but subject to change during the reserved matters stage.

Residential Parking

4.5 Details on car parking provision will be confirmed at the reserved matters stage. However, as an indication, car parking provision should be provided based on 2 spaces per 3 bedroom unit on average. Visitors parking will be provided at 1 space per 5 dwellings.

4.6 Assuming all dwellings will be three bedrooms (in reality there would be larger and smaller dwellings), this would result in 2,700 residents' parking spaces and 270 visitors' parking spaces.

4.7 The residents parking provision will be provided through a mixture of garages, private drives, allocated parking in private parking courts and on-street parking. Where provided, garages will have internal dimensions of 6m x 3m (single) or 6m x 6m (double) to enable cycle parking in the garages as well cars.

4.8 The majority of the visitors parking will be provided on-street.

Residents Cycle Parking

4.9 DCC do not have set cycle parking standards. However, it is envisioned that adult cycle parking will be provided at minimum 1 space per unit.

4.10 Cycle parking facilities will be incorporated into the design of the various residential units. Where a double garage is provided, cycle parking will be incorporated within the garage itself but otherwise storage sheds that comply with the Code for Sustainable Homes specification will be provided for this purpose.

4.11 Whilst all garages and sheds and communal cycle stores (where provided) will be lockable and secure, additional security measures, such as wall bars or rings will be provided if requested by future residents to further secure bicycles or motorcycles within garages or sheds.

Primary School Car Parking

4.12 Car parking for the primary school will be based on 1 space per 2 Full Time Equivalent (FTE) staff plus 2 visitors' spaces. For a 3 Form Entry School, assuming 84 FTE staff (approximately 4 per class room) the school would provide a total of 44 car parking spaces (42 staff spaces + 2 visitors' spaces).

Primary School Cycle Parking

4.13 Cycle parking for the school will be based on 1 space per 10 pupils plus 1 space per 2 FTE staff. For a 3 Form Entry School, this would equate to a total of 105 cycle parking spaces based on 63 pupil spaces and 42 staff spaces.

4.14 Cycle parking at the school will be provided in a covered and secure area.

Secondary School Car Parking

4.15 Car parking for the secondary school will be based on 1 space per 10 Full Time Equivalent (FTE) staff and pupils. Information on pupil teacher and pupil adult ratios combines pupil counts from the January 2013 School Census with the teacher data from the School Workforce Census, which provides a pupil teacher ratio of 15.4 for 2012.

4.16 Applying this ratio to average sized secondary school of 600 pupils gives a provision of 39 teaching staff. The combined staff / pupil number of 639 therefore means that there will be a total provision of 64 car parking spaces.

Secondary School Cycle Parking

4.17 Cycle parking for the secondary school will be based on 1 space per 10 pupils plus 1 space per 2 FTE staff. Allowing for a combined 639 staff / pupil number, this would equate to a total of 80 cycle parking spaces based on 60 pupil spaces and 20 staff spaces.

4.18 Cycle parking at the school will be provided in a covered and secure area.

Local Centre Car Parking

4.19 The exact development details of the proposed Local Centre are not yet known. For the purposes of this report, it is assumed that the Local Centre will comprise a series of local shops and community facilities. On this basis, car parking for the local centre will be based on 1 space per 40sqm of development. Assuming a Local Centre of 1,200m^2 this equates to 30 car parking spaces.

Local Centre Cycle Parking

4.20 Cycle parking for the Local Centre will be based on 1 space per 100sqm of development. This would equate to a total of 12 cycle parking spaces. The cycle parking at the local centre will be provided comprise of covered 'Sheffield stands' located in a prominent position within the public realm.

Motorcycle Parking

4.21 No dedicated residents motorcycle parking will provided. It is anticipated that residents can store motorcycles in garages where appropriate. Ground anchors will also be provided on request. Visitors' motorcycle parking will be provided on street.

5 SITE ACCESS AND INTERNAL LAYOUT

Internal Layout

5.1 The facilities proposed to provide access to the development site by each of the three main modes of travel identified; namely car, walking and cycling are detailed separately in the remainder of this section. Interaction between these three modes is essential in order to achieve an integrated package that will provide easy and safe access to the site for all modes of transport. It is important to note that an integrated approach to transport does not specifically exclude provision for the private car in favour of more environmentally friendly modes. Indeed, the mainstay of an integrated approach is to ensure that the different modes of travel compliment rather than exclude each other.

Facilities for Cars

5.2 Seven vehicular accesses will be provided to serve the development site as shown in **Figure 5.1**. Three of which will be signal controlled and sited along the A379.

Dawlish Road Access Junction (shown in **Figure 5.2)**

5.3 The Dawlish Road access junction is envisioned to be a minor priority junction with Dawlish Road. It is not expected that this access will be utilised on a day to day basis due to the restricted width of Dawlish Road and the observed difficulty of accessing the Devon Hotel roundabout.

Chudleigh Road Access Junction 1 (shown in **Figure 5.2)**

5.4 Chudleigh Road Access Junction 1 provides minor arm priority access from Chudleigh Road to the northern element of the site.

5.5 The salient points of the proposed access arrangement are:

- Major Carriageway Width – 6.3m;
- Minor Carriageway Width – 6.0m;
- Junction Radii – 6.0m;
- Junction Visibility – 2.4 x 43m;
- Footways – 2.0m (not currently shown on plan);

Chudleigh Road Access Junction 2 (shown in **Figure 5.2)**

5.6 Chudleigh Road Access Junction 2 provides minor arm priority access from Chudleigh Road to the north western element of the site.

5.7 The salient points of the proposed access arrangement are:

- Major Carriageway Width – 5.5m;

- Minor Carriageway Width – 5.5m;
- Junction Radii – 6.0m;
- Junction Visibility – 2.4 x 43m;
- Footways – 2.0m (not currently shown on plan);

A379 Junction 1 (shown in **Figure 5.3)**

5.8 The A379 Junction 1 will be a signal controlled junction with the minor arm (site access) providing access into the southern element of the site and is envisaged to be the major access point for both the educational facility and local centre.

5.9 At the stop line the A379 arms of the junction will have a total carriageway width of of approximately 19m across 5 lanes of 3m to 3.5m.

5.10 There will be a 30m dedicated right hand turn lane into the site from the A379 south which allows for the ahead movement towards Devon Hotel to be as uninterrupted as possible.

5.11 The site access arm will have a total carriageway width of 13m with a dedicated lane of 3.25m for both left and right out of the development onto the A379.

5.12 A staggered pedestrian crossing will be provided across the site access arm.

A379 Junction 2 (shown in **Figure 5.3)**

5.13 Junction 2 will be a signal controlled junction with the minor arm (site access) providing access into the northern element of the site. This junction will also allow further access to Chudleigh Road (which will be closed at its previous junction with the A379).

5.14 The junction provides a dedicated left hand turn lane of 90m and a dedicated right hand turn lane of approximately 185m.

5.15 A left turn radii of 15m has been used to allow for the possibility of a larger vehicle to access the northern element of the development.

5.16 The junction provides two 4.0m entry lanes onto the A379 and a total carriageway width of the minor arm varies between 15m at the stop line to 7.5m at the point where the north westerly traffic merges.

5.17 The maximum carriageway width of the major carriageway (A379) is approximately 21.5m.

Chudleigh Road / New Link Priority Junction (shown in **Figure 5.4)**

5.18 As part of the development it is proposed to close the existing Chudleigh Road junction with the A379 and allow movement to the A379 through the northern element of the development site. Implementing this change creates Junction 4 which gives priority to the north south (Alphington – A379) movement and means that Chudleigh Road south of the junction gives way.

5.19 Chudleigh Road remains open to allow access to the White Land development.

A379 Junction 3 (shown in **Figure 5.4)**

5.20 Junction 3 of the proposed network is a signal controlled junction providing a second access to the southern element of the site along the existing alignment of Trood Lane.

5.21 A pedestrian crossing will be provided on the Trood Lane minor arm.

5.22 The right hand turning lane into Trood Lane will be approximately 37m in length, with the left hand turning lane measuring 50m in length.

5.23 Trood Lane will be widened where necessary along the site frontage.

Dawlish Road Improvement and A379 Left In / Left Out (shown in **Figure 5.5)**

5.24 As part of the development Dawlish Road will be improved in a number of ways:

- The introduction of a left in / left out junction with the A379 incorporating the realignment of Dawlish Road through development land;
- The introduction of a 'one way' section of Dawlish Road travelling from Devon Hotel roundabout towards Alphington, and therefore banning the movement entering the roundabout.

A379 Improvement

5.25 As part of the overall site access strategy the A379 will be widened along the majority of its length to accommodate the new junction infrastructure and traffic lanes.

Further Considerations

5.26 The internal network will be in the form of culs-de-sac leading onto shared space driveways as shown in **Appendix E**.

5.27 Potential for future access to the Parr Land to the east across Old Matford Lane will be designed into the scheme. Potential pedestrian and bus linkages with the ECC land to the north of the site will be incorporated into the proposed development.

5.28 The proposed access arrangement and internal road network is in line with *Manual for Streets* and is appropriate to serve a development of the order that is proposed.

5.29 All roads will be designed to adoptable standards with close liaison with DCC highways officers.

Road Safety Audit – Stage 1

5.30 The highway network improvements outlined within this section have been subject to a Stage 1 Road Safety Audit (RSA). The RSA was undertaken by 'go – surveys' and can be found in full within **Appendix G**. Curriculum vitae and relevant experience can be provided for both of the auditors who undertook the audit if required.

5.31 The RSA site visit was undertaken between 4-6pm on Tuesday 17th February 2015 and comprised a walk and a drive through of the area covered by the proposals. During the site visit both the weather and road surface were dry. Traffic on the highway network surrounding the proposed access arrangements was moderate.

5.32 A number of perceived problems were identified within the audit, these are outlined below together with a designers response (the supporting plans etc. are contained within **Appendix H**).

5.33 PROBLEM 1

Location: Pedestrian refuge islands within the signalised junctions on A379.

Summary: The provision of an 'unorthodox' NMU crossing stagger may unnecessarily make the crossing less safe exposing pedestrians to risk of being struck by vehicles.

RECOMMENDATION

Reverse the stagger of the pedestrian refuge islands.

DESIGNERS RESPONSE

The unorthodox stagger of the Toucan crossings has been specifically requested by the DCC Signal Engineering team.

5.34 PROBLEM 2

Location: Individual T-junctions along Chudleigh Road and Dawlish Road.

Summary: Restricted visibility may result in sideswipe accidents.

RECOMMENDATION

Review the visibility in both the vertical and horizontal plain at each of these junctions and ensure that appropriate splays are provided. If it is not feasible to provide sufficient visibility splays, then consider speed reduction measures, including the provision of traffic calming.

DESIGNERS RESPONSE

The visibilities in both the vertical and horizontal plain have been reviewed and have been found to be acceptable in both cases. **Appendix G** contains a plan showing the vertical and horizontal visibilities.

5.35 PROBLEM 3

Location: Link Road between the A379 and Chudleigh Road.

Summary: Reverse curve alignment may increase the risk of loss of control accidents.

RECOMMENDATION

Revise the layout to eliminate the reverse curve.

DESIGNERS RESPONSE

The anticipated road speed of the internal network is 20mph. It is felt that with the appropriate siting of signage and calming measures that the more natural contour led design adopted is suitable. The detailed alignment of the link can be finalised during the detailed design stage post application approval.

5.36 PROBLEM 4

Location: The three signalised junctions on A379.

Summary: Potential issues with visibility to signal heads, approach gradients to the junction may result in road safety issues.

RECOMMENDATION

Review the visibility on the approach to the junction to ensure that the signal heads are clearly visible. Ensure that longitudinal sections along the junction approaches are prepared and provided for review at the Stage 2 Road Safety audit. Minimise the steepness of the gradient where possible.

DESIGNERS RESPONSE

Each of the signal junctions has been designed in accordance to the accepted and approved guidance in close consultation with DCC. The approach levels will again be in accordance with guidance and finalised during the detailed design stage of the proposal.

5.37 PROBLEM 5

Location: Westbound A379 adjacent to Trood Lane junction.

Summary: Location of bus stop on westbound carriageway may increase the risk of vehicle collisions.

RECOMMENDATION

Review the visibility available for vehicles exiting the bus stop in relation to those exiting Trood Lane. If necessary, relocate the bus stop.

DESIGNERS RESPONSE

The location of the aforementioned bus stop has been based on its proximity to the Toucan crossing to allow for the highest level of accessibility. Given the likely speed of the manoeuvre the level of visibility afforded to vehicles exiting Trood Lane to the west is considered to be acceptable.

5.38 PROBLEM 6

Location: Global.

Summary: Absence of sufficient footway/cycleway provision may lead to a risk of vehicle/pedestrian collisions.

RECOMMENDATION

Review the non-motorised user provisions based on the likely development requirements. Ensure that adequate measures are incorporated within the scheme.

DESIGNERS RESPONSE

The proposed development will have a wide network of pedestrian and cycle paths and facilities as shown in TA **Figure 4.1** and **Appendix F**. This network will be refined further during the detailed design stage as appropriate.

5.39 PROBLEM 7

Location: Dawlish Road (east) – proposed one way section.

Summary: Absence of sufficient detail to assess the potential road safety issues with the proposed one way operation of the eastern section of Dawlish Road.

RECOMMENDATION

Provide further information with regard to the extent of the one way system, and associated lining and signing that will accompany this element of the scheme.

DESIGNERS RESPONSE

Further details of the one way section of Dawlish Road will be confirmed during the detailed design stage of the proposed development. There are currently 3 properties that take access from the section of Dawlish Road being discussed and although it is appreciated that a minimal level of rerouting would be required it is thought that the potential safety benefits far out way the short term disruption potentially caused to a low number of existing residents.

5.40 PROBLEM 8

Location: Proposed site access priority junction from Dawlish Road.

Summary: Insufficient road width/junction layout to enable vehicles to access/egress the proposed development site without encroachment into opposing lanes risking head on collisions at this location.

RECOMMENDATION

Revise the layout of the site access at this location ensuring sufficient carriageway width/junction geometries are provided to remove this problem.

DESIGNERS RESPONSE

The individual junction layout in question has been revised to allow for the safe movement of vehicles exiting the site.

Facilities for Pedestrians and Cyclists

5.41 Given the low traffic volumes expected to be travelling within the development internally, it is considered that there is limited need in providing dedicated traffic free cycle facilities as part of the development. Cyclists will therefore be able to travel quite safely on-street within the development site.

5.42 **Figure 5.6** (along with Figure 4.1) shows the planned indicative pedestrian and cycle network within the site constraints.

5.43 The development will provide permeable linkages through the site leading to what is expected to be similar links through both the Parr and Waddeton Park Land developments. In doing so, there will be a network of links that will connect the site to the existing national and local cycle network within Exeter.

5.44 **Figure 5.7** provides details of the wider strategic pedestrian and cycle network.

5.45 For pedestrians, the main access roads will provide 2.0m footways on both sides of the carriageway. The remaining internal roads will provide either 2.0m footways or take the form of a series of shared surfaces which will comply with DCC standards.

5.46 As part of the site access strategy, the dedicated 2.0m foot / cycle way on the southern side of the A379 will be maintained and improved where necessary. Appropriate pedestrian / cycle access points will be located along its route to provide additional permeability into the site.

5.47 Chudleigh Road will be improved if necessary to provide a continuous footway into the village of Alphington allowing pedestrian access to a number of key facilities within the existing urban area.

5.48 Within the northern element of the proposed site pedestrian and cycle access points will be introduced along both the southern boundary with the A379 and western boundary with Chudleigh Road to ensure that the site is permeable and user friendly to all modes.

5.49 Cycle parking facilities will be provided at all points of interest within the site i.e. the educational facility, local centre etc. Parking facilities will also be incorporated within the design of the residential areas and individual properties where appropriate.

5.50 In order to ensure pedestrians and cyclists safe crossing of the A379 DCC have recommended that a foot / cycle bridge is constructed to span between both elements of the development site. Whilst the preferred position of the bridge is near to the educational facility, the fixed location and design of the structure will be determined post application and secured by condition.

5.51 The Public Right of Way located along the western boundary of the southern element of the development will be retained and where necessary re-routed around the educational facility.

6 CAPACITY ASSESSMENT PARAMETERS

6.1 During an extensive consultation process with DCC, which involved the joint working of the four consultants representing the individual land parcels within the TDC elements of the SWEUE area (referred to as the 'Group' for the remainder of this TA) a number of assessment parameters have been agreed prior to submission of the TA. The parameters that have been agreed and that are discussed further within this section include:

- Background Traffic
- Traffic Growth Rate
- Development Trip Rate
- Committed Development
- Traffic Generation Distribution
- Trip Discount

Background Traffic Data

6.2 Initial assessments utilising the flows within the submitted PCL Transport TA (8/10/2013 - ref:3036) for the Waddeton Park Ltd site at Matford Home Park were questioned by DCC due to the age of the traffic data. DCC provided PCL Transport with the following response:

'The data used in the TA is old, dating from October 2002 and October 2005. This is not acceptable. The DfT Guidance on Transport Assessment identifies that, 'the assessment should include recent counts (normally survey within the last three years)'.

The site is located on a key transport corridor and is part of a large urban extension. In this situation it is not appropriate to use counts more than three years old.

The appropriateness of the counts is discussed, including a reduction in traffic flows in Exeter from 2005 to 2008. Whilst this is not disputed, it is important that the junctions being assessed are done so in detail, including turning movements. This may have changed over time. Given the sensitive location of the development, it is important that a thorough assessment is undertaken and applying generalisations does not achieve this.'

6.3 PCL Transport have subsequently submitted an addendum (2/12/2013 – ref: 3036) showing that the level of change in flows from the submitted TA to 2013 flows obtained from DCC is relatively low and in some cases flows are higher in the past.

6.4 Despite this the Group agreed that in order to accurately reflect the existing situation the most recent data should be used. The traffic data used within this report is included within **Appendix C**.

6.5 The following list details the year and original owner of the survey for the study area junctions:

- Shillingford Road / Chudleigh Road / Chantry Meadow (2013 – DCC FMW analysis);
- A379 / Chudleigh Road (2013 – WSP);
- Devon Hotel Roundabout (2013 – DCC);
- Bad Homburg Way / Yeoford Way / Matford Park Road (2014 – FMW);
- Matford Roundabout (2013 – DCC).

Traffic Growth Rate & Assessment Scenarios

6.6 The Traffic Growth rate that has been used within this TA has been approved for use by DCC during the extensive consultation process.

6.7 The normal starting point in obtaining Growth rates is to use the TEMPRO software program, however in this case the factors that were being obtained were thought to be high and not applicable for use.

6.8 As a 'Group' we reviewed the Growth rates and committed development using alternative growth assumptions. However, as much of the Teignbridge allocation is not in the rural area, it is not possible to remove the housing and recalculate as it would result in the numbers being driven below the existing, resulting in a negative growth rate. A similar problem existed when we used Exminster as the selected geographical area. The use of the Exeter factor felt inappropriate as we would be including the significant housing west of the city thereby skewing the factor.

6.9 Given that the methodology used within the PCL TA has been accepted by both DCC and the HA, the 'Group' considered that it was appropriate to use the rates as set out in the PCL TA Appendix D and Addendum Appendix D. Both documents are included within this report as **Appendix I**.

6.10 The basic premise of the PCL work on growth factors is twofold, firstly that the historical data collected from DCC fixed counts shows a reduction in traffic along the key corridors (therefore negative growth) and secondly that the NTEM (National Trip End Model) over predicts the growth that will be seen on the network.

6.11 The PCL TA states that whilst it is unreasonable to apply a negative growth from the base year to the design years an also unreasonable to apply a perceived high TEMPRO rate when central government are not predicting significant economic growth until the year 2018. It is therefore proposed to assume a slow rate of growth from the 2013 base year to the 2026 design year.

6.12 The growth factor that has been agreed to use is 0.32% per year which reflects the decrease in flow shown by historical data and also allows for the operational capacity issues of both the A379 and A3015 corridors.

6.13 The scenarios assessed and summarised within this report have been agreed during the consultation period and reflect the joined up approach favoured by DCC. The scenarios are summarised below in **Table 6.1**:

Base Assessment	Proposed Development Assessment
• 2015 Base	• 2020 Base + Proposed Site
• 2020 Base	• 2026 Base + Proposed Site
• 2026 Base	• 2020 Base + Proposed Site + Cumulative SWEUE
	• 2026 Base + Proposed Site + Cumulative SWEUE
Sensitivity Test - Closure of Dawlish Road Arm of Devon Hotel Roundabout	
• 2015 Base	
• 2020 Base	
• 2026 Base	
• 2020 Base + Proposed Site	
• 2026 Base + Proposed Site	
• 2020 Base + Proposed Site + Cumulative SWEUE	
• 2026 Base + Proposed Site + Cumulative SWEUE	
Sensitivity Test – 'One Way' use of Dawlish Road Arm of Devon Hotel Roundabout	
• 2015 Base	
• 2020 Base	
• 2026 Base	
• 2020 Base + Proposed Site	
• 2026 Base + Proposed Site	
• 2020 Base + Proposed Site + Cumulative SWEUE	
• 2026 Base + Proposed Site + Cumulative SWEUE	

Sensitivity Test - Devon Hotel Roundabout Signalisation
• 2020 Base + Proposed Site
• 2026 Base + Proposed Site
• 2020 Base + Proposed Site + Cumulative SWEUE
• 2026 Base + Proposed Site + Cumulative SWEUE

Table 6.1: Assessment Scenarios

6.14 Given the above scenarios and the previous discussion on the applicable growth rate, the growth factors used within the capacity assessment summarised within this report are shown below in **Table 6.2**:

Assessment Year - Growth Period	Factor
2013 - 2015	**1.0064**
2015 - 2020	**1.0160**
2015 - 2026	**1.0352**

Table 6.2: Assessment Growth Factors

Development Vehicular Trip Rate

6.15 During the consultation process it was established that the development trip rates used within the DCC document 'South West Exeter Transportation Access Strategy' (SWETAS) should be used. Justification for the trip rate used within the document is provided below and the relevant extract from SWETAS is contained within **Appendix J** of this report:

> *'The agreed trip rate is lower than the survey of Alphington; however, car use can be more effectively minimised through effective design of streets which reduce the dominance of cars, and supported by travel planning mechanisms which publicise and promote the range of walking, cycling and public transport options available. Public transport will be important to achieve the low trip rate used in this modelling. At this stage there are a number of different options as to how this development would be served by public transport.'*

6.16 As only AM rates were given the 'Group' agreed that similar rates should be used for the PM.

6.17 It should be noted that these agreed rates are taken directly from the Option 1 – 500 Dwellings North of A379 outlined within the SWETAS report and that they are marginally higher than the rates outlined for Option Two – 2,500 Dwellings.

6.18 The agreed trip rates are shown below in **Table 6.3**.

	Arrivals	Departures	2-Way
AM	0.120	0.380	0.500
PM	0.300	0.200	0.500

Table 6.3: Agreed Vehicular Trip Rates

6.19 Working on the basis of 1,500 residential units and using the rates above the corresponding number of vehicular trips are shown below in **Table 6.4**.

	Arrivals	Departures	2-Way
AM	180	570	750
PM	450	300	750

Table 6.4: Vehicular Trips

Development People Trip Rate & Existing Modal Split (Census)

6.20 In order to provide details of the expected level of trips made by all modes associated with the development it is necessary to utilise the modal split of the person trips identified for the development has been based on 2011 national Census 'Method of Travel to Work' data for the Ward of Alphington. A summary of this Census data is shown in **Table 6.5** with the Census outputs being attached as **Appendix K**.

Mode of Travel	Persons	Percentage of Total People	Persons	Percentage of Viable Choices	Persons	Percentage of Travellers
All People	6,384	100.0%	4,668	100.0%	4,668	4,473
Work Mainly at or From Home	195	3.05%	195	4.18%		
Underground, Metro, Light Rail, Tram	2	0.03%				
Train	42	0.66%	42	0.90%	42	0.90%
Bus, Minibus or Coach	361	5.65%	361	7.73%	361	8.10%
Taxi	10	0.16%	10	0.21%	10	0.20%
Motorcycle, Scooter or Moped	49	0.77%	49	1.05%	49	1.10%
Driving a Car or Van	**2,513**	**39.36%**	**2,513**	**53.83%**	**2,513**	**56.20%**
Passenger in a Car or Van	271	4.24%	271	5.81%	271	6.10%
Bicycle	318	4.98%	318	6.81%	318	7.10%
On Foot	890	13.94%	890	19.07%	890	19.90%
Other Method of Travel to Work	19	0.30%	19	0.41%	19	0.40%
Not in Employment	1,714	26.85%				

Table 6.5: Alphington - 'Method of Travel to Work

6.21 In order to accurately identify the modal split of journeys to work, it is necessary to discount those who are not currently working as this category does not generate work related trips.

6.22 **Table 6.5** demonstrates that the majority of people who travel to work from Alphington do so by car / van with a majority split of 56.2%. People who travel to work by more sustainable modes such as public transport, walking and cycling equate to a total of 36.0%.

6.23 Using the percentage of travellers who have been identified as 'Driving a Car or Van' we are able to extrapolate the other modes from the agreed vehicular trip rate provided. The 56.2% figure for car drivers provides the following Total People rates shown in **Table 6.5**.:

	Arrivals	Departures	2-Way
AM	0.214	0.676	0.890
PM	0.534	0.356	0.890

Table 6.5: Total People Trip Rate

6.24 The resultant person trip generation based on the development of 1,500 residential units is shown in **Table 6.6**.

	Arrivals	Departures	2-Way
AM	321	1,014	1,335
PM	801	534	1,335

Table 6.6: Development Total Person Trips

6.25 **Table 6.6** demonstrates that the proposed development would generate approximately 1,335 two-way person trips during the morning peak hour, 1,335 two-way person trips during the evening peak hour.

Mode	Modal Split	AM Peak Hour		PM Peak Hour	
		Arr	Dep	Arr	Dep
On foot	19.9%	64	202	159	106
Bicycle	7.1%	23	72	57	38
Public Transport	9.0%	29	91	72	48
Passenger in a car or van	6.1%	20	62	49	33
Driving a car or van	**56.2%**	**180**	**570**	**450**	**300**
Other	1.7%	5	17	14	9
Total Person Trips		321	1014	801	534

Table 6.7: Proposed Development Person Trips with Modal Split (Census)

6.26 Applying the 56.2% car driver value from Table 6.5 to the person trip values given in Table 6.6 allows the multi modal trip generations for the proposed development to be identified. These are shown in **Table 6.7** above.

South West Exeter Transportation Access Strategy – Modal Split

6.27 As an alternative to the use of National Census data, the SWETAS report uses the TRICS database to derive indicative trip rates for other modes. As this assessment adopts the one of the vehicular trip rate used within the SWETAS work, the corresponding multi modal rates will also be utilised both within the TA and the Framework Travel Plan (FTP).

6.28 **Table 6.8** below provides these rates and the percentage modal split in comparison to the Census split outlined in **Table 6.7**.

	Arrivals	Departures	Total	%	Table 6.7 %
Cars	0.100	0.300	0.400	36.1%	56.2%
Car Passenger	0.066	0.265	0.331	29.9%	6.1%
Public Transport	0.008	0.035	0.043	3.9%	9.0%
Pedestrians	0.085	0.221	0.306	27.6%	19.9%
Cyclists	0.006	0.022	0.028	2.5%	7.1%
Total	0.265	0.843	1.108	100.0%	

Table 6.8: SWETAS Multi Modal Trip Rates from TRICS (AM Peak Period – Option 2)

6.29 The SWETAS report acknowledges that there is a large number of car passenger trips proposed, a level that might be difficult to achieve. The report suggests that some of these trips may well be accommodated by public transport.

6.30 Given that a slightly higher vehicular trip rate provided to support Option 1 of the SWETAS has been used within this assessment the above rates are not strictly applicable. **Table 6.9** below provides a balanced merged set of multi modal rates utilising both the Census data and the rates used within Table 6.8 for reference.

	Arrivals	Departures	Total	%	Table 6.7 %	Table 6.8 %
Cars	0.120	0.380	0.500	**40.7%**	56.2%	36.1%
Car Passenger	0.060	0.165	0.225	**18.3%**	6.1%	29.9%
Public Transport	0.008	0.098	0.106	**8.6%**	9.0%	3.9%
Pedestrians	0.100	0.240	0.340	**27.7%**	19.9%	27.6%
Cyclists	0.010	0.048	0.058	**4.7%**	7.1%	2.5%
Total	0.298	0.931	1.229	100.0%		100.0%

Table 6.9: Merged Multi Modal Trip Rates

6.31 The conversion of the rates summarised in **Table 6.9** into the total number of people expected to make trips by each mode in the AM peak period is summarised below in **Table 6.10**.

	AM Peak Period		
	Arrivals	Departures	Total
Cars	180	570	750
Car Passenger	90	248	338
Public Transport	12	147	159
Pedestrians	150	360	510
Cyclists	15	72	87
Total	447	1397	1844

Table 6.10: Expected AM Peak Period People Trips by Mode

6.32 The PM peak period is summarised below in **Table 6.11**.

	PM Peak Period		
	Arrivals	Departures	Total
Cars	180	570	750
Car Passenger	90	248	338
Public Transport	12	147	159
Pedestrians	150	360	510
Cyclists	15	72	87
Total	447	1397	1844

Table 6.11: Expected PM Peak Period People Trips by Mode

Trip Rate Capture and Internalisation of Development Trips

6.33 The proposed development comprises a mixture of residential, education and retail uses. Given the mixed use of the development, it is accepted that a proportion of the trips associated with the site would both already be captured within the residential trip rate and also remain internal (i.e. originate and terminate within the development boundary) and not impact on the wider highway network.

6.34 DCC have agreed that the educational facilities provided on the site will not generate any further trips over and above what has already been captured within the residential trip rate.

6.35 A blanket 100% internalisation of the trips associated with the Local Centre has been assumed within this assessment to reflect the low floor area and convenience retail characteristic of the facilities being provided.

6.36 Whilst a small number of trips may originate from the element of the site north of the A379 it is envisaged that these will be in the main 'pass by' in nature, be undertaken by a sustainable mode or occur outside of the normal highway peak periods.

SANGS Car Park

6.37 The Suitable Alternative Natural Green Space (SANGS) which will be located in the southern parcel of development will be served by a 40 space car park. To provide the worst case scenario it has been assumed that all 40 vehicles will arrive and depart within the peak hour assessment periods.

Trip Distribution

6.38 Trip distribution has been based upon the 2001 Travel to Work – Traffic Flows for the Ward of Alphington.

6.39 This base distribution has then gone through a number of iterations and been revised due to comments from DCC including amendments to the employment assumptions for the surrounding areas and routing considerations. The agreed distribution is shown below in **Table 6.12**.

Destination	2021	Route number	Route name	Distribution (%)
M5N	5.00%	1	A379 North	44.77%
A376/A3052	4.30%	1	A379 North	
Sowton/Heavitree	15.26%	1	A379 North	
Pinhoe/Pinhoe Road	4.18%	1	A379 North	
Rydon Lane Corridor	2.51%	1	A379 North	
West End	9.94%	1	A379 North	
A30E	3.59%	1	A379 North	
Topsham Road	16.73%	2	Topsham Road	16.73%
Bad Homburg Way	10.95%	3	Bad Homburg Way	10.95%
A30W	3.00%	4	Chudleigh Rd	17.54%
Chudleigh Road	2.00%	4	Chudleigh Rd	
A377 City	12.54%	4	Chudleigh Rd	
A380S	4.00%	5	A38 South	8.00%
A38S	4.00%	5	A38 South	
A379S	2.00%	6	A379 South	2.00%
TOTAL				100.00%

Table 6.12: Development Distribution

6.40 The trip distribution diagram is shown in **Figure 6.1**. Based on the trip distribution, the development trips assignment at the junction is shown in **Figure 6.2**. The individual development parcel distributions are provided in **Appendix L** whilst the trip assignments are included within **Appendix M**.

6.41 DCC suggested that the distribution of the flow to the A30(W) and the A377 City should be looked at in more detail as they believe more flow should travel via Marsh Barton and Topsham Road. In response the consultant team suggested that the distribution contained within **Table 6.12** is applicable to the northern element of development.

6.42 On closer examination and after a desktop study analysing the specific routes and timings, FMW believe that the distribution is applicable to the entirety of SWEUE development to the west of the Devon Hotel Roundabout. This is further enforced by the introduction of Access Junction 2 and the re-alignment of Chudleigh Road as part of the Bovis scheme.

6.43 It is however conceded that the development to the east of Devon Hotel Roundabout, the Parr and Waddeton Park lands are unlikely to follow the same distribution. The distribution of traffic flow for the eastern development areas is shown below in **Table 6.13** with a higher flow utilising Bad Homburg Way through Marsh Barton.

No	Route name	%
1	A379 North	45%
2	Topsham Road	17%
3	Bad Homburg Way	28%
4	Chudleigh Rd	0%
5	A38 South	8%
6	A379 South	2%

Table 6.13: Revised Development Distribution for Eastern Development

Planned Future Development

6.44 As previously discussed, the Bovis element of the site is a large element of the total masterplan area for the South West Exeter Urban extension. The other elements of the wider masterplan area are:

LAND	ACCESSED FROM	NO. OF UNITS
PARR	A379 (East of Devon Hotel Roundabout)	270
WADDETON	A379 (East of Devon Hotel Roundabout)	230
WHITE	Chudleigh Road	200
EXETER CC	Chudleigh Road / Shillingford Road / Dawlish Road	400
Total		1,100

Table 6.14: Summary of the other SWEUE Development

6.45 The TDC sites, namely Parr, Waddeton and White lands, of the SWEUE have been working in close cooperation with DCC and FMW in order to prepare comparable cumulative assessments. The information contained within this report relating to the Exeter City Council land has been based upon the February 2014 'Draft Development Brief for South West Alphington'.

6.46 For the purpose of the capacity assessments contained within **Section 7** of this report the DCC approved trip rate has been used for each development site.

6.47 The total planned future development trip assignment is shown in **Figure 6.3**. The individual site trip distributions and assignments are contained within **Appendix N**.

Approved Trip Discount

Ide Park & Ride Transfer (shown in **Figure 6.4**)

6.48 DCC have provided information that there are approximately 200 peak hour arrivals at Matford Park and Ride in the AM peak period. Of those (from surveys carried out by DCC in 2011), approximately 23% (46 cars) travelled westbound from the A379 Dawlish direction and 77% (154 cars) eastbound along the A379 from A38.

6.49 The survey also asked people whether they would consider switching from Matford P&R to Ide P&R and from these results, DCC anticipate approximately 20% transferring.

6.50 The DCC figure of 20% transferring equates to approximately 40 trips removed from the eastbound A379 approach to the Devon Hotel roundabout.

Marsh Barton Rail Halt Transfer (shown in **Figure 6.5**)

6.51 DCC have stated that the reduction in traffic at the Devon Hotel roundabout in the AM peak hour will be approximately 70 veh / hr (55 inbound). The distribution of the traffic reduction is about 60% to/from A379 north (Dawlish) and 40% A379 south (A38).

6.52 The figure of 70 veh / hr represents approximately half of the total traffic reduction due to the rail halt, the other half using alternative routes to and from Marsh Barton.

Committed Development

6.53 In terms of committed development, the Matford Phase 3 is considered to be the only development that would be genuinely appropriate to the A379 corridor.

6.54 PCL Transport have included the Seabrook Orchard development within their TA but it is thought that this development will include trips that are covered by the background growth and the Matford Phase 3 site.

6.55 However, to provide a robust assessment of the committed development applicable to the study area we have included the flows associated with both the Matford Phase 3 and the Seabrook Orchard development.

6.56 The committed development flows used within this TA are shown in **Figure 6.6**.

Indicative Construction Traffic Generation & Routing

6.57 The construction of the proposed development is anticipated to commence in 2016, subject to gaining planning permission, with a completion year of 2026.

6.58 The indicative construction programme for the Development is anticipated to span approximately 10 years. **Table 6.15** shows the indicative construction phasing and a phasing plan is included as **Appendix O**.

			Residential Construction		
Phase	**Year**	**Assumed Year**	**Units Under Construction**	**Cumulative Units Operational**	**Total Units for Phase**
Phase 1	1	2016	20	0	271
	2	2017	70	20	
	3	2018	140	90	
	4	2019	41	230	
Phase 2	4	2019	99	271	238
	5	2020	139	370	
Phase 3	6	2021	200	509	338
	7	2022	138	709	
Phase 4	7	2022	62	847	653
	8	2023	200	909	
	9	2024	200	1109	
	10	2025	191	1309	
Full Operation	11	2026	0	1500	

Table 6.15: Indicative Construction Phasing

6.59 Furthermore, the construction of the SANGS area will be appropriately phased to ensure that as each phase of the Development is completed sufficient areas are provided in advance of occupation.

6.60 **Table 6.16** provides an indicative level of construction traffic trip generation associated with each phase of development. This has been informed by anticipated construction works, including indicative levels of cut and fill, and advice from the Applicant regarding vehicle load capacity.

Phase	Hourly Trips		Daily Trips	Monthly Trips
	One Way	Two Way		
Phase 1	0	1	5	114
Phase 2	2	3	26	574
Phase 3	2	4	35	772
Phase 4	3	6	45	995
Average Across 10 Year Construction Programme	2	4	32	713

Table 6.16: Indicative Construction Trip Generation

6.61 Construction Traffic access arrangements are expected to vary between each phase of the proposed development. An exercise has been undertaken to establish an indicative split for each phase as shown below in **Table 6.17**.

	Phase 1	5	Phase 2	26	Phase 3	35	Phase 4	45
Routing Link	%	Trips	%	Trips	%	Trips	%	Trips
Church Road	0%	0	0%	0	0%	0	5%	2
Chudleigh Road (N1)	0%	0	0%	0	0%	0	5%	2
Chantry Meadow	0%	0	0%	0	0%	0	5%	2
Chudleigh Road (S1)	0%	0	0%	0	0%	0	0%	0
Shillingford Road	0%	0	0%	0	0%	0	0%	0
Chudleigh Road - South of Junction NW	0%	0	0%	0	50%	18	0%	0
Chudleigh Road - South of Junction NE	45%	2	0%	0	50%	18	46%	21
Chudleigh Road - South of 'White Land' access	45%	2	0%	0	50%	18	46%	21
Chudleigh Road - North of A379	0%	0	0%	0	0%	0	0%	0
A379 - West of Chudleigh Road	5%	0	5%	1	5%	2	5%	2
A379 - West of Development Junction 1	5%	0	5%	1	5%	2	5%	2
A379 - West of Development Junction 2	3%	0	3%	1	3%	1	2%	1
A379 - West of Development Junction 3	45%	2	45%	12	45%	16	43%	19
A379 - West of Devon Hotel Roundabout	95%	5	95%	25	95%	33	90%	41
Dawlish Road	0%	0	0%	0	0%	0	5%	2
Bad Homburg Way (N of DH / S of Mini)	5%	0	5%	1	5%	2	5%	2
A379 - East of Devon Hotel Roundabout	90%	5	90%	23	90%	32	85%	38
Old Matford Lane	0%	0	0%	0	0%	0	0%	0
Matford Park Road	0%	0	0%	0	0%	0	0%	0
Bad Homburg Way (N of Mini)	5%	0	5%	1	5%	2	5%	2
Yeoford Way	0%	0	0%	0	0%	0	0%	0
A379 - West of Matford RB	90%	5	90%	23	90%	32	85%	38
Bridge Road	90%	5	90%	23	90%	32	85%	38
Sanneville Way (East of Matford RB)	0%	0	0%	0	0%	0	0%	0

Table 6.17: Indicative Construction Routing

6.62 The proposed routes are illustrated on **Figures 6.7** to **6.10**.

Traffic Management

6.63 If abnormal or oversized loads are required to deliver materials to the Site, notice will be given to Teignbridge District Council (TDC), the Police, the Fire Brigade, and other emergency services, sufficiently in advance of the required closure or diversion dates.

6.64 All vehicle unloading will take place within the Site and will not affect public highways or adjacent occupiers.

6.65 An outline construction traffic management plan is set out below.

Construction Traffic Management Plan

6.66 A construction traffic management plan (CTMP) will be submitted prior to the works commencing and will include details of the following :

- Contact details for the relevant responsible persons;
- A brief description of the site activities covered by the CTMP;
- Programme / Key Dates;
- Days and hours of site operation;
- Routing of demolition, excavation and construction vehicles;
- Details of the site access arrangements;
- Details of the vehicles accessing the site per day/week in terms of number, type, size and weight;
- Details of any measures to protect the public highway from damage arising from construction related activity;
- Details of the arrangements for co-ordinating and controlling delivery vehicles; and
- Details of suppliers and other companies involved in the construction phase including utility companies.

7 IMPACT UPON THE SURROUNDING ROAD NETWORK

7.1 Four existing junctions have been assessed as part of this application. These junctions are as follows:

- Shillingford Road / Chudleigh Road / Chantry Meadow (2013 – DCC FMW analysis);
- Devon Hotel Roundabout (2013 – DCC);
- Bad Homburg Way / Yeoford Way / Matford Park Road (2014 – FMW);
- Matford Roundabout (2013 – DCC).

7.2 In addition to the existing junctions within the agreed study area, the site access junctions have been assessed (**Figure 5.1**).

7.3 The four existing junctions have been assessed in 2014, i.e. the year of application and the design years of 2019 and 2024, i.e. five and ten years from registration of the application. The proposed site access junctions have only been assessed for 2019 and 2024. This complies with the requirements identified within the Department for Transport publication *Guidance on Transport Assessment*.

7.4 The traffic growth factors set out in **Section 6** have been applied to the 2013 surveyed traffic flows to provide firstly 2015 base flows and then 2020 and 2026 design year flows as shown in **Figures 7.1**, **7.2** and **7.3**. The flows associated with the proposed development and applicable committed development were added to the 2020 and 2026 year base flows as shown in **Figure 7.4** and **7.5**. The cumulative SWEUE flows are shown in **Figure 7.6** for 2020 and **Figure 7.7** for 2026.

7.5 The assessment scenarios are previously provided in **Table 6.1** and are given below for reference:

Modelling Software

7.6 The existing and proposed junctions have been assessed using the Junctions 8.0.3 software package and the LinSig 3.2.

7.7 Junctions 8.0.3 includes ARCADY 8 and PICADY 8 as the 'Roundabout' and 'Priority Intersection' modules. This software assesses the operational capacity of roundabouts and priority junctions respectively.

7.8 LinSig 3.2 is the UK industry standard software for the assessment and design of traffic signal junctions. In order to accurately calculate and measure the phase intergreens for the signal junctions the 'quickGreen' software tool has been used. The software is designed not only to speed up the measurement process but also to reduce errors, improve the ease of checking of intergreens and assist with archiving.

7.9 The model parameters and measurements have been compiled by using topographical survey, Ordnance Survey data and aerial photographs.

7.10 Full PICADY 8 capacity assessment output is contained within **Appendix P**, the ARCADY 8 capacity assessment output is contained within **Appendix Q**, and the LinSig 3.2 capacity assessment output is contained within **Appendix R**. For completeness the 'quickGreen' output is included for reference within **Appendix S**.

Junction Assessment – Existing Junctions

Chudleigh Road / Shillingford Road / Chantry Meadow Double Mini Roundabout

7.11 The Chudleigh Road double mini roundabout is the most northerly of the junctions within the agreed study area.

7.12 **Table 7.1** summarises the results of the capacity assessment of the junction.

Chudleigh Road Mini-Roundabout						
	AM			PM		
	Queue (PCU)	Delay (min)	RFC	Queue (PCU)	Delay (min)	RFC
	2015 Base					
Chudleigh Rd	0.20	0.08	0.17	0.43	0.10	0.30
Chantry Meadow	0.25	0.09	0.20	0.10	0.09	0.09
South Give Way	0.00	0.06	0.32	0.00	0.05	0.18
North Give Way	0.00	0.05	0.18	0.00	0.05	0.18
Chudleigh Rd (South Arm)	0.72	0.12	0.42	0.41	0.10	0.29
Shillingford Rd (West Arm)	0.34	0.12	0.25	0.12	0.09	0.11
	2020 Base					
Chudleigh Rd	0.21	0.08	0.17	0.44	0.10	0.31
Chantry Meadow	0.26	0.09	0.21	0.10	0.09	0.09
South Give Way	0.00	0.06	0.33	0.00	0.05	0.18
North Give Way	0.00	0.05	0.18	0.00	0.05	0.19
Chudleigh Rd (South Arm)	0.73	0.12	0.43	0.42	0.10	0.30
Shillingford Rd (West Arm)	0.35	0.12	0.26	0.13	0.09	0.11

Table 7.1: Chudleigh Road Mini Roundabout – Capacity Assessment Summary

Chudleigh Road Mini-Roundabout (Further Sensitivity Test)						
	AM			PM		
	Queue (PCU)	Delay (min)	RFC	Queue (PCU)	Delay (min)	RFC
	2020 SW Exeter Urban Extension					
Chudleigh Rd	0.32	0.09	0.24	0.78	0.12	0.44
Chantry Meadow	0.28	0.10	0.22	0.11	0.10	0.10
South Give Way	0.00	0.07	0.42	0.00	0.05	0.24
North Give Way	0.00	0.05	0.23	0.00	0.06	0.27
Chudleigh Rd (South Arm)	1.42	0.16	0.59	0.66	0.12	0.40
Shillingford Rd (West Arm)	0.42	0.14	0.30	0.14	0.10	0.12
	2020 with Proposed Dev					
Chudleigh Rd	0.30	0.09	0.23	0.69	0.11	0.41
Chantry Meadow	0.27	0.10	0.22	0.11	0.09	0.10
South Give Way	0.00	0.07	0.40	0.00	0.05	0.23
North Give Way	0.00	0.05	0.22	0.00	0.06	0.25
Chudleigh Rd (South Arm)	1.21	0.15	0.55	0.61	0.11	0.38
Shillingford Rd (West Arm)	0.40	0.14	0.29	0.13	0.09	0.12
	2026 SW Exeter Urban Extension					
Chudleigh Rd	0.32	0.09	0.25	0.8	0.12	0.45
Chantry Meadow	0.28	0.10	0.22	0.11	0.10	0.10
South Give Way	0.00	0.07	0.43	0.00	0.05	0.24
North Give Way	0.00	0.05	0.23	0.00	0.06	0.27
Chudleigh Rd (South Arm)	0.47	0.17	0.60	0.68	0.12	0.41
Shillingford Rd (West Arm)	0.43	0.15	0.30	0.14	0.10	0.12
	2026 with Proposed Dev					
Chudleigh Rd	0.30	0.09	0.23	0.70	0.11	0.41
Chantry Meadow	0.28	0.10	0.22	0.11	0.09	0.10
South Give Way	0.00	0.07	0.40	0.00	0.05	0.23
North Give Way	0.00	0.05	0.22	0.00	0.06	0.25
Chudleigh Rd (South Arm)	1.26	0.15	0.56	0.63	0.11	0.39
Shillingford Rd (West Arm)	0.41	0.14	0.29	0.14	0.10	0.12

Table 7.2: Chudleigh Road Mini Roundabout – Capacity Assessment Summary

7.13 **Tables 7.1** and **7.2** demonstrate that the junction will operate within capacity with minimal delays and queues in the 2015, 2020 and 2026 design years with the cumulative impact. The maximum recorded value of 0.68 RFC indicates large amounts of spare capacity.

Devon Hotel Roundabout

7.14 **Table 7.3** summarises the results of the capacity assessment of the junction.

Devon Hotel Roundabout						
	AM			PM		
	Queue (PCU)	Delay (min)	RFC	Queue (PCU)	Delay (min)	RFC
	2015 Base					
A379 (East)	2.61	0.10	0.73	1.42	0.08	0.59
Old Matford Ln	0.00	0.00	0.00	0.00	0.00	0.00
A379 (West)	12.17	0.54	0.94	0.46	0.04	0.31
Dawlish Road	60.93	30.29	9999	0.63	0.17	0.39
Bad Homburg Way (B3123)	0.28	0.06	0.22	1.12	0.11	0.53
	2020 Base					
A379 (East)	4.93	0.17	0.84	1.65	0.08	0.62
Old Matford Ln	0.00	0.00	0.00	0.00	0.00	0.00
A379 (West)	67.63	2.39	1.08	0.49	0.05	0.33
Dawlish Road	99.91	1666	9999	0.71	0.19	0.42
Bad Homburg Way (B3123)	0.29	0.06	0.22	1.29	0.12	0.57
	2020SW Exeter Urban Extension					
A379 (East)	23.68	0.68	0.98	8.48	0.32	0.90
Old Matford Ln	0.00	0.00	0.00	0.00	0.00	0.00
A379 (West)	548.01	19.83	1.61	1.19	0.07	0.55
Dawlish Road	151.68	1666	9999	1.45	0.39	0.60
Bad Homburg Way (B3123)	0.36	0.08	0.26	3.34	0.28	0.78
	2020 with Proposed Dev					
A379 (East)	10.27	0.32	0.92	4.12	0.17	0.81
Old Matford Ln	0.00	0.00	0.00	0.00	0.00	0.00
A379 (West)	342.89	12.36	1.43	0.92	0.06	0.48
Dawlish Road	139.4	1666	9999	1.07	0.28	0.52
Bad Homburg Way (B3123)	0.33	0.07	0.25	2.40	0.20	0.71
	2026 SW Exeter Urban Extension					
A379 (East)	31.24	0.86	1.00	9.97	0.37	0.92
Old Matford Ln	0.00	0.00	0.00	0.00	0.00	0.00
A379 (West)	589.14	21.36	1.64	1.23	0.07	0.55
Dawlish Road	158.76	1666	9999	1.61	0.42	0.63
Bad Homburg Way (B3123)	0.36	0.08	0.27	3.71	0.31	0.80
	2026 with Proposed Dev					
A379 (East)	12.42	0.39	0.94	4.52	0.18	0.82
Old Matford Ln	0.00	0.00	0.00	0.00	0.00	0.00
A379 (West)	380.23	13.62	1.47	0.95	0.06	0.49
Dawlish Road	145.06	1666	9999	1.16	0.30	0.54
Bad Homburg Way (B3123)	0.34	0.07	0.26	2.61	0.22	0.73

Table 7.3: Devon Hotel Roundabout – Capacity Assessment Summary

7.15 **Table 7.3** shows that the junction experiences major capacity delays and queues in the 2014 AM base assessment year. The values of 9999 RFC indicate a lack of capacity and large queues.

7.16 The capacity issue is exacerbated when the proposed development and the SWEUE cumulative impact are assessed.

7.17 In the PM peak period the junction largely performs within capacity with no negative impact resulting from the Bovis development itself and the cumulative impact only marginally increasing delay and queue levels.

7.18 The arm most affected, Dawlish Road is a minor arm of the roundabout and therefore not critical to the overall performance of the junction. Vehicles have been observed on site struggling to enter the junction given the poor geometry of the arm.

7.19 The A379 (West) experiences delay and queuing in the AM peak period as the dominant movement is from the A379 (East) travelling towards Marsh Barton with two lanes of the roundabout allowing this movement making entering the junction from the A379 (West) and Dawlish Road a delayed movement.

7.20 On the request of DCC a separate sensitivity test has been undertaken to model the roundabout operation if the Dawlish Road and Old Matford Lane arms were closed. A summary of this assessment is included below in **Table 7.4**.

Devon Hotel Roundabout (Dawlish Road Closed - Flows Assigned to A379 West and Bad Homburg Way)						
	AM			PM		
	Queue (PCU)	Delay (min)	RFC	Queue (PCU)	Delay (min)	RFC
	2020 SW Exeter Urban Extension					
A379 (East)	23.68	0.68	0.98	8.48	0.32	0.9
Old Matford Ln	0.00	0.00	0.00	0.00	0.00	0.00
A379 (West)	595.56	20.6	1.61	1.6	0.08	0.62
Bad Homburg Way (B3123)	0.37	0.08	0.27	3.35	0.28	0.78
	2020 with Proposed Dev					
A379 (East)	10.33	0.32	0.92	4.11	0.17	0.81
Old Matford Ln	0.00	0.00	0.00	0.00	0.00	0.00
A379 (West)	386.26	13.26	1.45	1.25	0.07	0.56
Bad Homburg Way (B3123)	0.35	0.08	0.26	2.40	0.20	0.71
	2026 SW Exeter Urban Extension					
A379 (East)	31.23	0.86	1.00	9.97	0.37	0.92
Old Matford Ln	0.00	0.00	0.00	0.00	0.00	0.00
A379 (West)	637.8	22.11	1.64	1.67	0.08	0.63
Bad Homburg Way (B3123)	0.38	0.08	0.28	3.71	0.31	0.80
	2026 with Proposed Dev					
A379 (East)	12.42	0.39	0.94	4.52	0.18	0.82
Old Matford Ln	0.00	0.00	0.00	0.00	0.00	0.00
A379 (West)	426.07	14.55	1.48	1.30	0.07	0.57
Bad Homburg Way (B3123)	0.36	0.08	0.27	2.61	0.22	0.73

Table 7.4: Devon Hotel Roundabout Sensitivity – Summary Results

7.21 Comparing Table 7.4 with the existing roundabout situation and configuration summarised in Table 7.3 allows the following observations to be made:

- The removal of the Dawlish Road arm marginally increases the delay and queuing on the A379 (West) arm.
- There is no capacity or operational benefit seen by closing the Dawlish Road arm.
- There is however a safety benefit in terms of the operation of the roundabout as the dangerous entry manoeuvre from Dawlish Road onto the roundabout is prohibited.

7.22 Whilst there would be no permitted entry and queuing on Dawlish Road, the flows would transfer to the A379 (West) where marginal increases in delay and queuing are observed.

7.23 As part of the proposed development, a further mitigation scenario at the Devon hotel roundabout has been included within the assessment. On this occasion a 'one way' entry only in a westerly direction along Dawlish Road will be maintained from the roundabout towards Alphington. The scheme is outlined in **Figure 5.5** and also includes a left in / left out junction with the A379.

7.24 The results of the assessment are summarised within **Table 7.5** below.

Devon Hotel Rd (Further Sensitivity Test)						
	AM			PM		
	Queue (PCU)	Delay (min)	RFC	Queue (PCU)	Delay (min)	RFC
	2020 SW Exeter Urban Extension					
A379 (East)	24.00	0.68	0.98	8.00	0.31	0.90
Old Matford Ln	0.00	0.00	0.00	0.00	0.00	0.00
A379 (West)	665.00	23.51	1.70	100	2.53	1.09
Bad Homburg Way (B3123)	0.00	0.08	0.27	4.00	0.31	0.79
	2020 with Proposed Dev					
A379 (East)	10	0.32	0.92	4	0.16	0.81
Old Matford Ln	0.00	0.00	0.00	0.00	0.00	0.00
A379 (West)	452	16.37	1.52	91.00	2.31	1.08
Bad Homburg Way (B3123)	0.00	0.08	0.26	3.00	0.29	0.78

Table 7.5: Devon Hotel Roundabout – Further Sensitivity Assessment Summary

7.25 Comparing **Table 7.5** with the existing roundabout situation and configuration summarised in **Table 7.3** allows the following observations to be made:

- The creation of a west bound 'One Way' along Dawlish Road marginally increases the delay and queuing on the A379 (West) arm.
- There is no capacity benefit seen by closing the Dawlish Road arm.
- There is however a safety benefit in terms of the operation of the roundabout as the dangerous entry manoeuvre from Dawlish Road onto the roundabout is prohibited.
- A further benefit of this scheme over the complete closure of the Dawlish Road Arm is the continued allowance of access through to Alphington and the existing residential properties along Dawlish Road.

7.26 As with the previous sensitivity test, there would be no permitted entry and queuing on Dawlish Road, however the flows would transfer to the A379 (West) where marginal increases in delay and queuing are observed.

Proposed Devon Hotel Signal Junction

7.27 The SWETAS report provided details of a possible Signal junction mitigation measure to relieve the Devon Hotel roundabout junction. This is included as **Appendix T**.

7.28 The proposed scheme has been assessed using the LinSig software program and the results of the 2026 with the South West Exeter cumulative development scenario are summarised below in **Table 7.6**.

Proposed Devon Hotel Road Signal Junction (Further Sensitivity Test, No Dawlish Road Flows)						
	AM			PM		
	Deg Sat (%)	Mean Max Queue (pcu)	Av. Delay Per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue (pcu)	Av. Delay Per PCU (s/pcu)
	2026 SW Exeter Urban Extension					
Bad Homburg Way Left	35.20%	20.3	6.6	81.50%	22.5	20.2
Bad Homburg Way Ahead Right	108.10%	278.1	26.6	97.40%	94.7	37.2
A379 East Right Left Ahead	41.30%	7	8.7	98.30%	76.4	54.9
A379 East Right	107.90%	208.9	94	78.30%	71.2	12.3
A379 West Left	62.20%	23.5	12.1	13.50%	7.7	1.6
A379 West Right Ahead	107.00%	196.7	90.6	89.10%	62.1	21.5
Nearside Internal EB	66.80%	3.1	0.8	70.70%	2	0.4
Offside Internal EB	77.20%	3.5	2.5	72.70%	2.5	0.6
PRC	-20.10%			-9.30%		
Total Delay (pcu/hr)	176.88			76.09		
Time (sec)	150			150		

Table 7.6: Devon Hotel Signals – DCC SWETAS Option Assessment Summary

7.29 It can be seen from the above table that the DCC option performs considerably better than the existing roundabout when the worst case scenario is assessed. However the signal junction is already under pressure in terms of capacity and queue lengths are still unrealistically long.

7.30 With this in mind we have looked to develop the proposal further to allow for improved capacity and levels of queuing on all arms. Two options have been initially sketched and are included for reference as **Figures 7.8** and **7.9**.

7.31 There are iterative stages between the DCC scheme and the option schemes summarised within the following text. It is appreciated that the use of some or all of these stages is dependent on the total scheme cost.

7.32 DCC will ultimately need to weigh up the total cost of the mitigation measures against the total benefit in capacity.

7.33 The revised signal junction involves the creation of an extended short right hand turn lane from Bad Homburg Way in the A379 west arm and the

7.34 The second option removes the entry only access to the Devon Hotel complex from the junction. In doing so the opposed right hand turn from the A379 west arm is removed. We have presumed that access will be provided to the hotel through the Parr Development as discussed throughout the consultation process with DCC and the other South West Exeter land consultants.

7.35 **Table 7.7** below summarises Option 1 in 2026 with the cumulative South West Exeter development.

Proposed Devon Hotel Road Signal Junction – Option 1						
	AM			PM		
	Deg Sat (%)	Mean Max Queue (pcu)	Av. Delay Per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue (pcu)	Av. Delay Per PCU (s/pcu)
	2026 SW Exeter Urban Extension					
Bad Homburg Way Left	45.6%	22.9	7.1	94.5%	34.5	48.0
Bad Homburg Way Ahead Right	18.3%	20.1	3.0	39.3%	11.9	6.0
A379 East Right Left Ahead	82.7%	45.9	25.7	55.3%	22.3	13.9
A379 East Right	89.9%	61.8	31.9	46.6%	23.3	13.1
A379 West Left	67.5%	30.0	13.9	22.5%	37.0	3.7
A379 West Right Ahead	89.7%	50.3	27.8	94.9%	75.0	26.2
Nearside Internal EB	68.4%	1.7	0.5	75.1%	2.2	0.3
Offside Internal EB	78.5%	2.4	8.8	92.2%	7.8	5.0
PRC	0.2%			-5.5%		
Total Delay (pcu/hr)	58.94			48.71		
Time (sec)	150			150		

Table 7.7: Devon Hotel Signals – Option 1 Assessment Summary

7.36 The revised junction performs better than the original DCC scheme with significantly lower delays and improved reserve capacity. Queues back towards the proposed site access junctions are thought to be within acceptable levels and could be further controlled with the use of a linked signal system such as MOVA.

7.37 The Option 2 scheme has been assessed using the LinSig software program and the results of the 2026 with the South West Exeter cumulative development scenario is summarised below in **Table 7.8**.

Proposed Devon Hotel Road Signal Junction – Option 2						
	AM			PM		
	Deg Sat (%)	Mean Max Queue (pcu)	Av. Delay Per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue (pcu)	Av. Delay Per PCU (s/pcu)
	2026 SW Exeter Urban Extension					
Bad Homburg Way Left	43.7%	20.5	6.7	93.6%	31.5	45.5
Bad Homburg Way Ahead Right	16.4%	17.9	2.6	37.4%	11.3	5.7
A379 East Right Left Ahead	77.9%	40.6	23.9	55.0%	21.7	13.8
A379 East Right	88.0%	55.7	31.6	46.3%	22.7	12.9
A379 West Left	70.2%	33.3	14.7	22.8%	37.8	3.7
A379 West Right Ahead	88.5%	52.4	26.3	91.5%	71.3	22.9
Nearside Internal EB	77.3%	1.8	0.5	83.7%	2.8	0.5
Offside Internal EB	79.4%	2.6	10.5	87.7%	3.2	6.2
PRC	1.7%			-4.0		
Total Delay (pcu/hr)	56.81			45.49		
Time (sec)	150			150		

Table 7.8: Devon Hotel Signals – Option 2 Assessment Summary

7.38 The option of closing the Devon Hotel access provides further benefit to the junction performance. Both the level of queuing and reserve capacity is improved when compared to Option 1 and the original DCC scheme.

Yeoford Way / Bad Homburg Way Roundabout

7.39 **Table 7.9** summarises the results of the capacity assessment of the junction for the base and design year assessments.

Yeoford Way / Bad Homburg Way Roundabout						
	AM			PM		
	Queue (PCU)	Delay (min)	RFC	Queue (PCU)	Delay (min)	RFC
	2015 Base					
Yeoford Way	0.19	0.06	0.16	1.53	0.23	0.61
Bad Homburg Way (South)	25.92	0.76	0.99	0.4	0.04	0.29
Matford Park Way	0.11	0.06	0.1	0.93	0.07	0.48
Bad Homburg Way (North)	0.46	0.06	0.32	1.09	0.1	0.52
	2020 Base					
Yeoford Way	0.26	0.06	0.21	28.01	2.23	1.05
Bad Homburg Way (South)	141.98	3.48	1.12	0.46	0.04	0.32
Matford Park Way	0.12	0.07	0.11	0.93	0.07	0.48
Bad Homburg Way (North)	0.63	0.08	0.39	1.19	0.11	0.55
	2020 SW Exeter Urban Extension					
Yeoford Way	0.26	0.06	0.21	54.66	4.17	1.16
Bad Homburg Way (South)	224.43	6.24	1.2	0.53	0.04	0.35
Matford Park Way	0.13	0.07	0.11	0.98	0.08	0.5
Bad Homburg Way (North)	0.61	0.07	0.38	1.73	0.13	0.64
	2020 with Proposed Dev					
Yeoford Way	0.26	0.06	0.21	37.61	2.91	1.09
Bad Homburg Way (South)	176.77	4.65	1.16	0.48	0.04	0.33
Matford Park Way	0.12	0.07	0.11	0.94	0.07	0.49
Bad Homburg Way (North)	0.57	0.07	0.36	1.37	0.12	0.58
	2026 SW Exeter Urban Extension					
Yeoford Way	0.27	0.06	0.21	66.23	5.03	1.2
Bad Homburg Way (South)	248.9	7.06	1.22	0.54	0.04	0.35
Matford Park Way	0.13	0.07	0.11	1.03	0.08	0.51
Bad Homburg Way (North)	0.63	0.07	0.39	1.84	0.14	0.65
	2026 with Proposed Dev					
Yeoford Way	0.27	0.06	0.21	48.19	3.64	1.13
Bad Homburg Way (South)	199.53	5.42	1.18	0.5	0.04	0.33
Matford Park Way	0.12	0.07	0.11	0.99	0.08	0.5
Bad Homburg Way (North)	0.58	0.07	0.37	1.46	0.12	0.6

Table 7.9: Bad Homburg Way Roundabout – Capacity Assessment Summary

7.40 Values of 1.12 RFC indicate a lack of capacity and large queues on Bad Homburg Way within the assessed 2020 base.

7.41 The capacity issue is exacerbated when the proposed development and the SWEUE cumulative impact are assessed.

7.42 The level of queuing on Bad Homburg Way is likely to be improved should DCC progress with signalisation of the Devon Hotel roundabout.

Matford Roundabout

7.43 **Table 7.10** summarises the results of the capacity assessment of the junction for the base and design year assessments.

Matford Roundabout						
	AM			PM		
	Queue (PCU)	Delay (min)	RFC	Queue (PCU)	Delay (min)	RFC
	2020 SW Exeter Urban Extension					
Bridge Road	2	0.07	0.71	4	0.11	0.79
Sannerville Way	4	0.25	0.82	1	0.08	0.44
A379 (West Arm)	0	0.07	0.28	1	0.08	0.43
	2020 with Proposed Dev					
Bridge Road	2	0.07	0.67	2	0.08	0.7
Sannerville Way	4	0.2	0.79	1	0.06	0.39
A379 (West Arm)	0	0.07	0.27	1	0.08	0.43
	2026 SW Exeter Urban Extension					
Bridge Road	3	0.08	0.72	4	0.11	0.8
Sannerville Way	5	0.29	0.84	1	0.08	0.45
A379 (West Arm)	0	0.07	0.28	1	0.09	0.44
	2026 with Proposed Dev					
Bridge Road	2	0.07	0.68	2	0.08	0.71
Sannerville Way	4	0.22	0.81	1	0.07	0.4
A379 (West Arm)	0	0.07	0.28	1	0.09	0.44

Table 7.10: Matford Roundabout – Capacity Assessment Summary

7.44 **Table 7.10** demonstrates that the junction will operate within capacity with minimal delays and queues in the 2020 and 2026 design years with the cumulative impact. Maximum values of 0.84 RFC indicate a small level of spare capacity within the assessed junction.

7.45 The results indicate that the roundabout currently operates well within its theoretical capacity in the peak hours and will continue to do so in the 2020 and 2026 assessment years. The additional development flows lead to a negligible increase in the Ratio of Flow to Capacity (RFC) values and delays with the overall operation of the junction in the peak hours remaining within capacity.

Junction Assessment – Proposed Junctions

7.46 As part of the development a number of new junctions will be introduced to provide access to the proposed site and to improve the overall network performance where possible. The remainder of this section provides the assessment summaries for the new proposed junctions.

Chudleigh Road / Site Access Priority Junction

7.47 **Table 7.11** summarises the results of the capacity assessment of the junction for the base and design year assessments.

Chudleigh Road / Site Access Priority Junction						
	AM			PM		
	Queue (PCU)	Delay (min)	RFC	Queue (PCU)	Delay (min)	RFC
	2020 SW Exeter Extension					
Site Access	0.28	0.15	0.22	0.13	0.13	0.11
Chudleigh Road (right)	0.15	0.07	0.08	0.41	0.08	0.18
	2020 with Proposed Development					
Site Access	0.25	0.14	0.20	0.12	0.12	0.11
Chudleigh Road (right)	0.13	0.07	0.07	0.31	0.09	0.16
	2026 SW Exeter Extension					
Site Access	0.28	0.15	0.22	0.13	0.13	0.11
Chudleigh Road (right)	0.15	0.07	0.08	0.41	0.08	0.18
	2026 with Proposed Development					
Site Access	0.26	0.14	0.20	0.12	0.13	0.11
Chudleigh Road (right)	0.13	0.07	0.07	0.32	0.09	0.16

Table 7.11: Chudleigh Road / Site Access – Capacity Assessment Summary

7.48 **Table 7.11** demonstrates that the junction will operate within capacity with minimal delays and queues in the 2020 and 2026 design years with the cumulative impact. Maximum values of 0.22 RFC indicate large amounts of spare capacity within the assessed junction.

Dawlish Road / A379 Left In – Left Out Priority Junction

7.49 **Table 7.12** summarises the results of the capacity assessment of the junctions for the 2016 Phase 1 development scenario assessment.

Dawlish Road Realignment						
	AM			PM		
	Queue (PCU)	Delay (min)	RFC	Queue (PCU)	Delay (min)	RFC
	Dawlish Road Realignment Priority 2016 + 300 Units					
Dawlish Road East (to A379)	0.00	7.43	0.00	0.00	7.41	0.00
Dawlish Road East (to Dawlish Road)	2.70	29.46	0.74	1.81	22.88	0.65
	Left In / Left Out Priority 2016 + 300 Units					
Dawlish Road	0.93	16.03	0.49	0.85	11.10	0.46

Table 7.12: Dawlish Road Realignment – Phase 1 – Capacity Assessment Summary

7.50 The summary table above shows that the first phase of development can be accommodated by the proposed realignment of Dawlish Road together with a new left in / left out junction.

LinSig Assessment – Signalised Access Junctions along the A379

7.51 As previously mentioned the proposed access from the site onto the A379 will be in the form of three signalised junctions. The three junctions have been designed to take into account both the perceived demand from the development and the restrictive topography of the area, allowing for best route choice to minimise cut and fill and more intrusive build up features.

7.52 All controllers were assessed with a 90 second cycle time and the network was designed to allow for 'greenway' running along the A379.

7.53 The prediction of saturation flows using a standard formula was outlined in TRL Research Report 67 (RR67) by Kimber et al through the classification of empirical data surveyed over twenty years ago at various UK sites. RR67 allows the estimation of saturation flows based on geometric data such as vehicle turning radii, lane width and road gradient. Data used in the development of RR67 was restricted to sites which were classified as 'good' or 'average' in terms of junction performance based on geometry by Webster and Cobbe.

7.54 Intergreens have been calculated using the 'quickGreen' program in order to reduce the errors associated with undertaking the exercise by hand.

7.55 The following scenarios were assessed:

- 2020 AM with the Development
- 2020 PM with the Development
- 2026 AM with the Development
- 2026 PM with the Development
- 2020 AM with SWEUE
- 2020 PM with SWEUE
- 2026 AM with SWEUE
- 2026 PM with SWEUE

7.56 The scenarios including the SWEUE area wide development represent the worst case situation in terms of total demand on the proposed signal controlled network. In order to provide a succinct summary of the assessment undertaken, the summary tables that follow show the results of the 2026 assessments which represent the worst case scenario. All other results and parameters can be found within the **Appendix R**.

7.57 **Table 7.13** summarises the 2026 scenario with the proposed development.

Proposed A379 Signal Access		2026 AM with Dev		2026 PM with Dev	
Item	**Lane Description**	**Deg Sat (%)**	**Mean Max Queue (pcu)**	**Deg Sat (%)**	**Mean Max Queue (pcu)**
Network	**-**	**79.40%**	**-**	**71.30%**	**-**
J1: Site Access South	**-**	**78.70%**	**-**	**66.20%**	**-**
1/1	A379 south Ahead	78.00%	18.4	35.50%	5.3
1/2+1/3	A379 south Right Ahead	69.8%	16.2	25.4%	3.8
3/2+3/1	Left Right	78.7%	5.1	59.8%	3
4/1	A379 north Ahead Left	36.10%	1.9	66.20%	4.1
4/2	A379 north Ahead	26.60%	0.8	52.00%	3.6
J2: Site Access North	**-**	**79.40%**	**-**	**70.20%**	**-**
1/2+1/1	A379 south Ahead Left	70.4%	19.5	42.2%	10.8
1/3	A379 south Ahead	78.70%	8.4	35.20%	2.8
2/1	Access Road + Flare	79.4%	9.7	70.2%	4.4
3/1	A379 north Ahead	29.30%	7.8	69.00%	5.4
3/2+3/3	A379 north Ahead Right	69.5%	5.1	69.7%	6
J3: Site Access South	**-**	**67.90%**	**-**	**71.30%**	**-**
1/1	A379 south Ahead	58.50%	10.9	23.80%	5.6
1/2+1/3	A379 south Ahead Right	64.0%	9	31.8%	5.7
2/2+2/1	Site Access South Left Right	67.9%	4.5	50.6%	3
3/2+3/1	A379 north Ahead Left	36.4%	5.1	71.3%	13.8
3/3	A379 north Ahead	32.80%	5.3	67.20%	13.9
	PRC	13%		26%	
	Total Delay (pcu/hr)	37.49		30.45	
	Time (sec)	90		90	

Table 7.13: 2026 with the Proposed Development – Summary Results

7.58 The results indicate that the junction would operate within its effective capacity. The maximum RFC in the 2026 with Development scenario is 79.40% in the AM peak and 71.30% in the PM peak.

7.59 **Table 7.14** overleaf summarises the 2026 scenario with the cumulative SWEUE development.

Proposed A379 Signal Access		2026 AM SW		2026 PM SW	
Item	**Lane Description**	**Deg Sat (%)**	**Mean Max Queue (pcu)**	**Deg Sat (%)**	**Mean Max Queue (pcu)**
Network	**-**	**89.80%**	**-**	**84.20%**	**-**
J1: Site Access South	**-**	**79.70%**	**-**	**70.70%**	**-**
1/1	A379 south Ahead	79.70%	19.5	35.40%	5.3
1/2+1/3	A379 south Right Ahead	69.1%	15.8	27.5%	4.1
3/2+3/1	Left Right	78.7%	5.1	59.8%	3
4/1	A379 north Ahead Left	40.70%	3.5	70.70%	7
4/2	A379 north Ahead	25.10%	2.1	49.20%	3.3
J2: Site Access North	**-**	**89.80%**	**-**	**84.20%**	**-**
1/2+1/1	A379 south Ahead Left	80.4%	20.9	43.2%	10.8
1/3	A379 south Ahead	89.80%	10.2	43.10%	3.1
2/1	Access Road + Flare	87.9%	15.9	81.2%	6.9
3/1	A379 north Ahead	34.70%	3.5	82.40%	8.2
3/2+3/3	A379 north Ahead Right	81.3%	36	84.2%	41.4
J3: Site Access South	**-**	**70.10%**	**-**	**78.00%**	**-**
1/1	A379 south Ahead	64.80%	8.8	30.30%	4.5
1/2+1/3	A379 south Ahead Right	70.1%	12	32.6%	5.1
2/2+2/1	Site Access South Left Right	67.9%	4.5	50.6%	3
3/2+3/1	A379 north Ahead Left	39.0%	5.7	78.0%	16.6
3/3	A379 north Ahead	37.10%	6.2	74.40%	16.6
	PRC	0.20%		6.90%	
	Total Delay (pcu/hr)	48.96		37.87	
	Time (sec)	90		90	

Table 7.14: 2026 with the SWEUE Cumulative Development – Summary Results

7.60 The results indicate that the junction would operate within its effective capacity. The maximum RFC in the 2026 with SWEUE Cumulative Development scenario is 89.80% in the AM peak and 84.20% in the PM peak.

7.61 If the network was linked to MOVA (Microprocessor Optimised Vehicle Actuation) there is the potential to increase the capacity by an additional 5% - 10%.

7.62 The LinSig network is shown in **Plate 7.1**.

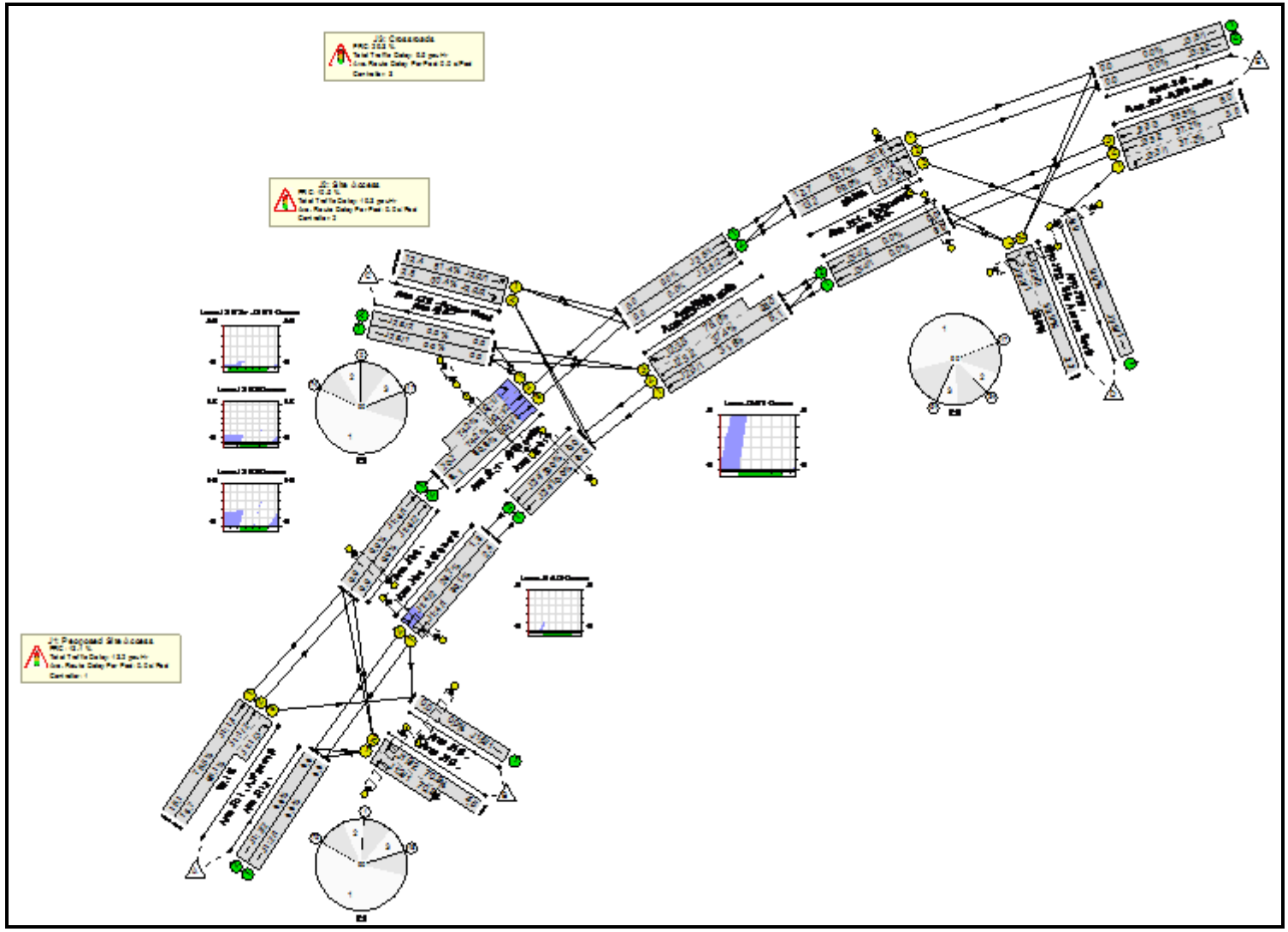

Plate 7.1: A379 / Site Access Junctions – LinSig Network

Wider Strategic Road Network

7.63 To assess the impact of the development on the wider strategic road network FMW have utilised data contained within the Department for Transport (DfT) Count Point website. The selected datasets represent points along the M5, A38 and A380.

7.64 On instruction from the Highways Agency, the traffic impact has been graphically mapped on a set of plans. **Figure 7.10** shows the impact on the 2020 wider network while **Figure 7.11** shows the impact on the 2026 wider network. The wider highway network distribution and the 2-way development AADT flows are shown in **Figure 7.12** and **Figure 7.13**.

7.65 **Table 7.15** below summarise the impact of the proposed development on the strategic road network.

Link number	Link reference	2020 with SW Exeter Urban Extension	2026 with SW Exeter Urban Extension	2020 with SW Exeter Extension and Development	2026 with SW Exeter Extension and Development	2020 % increase in traffic	2026 % increase in traffic
1	CP 36195 M5	59000	60099	59268	60367	0.45%	0.45%
2	CP 16023 M5	74978	76378	75246	76646	0.36%	0.35%
3	CP56192 M5	77221	78666	77221	78666	0.00%	0.00%
4	CP 37903 A38	60582	61716	60582	61716	0.00%	0.00%
5	CP 26411 A38	72206	73549	72634	73977	0.59%	0.58%
6	CP 70079 A38	56346	57394	56774	57822	0.76%	0.75%
7	CP 56358 A38	37473	38172	37687	38386	0.57%	0.56%
8	CP 56287 A30	29221	29764	29413	29955	0.66%	0.64%
9	CP 37674 A376	41776	42553	42006	42783	0.55%	0.54%

Table 7.15: Wider Strategic Road Network – Proposed Development Impact

7.66 The above table shows that the proposed development will have a minimal impact on the wider network and that no further assessment is required.

Assessment Summary

7.67 The double mini roundabout of Shillingford Way / Chantry Meadow / Chudleigh Road performs well in all scenarios.

7.68 It is clear from the operational capacity analysis summarised within the proceeding text that the existing highway junctions of the Devon Hotel roundabout and the Yeoford Way / Bad Homburg Way roundabout are operating close to or at capacity in the morning and evening peak hours during the 2015 base year scenario.

7.69 This situation is compounded when the development scenarios are run and both delay and levels of queuing increase.

7.70 It is evident that rather than a capacity problem with the A379 which dissects the proposed site, the problem is due to the heavy bias of flows from the direction of Exminster.

7.71 Mitigation measures may be required for these junctions and it is also understood that the proposed development will be contributing towards the Ide Park & Ride facility, the Marsh Barton Rail Halt and a package of measures that will be introduced to provide quality bus links into the area. Any proposed package of transport mitigation measures must be assessed in accordance with the Community Infrastructure Levy Regulations 2010 (CIL).

7.72 The Devon Hotel Sensitivity tests that have been undertaken show that there is limited opportunity to increase actual capacity if the junction remains as a roundabout. There are however substantial safety benefits to be had should the Dawlish Road entry onto the roundabout be closed.

7.73 A capacity benefit (along with the associate safety benefits) is seen should the junction be signalised. This section has summarised the results of the DCC option and two further revisions which show that an acceptable mitigation measure can be found.

7.74 There are no capacity problems or delays at Matford roundabout and the junction performs well in all scenarios.

7.75 The proposed signal controlled junctions perform within capacity in all scenarios.

7.76 The impact on the wider strategic network will be minimal.

8 SUSTAINABLE TRANSPORT

8.1 As part of the development of the site various facilities will be introduced that will assist and encourage travel to and from the site by sustainable modes of transport; namely bus, cycle and foot.

8.2 The facilities proposed are shown in the indicative Masterplan attached as Appendix E to this report and are summarised below:

- Provision of 2.0m footways along all internal roads;
- Provision of an improved pedestrian and cycle link running adjacent to the southern side of the A379 along the entire length of frontage;
- Provision of improvements to the footways along Chudleigh Road;
- Provision of pedestrian / cycle linkages within the site which are off street and therefore safer for all users;
- Provision of multiple permeable pedestrian / cycle access points along a site frontages;
- Provision of cycle parking facilities at all points of interest within the proposed site;
- Provision of cycle parking facilities within the residential areas along with in individual properties where applicable;
- Provision of a foot / cycle bridge across the A379 allowing for safe movement to and from the educational facility;
- Potential S106 agreement and CIL contribution towards improved transport facilities within the vicinity of the site; and
- Preparation of a Travel Plan to promote travel to and from the site by sustainable modes.

8.3 The majority of the key services and facilities within the local area are located to either the northwest (within Alphington Village) or northeast of the site within the Marsh Barton employment area. Walking routes will be predominantly along the existing highway network, the A379 and Chudleigh Road. The pedestrian access points will enable good permeability through the site and provide links to footways along the A379 and Chudleigh Road.

8.4 Whilst not defined at this stage the proposed local centre within the site is likely to offer key facilities within an easy walking distance to many of the residents of the Matford Barton development.

8.5 In terms of public transport, the development will contribute towards the new rail halt at Marsh Barton, the Ide Park & Ride site and to a package of measures to improve the public transport in the area.

8.6 DCC have undertaken some initial work to identify bus service improvements. To serve the northern element of the site it is likely that the existing 'A' service will be extended into the site. DCC recognise that the southern element of the site is more difficult to serve and may need to have a new service, whilst an extension to the 'B' route is still a possibility. **Figure 8.1** shows the potential route options being currently being considered.

8.7 The potential for a service to connect to the proposed rail halt further increases the possibilities for multi modal travel from the site.

8.8 Whilst the package of improvements is still relatively fluid, it is clear to see that once finalised the proposed site will have an excellent connection to public transport.

9 ACCESSIBILITY ASSESSMENT

Pedestrian Accessibility

9.1 Walking routes from the site towards Alphington village centre, Devon Hotel area and the Marsh Barton employment area, are in the main provided as footways and footpaths along Chudleigh Road and the A379.

9.2 Acceptable walking distances will vary considerably depending on various factors such as fitness and land topography; however, 'Providing for Journeys on Foot' guidelines by the Institution of Highways and Transportation (IHT) suggest the following walking distances shown in **Table 9.1** for commuting / travelling to school or sight-seeing and elsewhere:

Destination	Desirable	Acceptable	Preferred Maximum
Commuting / School / Sight-seeing	500m (6 minutes)	1,000m (12 minutes)	2,000m (25 minutes)
Elsewhere	400m	800m	1,200m
Shopping			1,000m

Table 9.1: Suggested Acceptable Walking Distance

9.3 As shown in **Figure 9.1**, and based on a walking speed of 1.4 m/sec or just over 5.0 km/h, the following facilities shown in **Table 9.2** are within 25 minutes' walk from the site:

Service / Facility	Walking Distance		IHT Guidance	Walk Times @ 1.4 m/s	
	North	South		North	South
Alphington Primary School	1,350m	1,920m	2km	16 mins	23 mins
Alphington Village Hall	1,200m	-	1.2km	14 mins	-
Ide Lane Doctors Surgery	1,200m	-	1.2km	14 mins	-
Alphington Pharmacy	1,200m	-	1.2km	14 mins	-
Matford Dental Centre	1,500m	1,350m	1.2km	18 mins	16 mins
Post Office	1,500m	-	1.2km	18 mins	-
Devon Hotel and Carriages Brasserie	890m	730m	1.2km	11 mins	9 mins
Church (St Michael & All Angels)	1,100m	-	1.2km	13 mins	-
Lidl Supermarket	1,500m	-	1km	18 mins	-
Spar Convenience Store	1,200m	-	1km	14 mins	-
Parr's Farm Country Store inc. Butchers	1,100m	900m	1km	13 mins	11 mins

Table 9.2: Walking Distances to and from the Proposed Development Site

9.4 The table identifies that the majority of day to day services and facilities are available within the maximum acceptable walking distance of the site according to IHT guidelines. The topography of the area is also generally flat so walking journeys to and from the town centre destinations are likely to be a genuine travel choice for many potential residents.

9.5 Journeys on foot to the north, therefore Alphington Village require the use of Chudleigh Road which currently does not have street lighting for the entirety of its length. It is expected that as part of the SWEUE development that the both the pedestrian facilities and the street lighting will be considerably improved.

9.6 Journeys in the direction of Devon Hotel and Marsh Barton have the benefit of an established footway network which is well lit although generally alongside reasonably fast moving traffic. The proposed development would look to offer an alternative dedicated route within the site along its frontage.

9.7 As previously stated, the proposed local centre within the site is likely to offer key facilities within an easy walking distance to many of the residents of the Matford Barton development.

9.8 In summary the site is considered to be accessible on foot for local trips to the village centre and beyond. The development itself will be designed to include high quality pedestrian routes throughout that link through to the existing off-site routes.

Cycling Accessibility

9.9 Given the above distances to key day to day services and facilities, the application site is also considered to offer good access by bicycle.

9.10 The Department of Transport (DfT) Local Transport Note 2/08 Cycle Infrastructure Design (October 2008) suggests that a trip distance of over five miles is not uncommon.

"1.5.1 Urban networks are primarily for local journeys. In common with other modes, many utility cycle journeys are under three miles (ECF, 1998), although, for commuter journeys, a trip distance of over five miles is not uncommon. Novice and occasional leisure cyclists will cycle longer distances where the cycle ride is the primary purpose of their journey. A round trip on a waymarked leisure route could easily involve distances of 20 to 30 miles. Experienced cyclists will often be prepared to cycle longer distances for whatever journey purpose."

9.11 The Department for Transport outlines an average cycle speed on level ground of 18kph (5 metres per second).

9.12 Assuming a slightly lower speed of 12kph (3.3 metres per second) accounting for local topography, a 10 minute (1,980m) cycling distance from the proposed development would cover a large part of Exeter and the adjoining countryside.

9.13 Local Transport Plan 3 (2011 – 2026) states the vision of making Devon the Country's leading cycling county. The key priorities identified to help deliver this vision for cycling in Devon that are relevant to TDC and the proposed development site include:

- Provision of a high quality accessible, cycle route network;
- Provision of comprehensive information on cycling;
- Inspiring the take up of cycling by promoting its benefits;
- Provision of recognised cycle training for all age groups and levels of ability;
- Enhancing cycling safety and tolerance amongst all road users; and
- Provision of improved facilities for cyclists.

9.14 The village of Alphington provides access to key services such as a doctor's surgery and pharmacy whilst Marsh Barton provides further access to a dentist and bank.

10 SUMMARY AND CONCLUSIONS

10.1 In summary, this report has demonstrated the following:

- The site is well positioned in relation to the local highway network;
- The site is well located to existing footways providing links towards the village centre of Alphington and the employment area of Marsh Barton;
- The development will comprise of at least 1,350 residential units, a local centre with community facilities and low level retail, a primary school and potentially a secondary school;
- The site will be accessed via three signal controlled junctions from the A379, two simple priority junctions from Chudleigh Road and a minor priority junction with Dawlish Road;
- The development will seek to provide a number of combined walking and cycling routes through the different elements of the site and look to retain the Public Right of Way located to the west of the development site;
- The impact assessment of the development demonstrates that the site access junctions will operate within capacity;
- The development will provide a suitable level of contribution towards off-site junction improvements if considered necessary;
- The development will contribute to a package of measures that will positively deliver a modal shift away from the use of the private car;
- The development of the site will provide facilities to encourage sustainable modes of travel. This includes providing pedestrian access to existing footpaths surrounding the site; and conforming to DCC standards on parking for cycles;
- The development will also contribute towards the provision of a pedestrian / cycle bridge that will cross the A379 linking both the northern and southern elements of the site;
- In light of the proposed package of measures that will be introduced to provide public transport for the development, the site will be well located for sustainable travel to local facilities and services.

10.2 We conclude that the site is suitable for residential development together with the educational facility proposed and that there are no transportation reasons as to why the site should not be developed as proposed.

FIGURES