



**Berry Farm, Bursledon**  
Transport Assessment for 166 Dwellings

May 2015  
Barratt Homes

**PB** paulbasham  
ASSOCIATES  
[www.paulbashamassociates.com](http://www.paulbashamassociates.com)

**RESIDENTIAL DEVELOPMENT  
BERRY FARM, BURSLEDON**

**TRANSPORT ASSESSMENT**

**CONTROLLED DOCUMENT**

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<i>Prepared by:</i>	Jessica Lloyd		May 2015
<i>Checked:</i>	Mark Smith		May 2015
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**Barratt Homes**  
Tollbar House  
Tollbar Way  
Hedge End  
Southampton  
SO30 2UH

**Paul Basham Associates Ltd**  
Lancaster Court  
8 Barnes Wallis Road  
Segensworth  
Fareham  
PO15 5TU

# RESIDENTIAL DEVELOPMENT BERRY FARM, BURSLEDON

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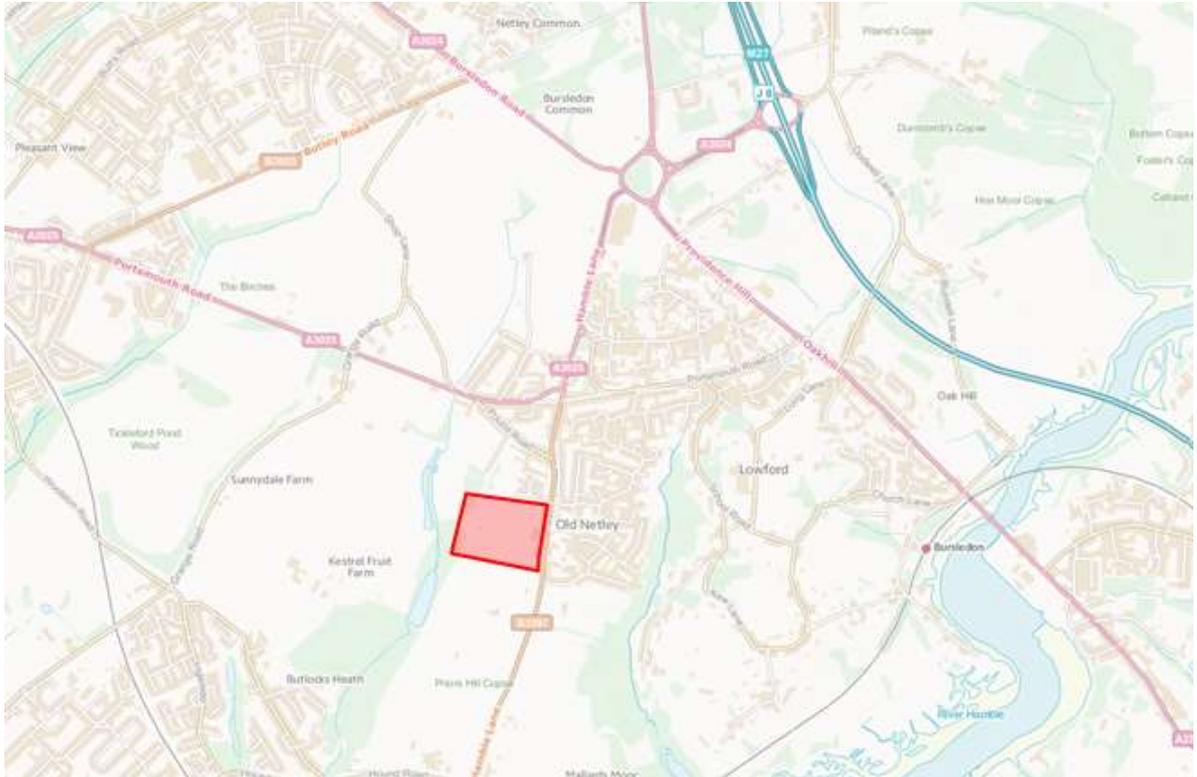
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## 1. INTRODUCTION AND SITE HISTORY

- 1.1 This Transport Assessment (TA) has been prepared by Paul Basham Associates on behalf of Barratt Homes to support a full planning application for the residential redevelopment of Berry Farm, Hamble Lane, Bursledon. The site location is outlined in **Figure 1**.



**Figure 1: Site Location**

- 1.2 The proposed development comprises 166 dwellings with 40% proposed for affordable housing ownership. The site is well located within close proximity of three suburbs; Hamble, Lowford and Bursledon. The site layout is included as **Appendix A**.
- 1.3 The application site has a history of farm use, as demonstrated within **Photograph 1**, with various uses at present including caravan storage and diversified buildings used for storage.



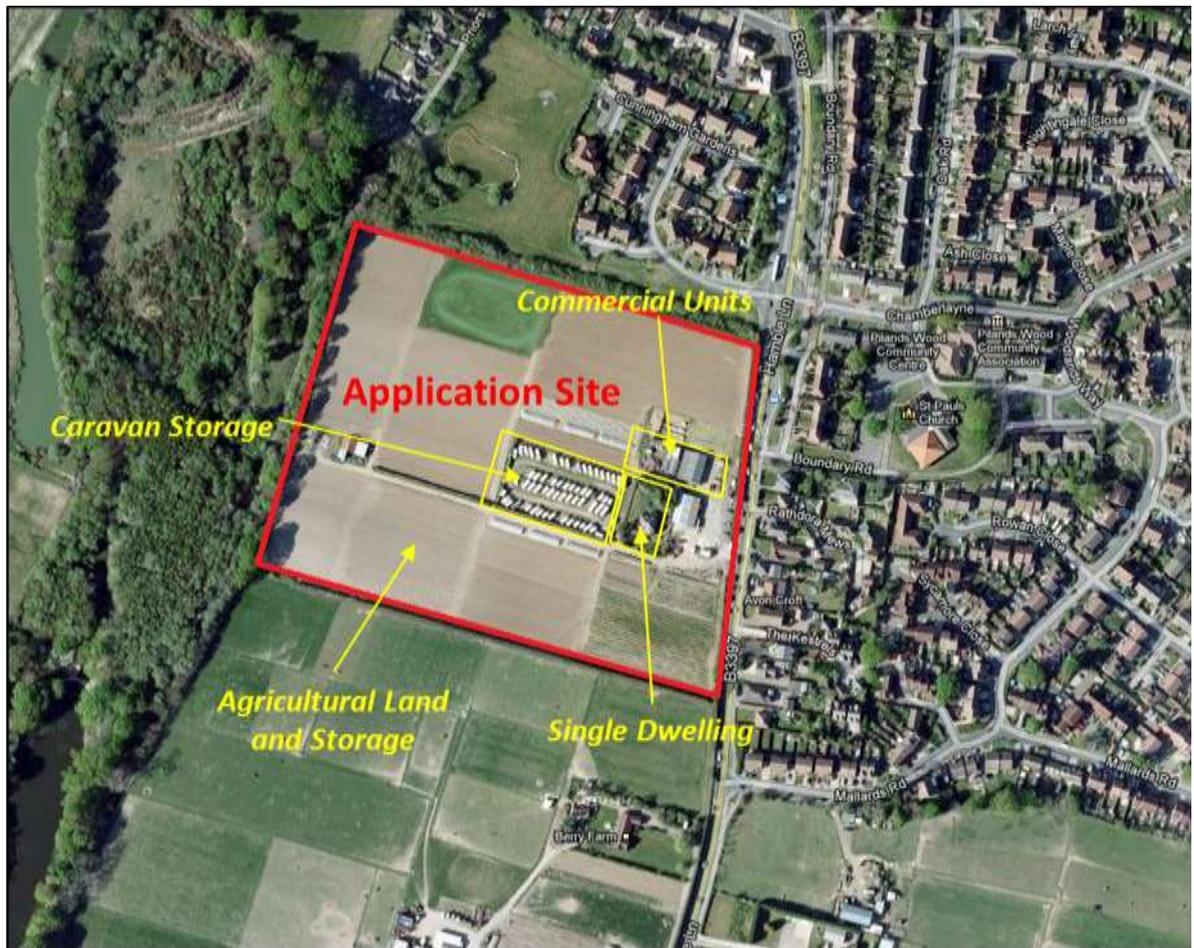
**Photograph 1:** Existing Site Conditions

- 1.4 The scope of this reflects the principles of the recently withdrawn DfT's 'Guidance on Transport Assessments' (March 2007), reviewing planning history, site accessibility, Personal Injury Accident (PIA) data, the proposed accommodation schedule, car and cycle parking requirements, visibility and access arrangements, trip assessments, traffic impact and capacity assessment on the local road network (LRN), explores design solutions and draws conclusions from the overall assessment.
- 1.5 The highways matters addressed within this TA have been informed by pre-application discussions with Hampshire County Council (HCC) Highways, Eastleigh Borough Council (EBC) highways and through attendance at local public consultations.
- 1.6 A Travel Plan has been prepared as part of the planning application and in conjunction with this TA, which seeks to promote the use of sustainable transport modes, through providing a package of measures, detailed action plan and related travel modal shift targets.
- 1.7 A previous application for 150 units by Taylor Wimpey (TW) (ref. O/12/71828) on land 500m north of Berry Farm and accessed from Hamble Lane has been consented through appeal in April 2014 (*Land West of Hamble Lane*). The Taylor Wimpey application has been considered in detail by PBA, in particular reviewing the detailed network modelling and highway capacity assessments prepared by Mott MacDonald.

- 1.8 An application was also made by Hallam Land at land adjacent to Hamble Railway Station (ref. O/13/73479), which provides baseline 2013 turning counts to inform the capacity assessment performed with this application. This site, (*'Hamble Station'*) although refused and currently at appeal, is considered as 'committed development' for the purpose of this TA at the request of HCC, which will represent a 'worst case' scenario for traffic modelling on the Hamble Lane corridor.
- 1.9 Berry Farm was previously subject to a planning application (ref: O/14/73948) for 125 residential dwellings and a 70 dwelling/100 bed extra care nursing home. No highways objection to the traffic impact of this scheme was received (subject to mitigation works) and the Hamble Lane corridor was modelled with the Taylor Wimpey '*Land West of Hamble Lane*' and Hallam Land '*Hamble Station*' developments included as a sensitivity test. This scheme is here after referred to as the 'approved scheme', and although refused for wider planning reasons and was subject to an appeal, this appeal has now been withdrawn and every effort is being made to work with EBC on this new 166 dwelling scheme.
- 1.10 A pre-application Highways Statement (HS) was prepared by PBA in February 2015 which considered the traffic impacts of this revised scheme (relative to the approved scheme) on the local road network. This included updated peak period flows and re-run traffic models, and incorporated the two aforementioned 'committed' developments (Taylor Wimpey and Hallam Land). The HS summarised the revised scheme in terms of impacts on capacity and queue lengths at each junction relative to the 'approved scheme'. HCC did not raise an objection to the principle of the revised scheme.

## 2. EXISTING LOCAL CONDITIONS

2.1 The application site is presently occupied by Berry Farm which is landlocked to the north, west and south. As such, the existing site is served from the only location possible for vehicle access directly onto Hamble Lane (B3397). The site surroundings are demonstrated within **Figure 2**.



**Figure 2:** Site Context

- 2.2 The existing mixed-use site comprises; agricultural land and storage, caravan storage for 70 caravans, small commercial units and residential use (1 dwelling). The existing farm access is located centrally along the site frontage and takes the form of a circa 12m break in the boundary hedge leading into a large concrete surface parking and turning area within the site.
- 2.3 The existing site access exhibits relatively good visibility conditions due to Hamble Lane's straight carriageway alignment and verges in the proximity of the access. The existing site and access arrangements are demonstrated in **Photograph 2**.



**Photograph 2:** Existing Site and Access Arrangements

2.4 Hamble Lane has a wide carriageway of 6m and is subject to a 30mph speed restriction in the vicinity of the site's access. There are no parking restrictions present in the immediate vicinity of the site, however the adjacent properties' provision of off-street parking facilities mean that on street parking is neither required nor desirable and has not been observed during an extensive number of site visits. There are no footways provided on the development (western) side of Hamble Lane, however a 3m footway/cycleway flanks the opposite side of the carriageway. Hamble Lane and its highways features are demonstrated in **Photograph 2** and **3**.



**Photograph 3:** Hamble Lane

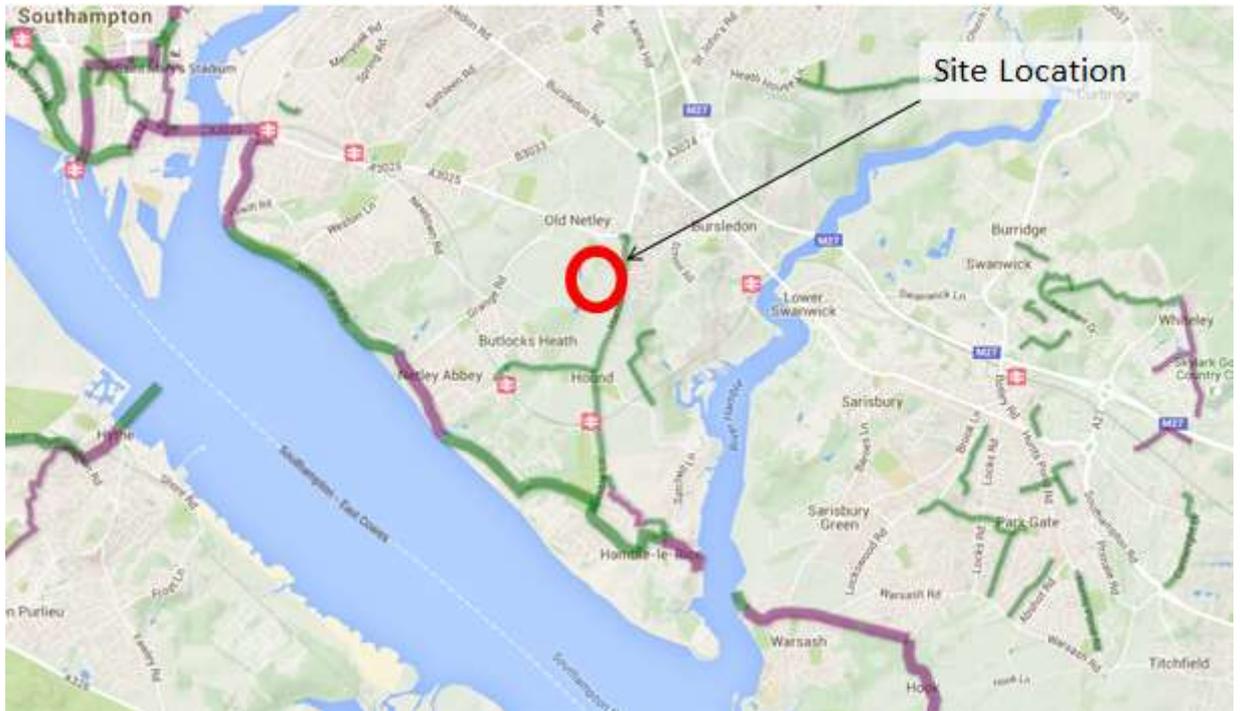
2.5 Hamble Lane exhibits relatively heavy traffic during AM and PM peaks across the site frontage, serving as the primary route between the M27 and the Hamble peninsula, providing access to the villages of Hamble-le-Rice and Netley.

#### **Accessibility**

2.6 The application site is located to the west of Hamble Lane, adjacent to the residential area of Bursledon and 700m south-west of Lowford, presenting a good opportunity to support sustainable development with its close proximity to local amenities and pedestrian and cycle networks (including local shops off Chamberlayne Road). A primary regional bus service utilises bus stops located within a 4 minute walking distance of the site which is also within 1.4km (approximately 17 minute walk, 5 minute cycle) of Hamble Railway Station. Local accessibility in relation to the proposed development site is included as **Appendix B**.

#### **Walking and Cycling**

- 2.7 The local footway network is of level topography and provides continuous pedestrian and cycling links to the local facilities and amenities identified within **Appendix B**. The signal-controlled junction to the north of Berry Farm (Hamble Lane/Chamberlayne Road/Cunningham Gardens) incorporates pedestrian phasing with call buttons to assist the safe movement of pedestrians across the roads close to the site.
- 2.8 Local cycle travel is supported through an increasing network of dedicated off-road (green) and on-road cycle (purple) routes, which connect the application site identified in **Figure 3**.



**Figure 3:** National Cycle Network Map (Sustrans)

- 2.9 EBC are currently implementing an improved cycle route to the north of the site from Bursledon Road to Providence Hill, providing future potential for improved cycle networks to the area.
- 2.10 The site is bordered by 2 Public Rights of Way (PROW), numbers 13 and 503, which provide safe and convenient routes to bus services and towards Hamble Village Centre. These paths are identified in **Figure 4**.

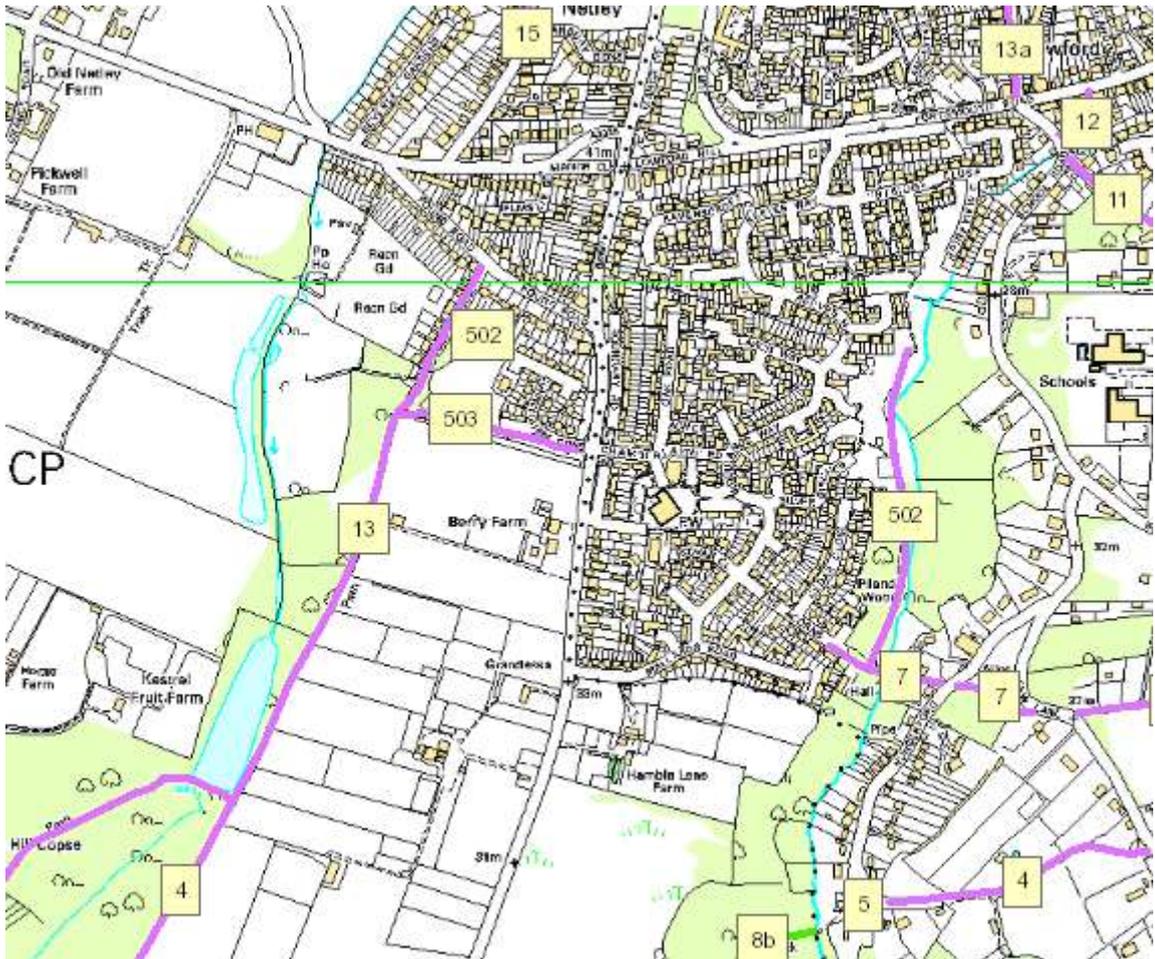


Figure 4: Hampshire Public Rights of Way

### Bus Services

2.11 The proposed development site benefits from good access to local bus stops and services, covered by 3 operators: First Hampshire, Brijan and XelaBus, a summary of which is provided in **Table 1**. The X4 and X5 bus services are BREEAM compliant transport nodes with a suitable level of frequency of services at peak and off peak times.

Bus Stop	Service Number	Route	Operator	Frequency		
				Mon - Fri	Saturday	Sunday
Priors Hill Lane	X4	Southampton – Fareham – Portsmouth	First Hampshire	Every 30 mins	Every 30 mins	Hourly
Priors Hill Lane	X5	Southampton – Fareham – Gosport	First Hampshire	Every 30 mins	Every 30 mins	Hourly
Chamberlayne Road	15	Hamble – Netley – Bursledon – Hedge End	Brijan	Every 2 hours Monday, Wednesday and Friday	No Service	No Service

				Only		
Chamberlayne Road	X56	Hamble - Eastleigh	XelaBus	Thursday ONLY ( 09:39, 11:39 and 13:39)		
Chamberlayne Road	405*	Hamble – Bursledon – Barton Peverill College	XelaBus	07:24	No Service	No Service
Chamberlayne Road	406*	Hamble – Bitterne - Eastleigh	XelaBus	09:03	No Service	No Service
Chamberlayne Road	542/543*	Park Gate – Sarisbury Green – Hamble Sports College	Lucketts Travel	14:43 and 15:03	No Service	No Service

**Table 1:** Summary of Local Bus Services  
\*School/College Services ONLY

2.12 The closest BREEAM compliant bus stop is the ‘Chamberlayne Road’ bus stop which is located within 1 minute walking distance of the site on Hamble Lane. The bus stop is equipped with a bus layby and shelter on both the north and southbound bus stops (see **Photographs 4 and 5**).



**Photograph 4:** Chamberlayne Road bus stop (Northbound)



**Photograph 5:** Chamberlayne Road bus stop (Southbound)

2.13 A further stop; ‘Priors Hill Lane’ can be reached within 4 minute’s walk (either by Hamble Lane or Public Footpath 13 and 502) which accesses further services mentioned above. This bus stop is within a 550m walking distance which is BREEAM communities compliant.

2.14 The frequency and range of bus services provided from the aforementioned services provide an attractive option for residents commuting and/or leisure purpose.

### **Rail**

2.15 The nearest railway station to this site is Hamble Railway Station which is approximately 1.4km south of the proposed development site. Based on an average walking speed of 80m per minute ('Guidelines for Providing Journeys on Foot', 2000 from The Chartered Institution of Highways and Transportation) this journey would take 17 minutes by foot. The location of Hamble Railway Station is demonstrated within **Appendix B**.

2.16 Hamble Railway Station is equipped with cycle storage, step-free access, customer help points and CCTV, Hamble is a well serviced, secure and attractive railway station maintained by South West Trains. Hamble Station and some of its facilities are shown in **Photograph 6**.



**Photograph 6:** Hamble Railway Station

2.17 Hamble Railway Station provides access to hourly services running between Southampton to Portsmouth Harbour, with these stations providing connections with other destinations further afield. Journey times to Southampton take 20 minutes and to Portsmouth the commute takes 40 minutes. Full details on service timings and station facilities are available at [www.nationalrail.co.uk](http://www.nationalrail.co.uk).

### Local Road Network

2.18 As previously identified Hamble Lane serves as the primary route to/from the Hamble peninsular, providing access to Hamble-Le-Rice and Netley. The Windhover Roundabout at the northern end of Hamble Lane provides connections to major strategic routes such as M27 Junction 8, the A27 east and west bound, and Bursledon Road (A3024).

2.19 Between Berry Farm and Windhover Roundabout, there are 6 significant junctions, which have been discussed with HCC highways as necessary for consideration within this TA:

- The Proposed Development Access
- Cunningham Gardens/Chamberlayne Road/Hamble Lane Signalised Crossroads
- Portsmouth Road/Hamble Lane T-junction
- Lowford Roundabout Junction
- Tesco Roundabout
- Windhover Roundabout

2.20 Traffic flow data for these junctions has been collected from the 2013 baseline traffic surveys conducted by Hallam Land, submitted as part of their '*Hamble Station*' application. Additional surveys were conducted where baseline traffic data was not available. The baseline traffic flow network is discussed in greater detail within subsequent sections of this TA.

### Personal Injury Accident Data

2.21 Personal Injury Accident (PIA) data has been assessed to consider the existing safety situation of the LRN. Patterns displayed within this data can be assessed with regards to the proximity, frequency and severity of incidents that have occurred which may require further consideration. As with the previous application, the PIA data has been collected for a period of 3 years from January 2010 to December 2012 and includes Portsmouth Road (A3025), Pound Road, Hamble Lane, Cunningham Gardens and Chamberlayne Road.

2.22 There have been a total of 18 PIAs on the LRN during that time with 1 fatal incident occurring, 4 'serious' incidents, and 13 'slight' incidents. The distribution of the incidents suggests a cluster in the vicinity of the Hamble Lane/Portsmouth Road junction although with a mix of causes and casualties. The distribution and severity of PIA incidents on the LRN is demonstrated in **Figure 5**.

2.23 As previously requested by HCC, further detail into the PIAs recorded between 2010 and 2012 has been completed in **Figure 5**. The PIA reports are attached as **Appendix C**.

2.24 Of the PIAs recorded, 3 resulted in pedestrian injuries, with two occurring at the toucan crossing close to the Portsmouth Road junction (one 'slight', one fatal) and one 'slight' occurring in proximity to the site access. All other PIAs resulted in injury to either car or motorcycle users. These incidents primarily appear to be related to highway design.

2.25 There is no accident history at the current site access; however the design of the new access (explained in more detail below) has been subject to a Stage 1 Road Safety Audit to ensure the design is compliant. For BREEAM purposes, an accident target will be set at the site access which will be to see no increase in traffic accidents given that the current site access has no accident history.

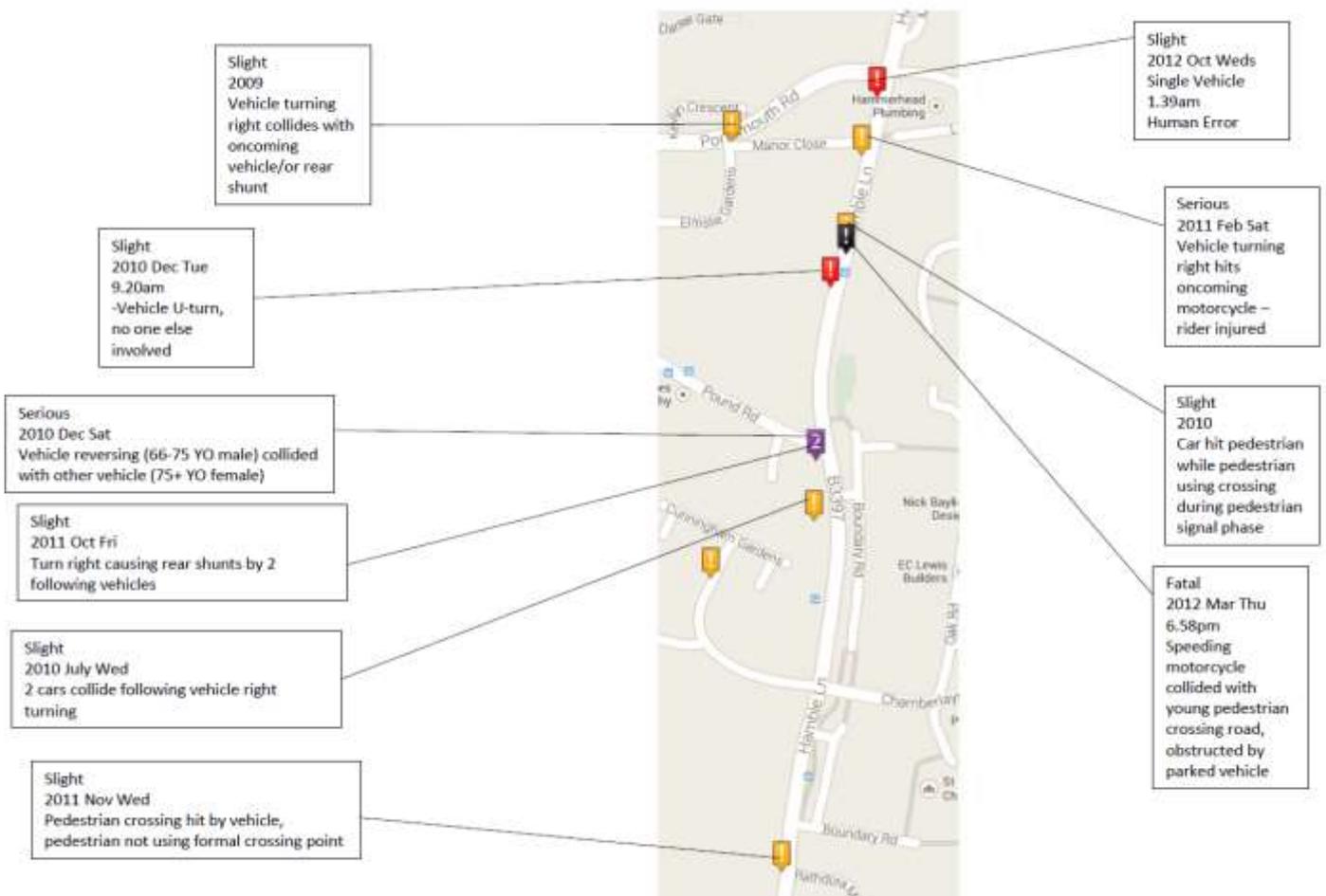


Figure 5: PIA Incidents January 2010-December 2012

2.26 Pedestrian crossing counts were undertaken between 7:30am and 9:00am on the morning of the 7<sup>th</sup> November 2013 to consider the extent of crossing demand at the existing signal crossing. This survey demonstrated the crossing as operating within capacity and able to accommodate pedestrian demand to ensure pedestrians can cross the signalised crossing on Hamble Lane safely. Therefore pedestrians are well catered for in the immediate vicinity of the site. As previously requested by HCC, the raw data from the survey is attached as **Appendix D**.

2.27 The principle of the accessibility of the site and the baseline local road network conditions was agreed with HCC through the previous application on this site.

## National Planning Policy

2.28 Adopted 1st April 2012, the National Planning Policy Framework (NPPF) acts as the central guidance for development planning and replaces all national planning policy guidance including Planning Policy Guidance 13 (PPG13): Transport.

2.29 Designed to make the planning system less complex and more accessible, The Framework gives greater responsibility to Local Authorities, a 'presumption in favour of sustainable development', and encourages local planning authorities to 'positively seek' opportunities to meet the development needs of their area.

2.30 The NPPF paragraph 32 states:

'All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:

- *the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;*
- *safe and suitable access to the site can be achieved for all people; and*
- *Improvements can be undertaken within the transport network that costs effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe'.*

2.31 This TA and accompanying Travel Plan accord with these principles. The NPPF also cites the following as key considerations with regards to transport and development planning to which this proposal's highway approach adheres:

- The development gives priority to pedestrian and cycle movements, and has access to high quality public transport facilities
- The development has a safe and secure layout which minimises conflicts between traffic and cyclists or pedestrians, avoids street clutter and, where appropriate, establishes home zones
- The development considers the needs of people with disabilities

### 3. DEVELOPMENT PROPOSALS

#### Accommodation Schedule

- 3.1 The proposed development would consist of 166 units with a mix of 40% affordable housing and 60% private. A summary of the accommodation schedule is provided within **Table 2**, whilst the proposed development site layout is included as **Appendix A**.

Unit Type	Number of Dwellings
<b>Private</b>	
2 Bed Flat	11
2 Bed Bungalow	3
2 Bed Coach House	4
2 Bed House	13
3 Bed House	55
4 Bed House	14
<b>Affordable</b>	
1 Bed Maisonette	2
2 Bed Flat	14
2 Bed Coach House	4
2 Bed Wheelchair	1
2 Bed House	26
3 Bed House	17
4 Bed House	2
<b>TOTAL</b>	<b>166</b>

**Table 2:** Accommodation Schedule

### **Access Arrangements**

- 3.2 The site would be served by a single access point onto Hamble Lane, broadly using the existing site access location. The junction would take the form of a bellmouth supported by a right turn lane. The bellmouth access would measure 5.5m in width supported by 9m corner radii, allowing two vehicles to pass when concurrently turning in and out of the access and would allow large service vehicles to safely enter the site. The access would be constructed to HCC adoptable standards. The proposed access arrangement is demonstrated in **Appendix E**.
- 3.3 Given the existing traffic volumes on Hamble Lane established through traffic count surveys, and anticipated trip generation from the proposed development being in excess of 300 movements per day, a right turn lane is proposed to support the site access in accordance with Design Manual for Roads and Bridges (DMRB) TD42/95 guidance.
- 3.4 The right turn lane would ensure no obstruction to the free flow of traffic on Hamble Lane southbound should a vehicle be waiting to turn right into the development. The right turn lane would be supported by a proposed 2.4m pedestrian refuge crossing at each end to link the development with the existing footway/cycleway network on the eastern side of Hamble Lane.
- 3.5 The proposed ghost island right turn lane incorporates the following design geometries based on TD42/95 guidance, with a design speed of 70kmph (43.75mph):
- Through Lane Width = 3.3m (TD42/95 para. 7.20)
  - Taper Ratio = 1:20 (TD42/95 Table 7/3)
  - Turning Length = 10m (TD42/95 para. 7.32)
  - Direct Taper Length = 5m (TD42/95 Table 7/4)
  - Turning Lane Width = 3m (TD42/95 para. 7.35)
  - Deceleration Length = 25m (TD42/95 Table 7/5a)
- 3.6 A one day (2<sup>nd</sup> April 2014) speed survey, located in the vicinity of the proposed site access between the existing Berry Farm access and Boundary Road was completed as part of the previous application's Addendum Transport Assessment (Ref: 041.0003/ATA2). The results of the survey are attached in full as **Appendix F**, with a summary of the speeds and therefore visibility splay requirements is provided within **Table 3**. Calculation of stopping sight distances (SSD) are based on wet weather speed conditions and so these speeds can be adjusted accordingly to reflect wet weather conditions by a 2.5mph reduction (DMRB TA22/81, paragraph 3.4), given the fine and dry conditions of 2<sup>nd</sup> April 2014.

	Mean	85 <sup>th</sup> %ile	Wet Weather 85 <sup>th</sup> %ile	Visibility Y-Distance
Northbound Direction	27.2mph	33.8mph	31.3mph	45.6m
Southbound Direction	29.2mph	34.6mph	32.1mph	47.2m

**Table 3:** Speed Survey Results and Visibility Splay Requirements

- 3.7 The access drawing therefore includes visibility splays of 2.4m x 45.6m to the north and 2.4m x 47.2m to the south, which is attached as **Appendix E** for reference. These visibility splays were confirmed as acceptable to HCC highways with the previous application.
- 3.8 In addition to the pedestrian refuges, pedestrian and cycle access to the site would be improved with a new footpath into the site from the northeast corner, which in turn links to the existing crossing at the signalised crossroads.
- 3.9 A third pedestrian access point would be provided from the northwest corner of the site linking with an existing public footpath (Hampshire PROW 13, see **Figure 4**) that runs parallel to Hamble Lane along the western boundary of the site. Access points and routes through the site would be well lit, direct and overlooked. The proposed footways and pedestrian crossings are demonstrated within the site layout (**Appendix A**).
- 3.10 An independent Stage 1 Road Safety Audit (RSA) was commissioned to assess the highway safety implications of the initial proposed access arrangements, with only one minor design issue noted, which was accepted and addressed by the designer's response, attached as **Appendix G**.
- 3.11 The access design and ghost island right turn lane was confirmed as acceptable in terms of highways in the last application on this site. Since this approval in principle, the pedestrian refuge islands have been increased in width from 2.1m to 2.4m to ensure a bicycle could sufficiently wait at the refuge, as per EBC pre-application comments.

#### **Internal Layout**

- 3.12 The internal carriageways would be designed to adoptable standards with the sections stemming from the access road, with the spine roads providing a 4.8m carriageway width supported by 2m footways in line with MfS guidance. The carriageway geometries would provide sufficient space for a car and larger vehicle (e.g. refuse vehicle) to pass.
- 3.13 The roads have been designed to accommodate the occasional Heavy Goods Vehicle (HGV's), such as refuse vehicles/emergency service/food home delivery etc.

- 3.14 As the internal roads move out towards the periphery of the site into quieter cul-de-sacs, shared-surface carriageways are proposed adopting 'home zone' principles with active property frontages. The geometries would accommodate the passing of 2 vehicles and allow cyclists and pedestrians to comfortably manoeuvre. The site layout is included as **Appendix A**.
- 3.15 In accordance with MfS design guidelines, all carriageway bends within the 'home zone' areas of the proposed internal site design would achieve the required inter-visibility for vehicles travelling up to 15mph within the site, supported by planting maintained below 600mm in height.
- 3.16 Traffic calming features would form part of the design to support the movement of all road users, including pinch-points and changes in surface materials to provide a clear indication of the change in environment from the spine roads.

#### **Servicing Arrangements**

- 3.17 Provision for servicing of the site is provided with adequate on-site turning facilities for refuse and emergency vehicles, therefore ensuring such vehicles can enter and exit the proposed development site in a forward gear. A vehicle tracking exercise demonstrating turning manoeuvres is attached as **Appendix H**.
- 3.18 Access to all dwellings can be achieved within 45m of the proposed units and would not require emergency vehicles to reverse more than 20m, in line with Building Regulation requirements.

#### **Parking**

- 3.19 Parking requirements have been identified from EBCs Car Parking Standards (Adopted 2009). The type and tenure has been considered when determining the level and design of the proposed site parking. An appropriate level of car parking provision is proposed with well-located parking spaces which discourage poor parking practice and a dominance of parked cars in the street scene. These standards are outlined in **Table 4**.

Unit Type	Quantum	Standard	TOTAL
1 Bedroom Unallocated	0	1.25	0
1 Bed On Plot	2	2	4
2/3 Bedroom Unallocated	14	1.75	24.5
2/3 Bedroom on Plot	134	2	268
4+ Bedroom Unallocated	0	2.25	0
4+ Bedroom On Plot	16	3	48
			<b>344.5</b>

**Table 4:** EBC Parking Standards

- 3.20 The proposed development intends to provide a total of 362 resident parking spaces, which 340 spaces will be allocated on plot, with 22 spaces unallocated. This will provide an average provision of 2.5 spaces per dwelling.
- 3.21 A minimum of 20% visitor parking is required by EBC. Based on the standard requirement of 340 resident spaces for the development, a further 68 spaces are required for visitors. Of this 20%, at least 0.2 per dwelling is required in formal parking spaces. This development proposes an additional 54 formal spaces, provided in the form of parallel parking bays off the local highway, leaving 15 spaces required informally. A plan identifying the locations of the 15 spaces is included as **Appendix I**.
- 3.22 Consultation has taken place between the local authority, highway authority, developer and through a public exhibition to achieve adequate parking numbers and design. Parking is integrated into the development without dominating the space and still ensures cycle, pedestrian and motor vehicle movement is not interfered. Parking is convenient and accessible to the plots they serve and overlooked by multiple dwellings.
- 3.23 Parking provision is in line with the site's previous application with a sufficient level of parking to accommodate resident and visitor demand.
- 3.24 Cycle parking would be provided as per EBC cycle standards and BREEAM Communities with at least 1 bicycle space per unit for flatted development, and 2 bicycle spaces for each house. Individual storage would be provided in properties with direct access to rear gardens. For the flats, cycle storage would be provided via a communal facility which would accommodate 1 space per unit.

3.25 In total 416 parking spaces would be provided for the development. 340 spaces would be allocated for the residents, 22 spaces unallocated for the residents, 54 formal visitor spaces and provision for 15 informal visitor spaces.

### Trip Assessment

3.26 This section of the TA assesses the likely vehicle trip generation associated with the proposed development compared to that of the existing site and the 'approved scenario'.

3.27 The development site's 'approved' application (for 125 residential dwellings and a 70 dwelling extra care nursing home) received no objection from Hampshire County Council (HCC) highways and the trip rates and junction modelling process have been agreed and considered applicable to this revised scheme.

3.28 The trip rates previously agreed were generated using the national system of trip generation analysis 'TRICS'. The trip rates generated were for sites of a comparable size, location and demographic. The TRICS criteria included private house and private flat developments in England and Wales (excluding Greater London), located within suburban, neighbourhood centre and edge of town locations and surveys only carried out on weekdays. The TRICS outputs are attached as **Appendix J**.

3.29 The peak period and daily trip rates and subsequent trip generation for the 'approved scheme' are outlined in **Table 5**. Three peak periods have been identified, AM peak 0800-0900, PM peak 1700-1800 and the network peak 1600-1700 (based on ATC surveys). It is prudent to highlight that these residential trip rates are substantially higher than those approved at appeal for the 'Land West of Hamble Lane' scheme and subsequently used for the 'Hamble Station' scheme.

TRICS	AM Peak (0800-0900)		Network PM Peak (1600-1700)		Residential PM Peak (1700-1800)		Daily Totals
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	
<i>Nursing Home Trip Rates per resident</i>	0.064	0.051	0.041	0.062	0.051	0.080	1.592
100 resident Care Home	6	5	4	6	5	8	159
<i>Trip Rate per Flat</i>	0.075	0.281	0.136	0.102	0.262	0.129	2.721
7 Flats	1	2	1	1	2	1	19
<i>Trip Rate Per Household</i>	0.162	0.425	0.325	0.196	0.402	0.238	5.413
118 dwellings	19	50	38	23	47	28	639
<b>Total</b>	<b>83</b>		<b>73</b>		<b>91</b>		<b>817</b>

**Table 5:** Approved Scheme Trip Generation

3.30 The peak period daily trip rates and subsequent trip generation for the revised scheme of 166 residential dwellings (including 131 houses and 35 flats/coach houses) with the three peak periods are illustrated in **Table 6**.

TRICS	AM Peak (0800-0900)		Network PM Peak (1600-1700)		Residential PM Peak (1700-1800)		Daily Totals
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	
<i>Trip Rate per Flat</i>	0.075	0.281	0.136	0.102	0.262	0.129	2.721
<i>35 Flats</i>	<b>3</b>	<b>10</b>	<b>5</b>	<b>4</b>	<b>9</b>	<b>5</b>	<b>95</b>
<i>Trip Rate Per Household</i>	0.162	0.425	0.325	0.196	0.402	0.238	5.413
131 dwellings	<b>21</b>	<b>56</b>	<b>43</b>	<b>26</b>	<b>53</b>	<b>31</b>	<b>709</b>
<b>Total</b>	<b>90</b>		<b>78</b>		<b>98</b>		<b>804</b>

**Table 6:** Revised (166 dwelling) Scheme Trip Generation

3.31 To assess the net impact on the local road network, the difference between the approved scheme and the revised scheme has been calculated. The results of this net change in displayed in **Table 7**.

TRICS	AM Peak (0800-0900)		Network PM Peak (1600-1700)		Residential PM Peak (1700-1800)		Daily Totals
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	
<i>Approved Scenario</i>	26	57	43	30	54	37	817
<i>Revised Scenario</i>	24	66	48	30	62	36	804
<i>Net difference</i>	-2	+9	+5	0	+8	-1	-13
<b>Net Total</b>	<b>+7</b>		<b>+5</b>		<b>+7</b>		<b>-13</b>

**Table 7:** Net Change in Trip Generation

3.32 The trip rate analysis of the revised 166 residential scheme compared to the 'approved scheme' indicates a likely net trip decrease of 13 daily vehicle trips per day with; 7 additional vehicle trips in the AM peak (0800-0900hrs), 5 additional vehicles during the network peak (1600-1700hrs) and 7 additional vehicle trips in the residential PM peak (1700-1800hrs).

3.33 The distribution of these trips across the local road network is in accordance with that found acceptable for the 'approved' scenario. The net change in traffic impact on the junctions modelled in the approved scheme is attached as **Appendix K**.

### Existing Trips

- 3.34 To establish the trip rates generated by the existing use as Berry Farm, the TRICS database could not be used as it does not provide representative criteria for the existing mixed use of the site. The trip generation has therefore been established based on information relating to each of the various uses.
- 3.35 The existing house would be expected to generate circa 5 trips per day, based on the trip rates identified within **Tables 5 and 6**.
- 3.36 The existing caravan storage facility has a capacity of 70 caravans which would generate 2 vehicle movements each time caravans are collected and 2 vehicle movements when returned (i.e. vehicle arrives to tow the caravan/return the caravan). Assuming that each caravan is used twice per year, 8 movements per caravan bay per year could be expected (560 trips per year). The majority of these trips would occur between April and September (6 months c.182 days) resulting in an average of roughly 3 trips per day in the spring and summer months.
- 3.37 Whilst the land at Berry Farm has not been extensively farmed in recent years, some farming does still occur (with polytunnels still present for year round farming); with other land and farm buildings used for storage and overnight parking for commercial vehicles (e.g. burger vans/farm vehicles). These uses may generate circa 12 vehicle trips per day.
- 3.38 A conservative estimate for the existing daily traffic flows is therefore anticipated to generate circa 20 vehicle trips per day (10 arrivals/10 departures), of which some would be larger vehicles (caravans, farm vehicles, commercial vehicles).
- 3.39 The trip rate analysis therefore indicates a likely net trip increase of 784 daily vehicle trips per day (with a reduction of 20 existing vehicle movements) when the current Berry Farm usage is compared with the revised scheme, with 90 additional vehicle trips in the AM peak (0800-0900hrs), 78 vehicles during the network peak (16:00-17:00hrs) and 98 vehicle trips in the residential PM peak (1700-1800hrs) presuming no existing peak period movements to present a 'worst case' scenario.
- 3.40 The distribution of these trips across the local road network and the associated junction modelling process has been agreed and considered applicable to this revised scheme (through the Highways Statement).

## 4. TRIP ASSIGNMENT AND MODELLING ASSESSMENT

### Trip Assignment

- 4.1 In order to establish the anticipated traffic distribution from the proposed development site, consideration has been paid to baseline traffic movements on the local road network, the distribution assessment submitted and approved with the Taylor Wimpey scheme, the distribution submitted with the Hamble Station Scheme and the relationship of the site to local areas of employment for commuter purposes.
- 4.2 Traffic distributions were submitted with the previous application, and were considered acceptable by HCC highways. The percentage distribution of development traffic through local junctions is identified within **Appendix L**. The raw survey data is included as **Appendix M**.
- 4.3 The scope of the junction assessment work has been informed by these traffic distributions and the quantum of traffic generated by the development during the network peak periods. An AM Peak of 08:00-09:00 has been assessed, and for robustness, both the network peak of 16:00-17:00 and 17:00-18:00 have been considered for the PM peak, based on the baseline traffic surveys undertaken and local resident comments raised at public consultations.
- 4.4 All baseline data has had TEMPRO growth factors applied as shown in **Table 8** (NTM adjusted AF09 – Hamble) to consider traffic increases on the local road network for a 2018 scenario. A baseline of 2018 remains consistent with the site's previous application and allows a direct comparison between the current scenario and 'approved scenario'. The resultant traffic distributions for scenarios including; 2018 baseline plus the committed development of the Taylor Wimpey and Hamble Station schemes, plus this development at Berry Farm during these periods are demonstrated in **Appendix N**.

	2012-2018		2013-2018	
	AM	PM	AM	PM
TEMPRO Growth Factor	1.0615	1.0668	1.0568	1.0612

**Table 8:** TEMPRO Growth Factors

- 4.5 As previously agreed with HCC, only 8% of development traffic is anticipated to travel to and from south of the site (towards Netley and Hamble), which equates to 6 AM peak hour trips, 6 (4-5PM) and 8 (5-6PM) peak hour trips. Such a modest increase in traffic is not considered to have a material or 'severe' impact on the operation of the Hamble Lane/Hound Road roundabout. This TA does therefore not assess the impact on this roundabout or junctions

further south as part of the network modelling assessment, as considered appropriate under NPPF guidance and agreed as part of the previous application.

- 4.6 Where the Taylor Wimpey '*Land West of Hamble Station*' and Hallam, Land's '*Hamble Station*' have not considered the impact of 4-5pm network peak period (traditional AM and PM peak periods only), and the actual TRICS outputs have not been present, we have applied the 'approved' 5-6pm peak period flows to the 4-5pm peak scenarios for all junction reviews, which is considered robust.
- 4.7 This TA does consider the traffic impact of the proposed development at six local junctions.
- The Proposed Development Access
  - Cunningham Gardens/Chamberlayne Road/Hamble Lane Signalised Crossroads
  - Portsmouth Road/Hamble Lane T-Junction
  - Lowford Roundabout
  - Tesco Roundabout
  - Windhover Roundabout
- 4.8 Baseline 2013 flows are available for Portsmouth Road/Hamble Lane, Lowford Roundabout and Tesco Roundabout, with independent traffic surveys commissioned in association with the Hallam Land '*Hamble Station*' application (O/13/73479). An additional 2013 turning count survey has been commissioned by PBA for the Cunningham Gardens/Chamberlayne Road/Hamble Lane Crossroads (with traffic signal phasing timings obtained direct from HCC's ITS team).
- 4.9 Further to this, a pedestrian count was undertaken by PBA at the pedestrian crossing approximately 45m south of the Portsmouth Road/Hamble Lane T-junction to inform the modelling process and estimate its impact on queue lengths and delays (See [Appendix D](#)).
- 4.10 An impact assessment of the Berry Farm development on Windhover Roundabout was requested by HCC through a second consultation response dated 23<sup>rd</sup> April 2014 in accordance with application O/14/73948. PBA completed an Additional Highways Note to address the impact at Windhover Roundabout. PBA secured access to HCC's approved junction model of Windhover Roundabout, which was prepared in association with their planned improvement works at this junction. This model included 2011 traffic count data which has been increased to 2014 levels, through application of a growth factor. These HCC-prepared 2014 flows were used as a baseline for the following analysis. The Windhover Roundabout has been assessed subsequently in this TA.

### Modelling Process

- 4.11 Based on the 8-9AM, 4-5PM and 5-6PM peak network models, each of the six identified junctions has been modelled to gauge the traffic impact associated with the proposed development during peak network traffic periods.
- 4.12 The assessment has been completed in relation to this developments trip generations and the trip generations associated with 2 'committed developments'; at Taylor Wimpey's '*Land West of Hamble Lane*' (TW) and Hallam Land's '*Hamble Station*' (HS).
- 4.13 As previously mentioned, a baseline of 2018 has been used which is consistent with the sites previous application and allows for a direct comparison of the 'approved scheme' with the 'revised scheme'. Therefore the 3 modelling scenarios comprise the following:
- AM 0800-0900 2018 Baseline plus Taylor Wimpey '*Land West of Hamble Lane*', plus Hallam Land '*Hamble Station*' plus Berry Farm
  - PM 1600-1700 2018 Baseline plus Taylor Wimpey '*Land West of Hamble Lane*', plus Hallam Land '*Hamble Station*' plus Berry Farm
  - PM 1700-1800 2018 Baseline plus Taylor Wimpey '*Land West of Hamble Lane*', plus Hallam Land '*Hamble Station*' plus Berry Farm
- 4.14 Modelling has been completed using ARCADY (for roundabouts), PICADY (for T-junctions) and LINSIG (for the signalised junction). The outputs for each model provide a ratio of flow to capacity (RFC) or degree of saturation for LINSIG outputs and maximum queue lengths associated with each stream (i.e. the arm of the junction). RFC values exceeding 0.85 or degree of saturation at 85% signify the point at which capacity is being approached and the potential to improve capacity should be explored, whilst RFC values of 1.00 or degree of saturation at 100% represent the junction operating at capacity. The FLAT profile has been used in ARCADY, due to the relatively constant levels of traffic on Hamble Lane through the peaks, and ODTAB in PICADY, as the best approximation of the nature of the traffic flows.
- 4.15 It is worth noting that the junction models consider each junction in isolation from one another, which can result in differences between the traffic congestion experienced in reality compared to model results. For example a subsequent junction may cause a tail back through a junction that is not actually over capacity. This is particularly salient in a scenario such as Hamble Lane where the junctions are in relatively close proximity to one another. The method used in this assessment is appropriate in that it provides identification of the junctions which are causing the restriction in flow and was approved through the previous application.

## Modelling Results

- 4.16 The modelling results will present the approved scheme results, and then the revised scheme results which have been run using the 2018 Base, plus Taylor Wimpey's 'Land West of Hamble Lane' and Hallam Land 'Hamble Station' plus Berry Farm development traffic flow based on 166 dwellings (flows attached as **Appendix N**).
- 4.17 The modelling results for each junction will display two tables, the first the 'approved scheme' results and the second the 'revised scheme' results, which again assists with a direct comparison.

### The Proposed Development Site Access/Hamble Lane Junction

- 4.18 As the site access design received no objection in the sites previous application the site access design remains the same, and therefore the modelling parameters used remain the same.
- 4.19 The approved 2018 scenario from the original December 2014 Transport Assessment (TA) is recreated here as **Table 9**, with the modelling outputs included as **Appendix O**.

	AM Peak (8-9am)		PM Peak (4-5pm)		PM Peak (5-6pm)	
	Queue	Deg Sat	Queue	Deg Sat	Queue	Deg Sat
<b>Baseline 2018 + Dev (TW + HS + BF) (Agreed through TA)</b>						
New Site Access to Hamble Lane N	0.17	0.15	0.13	0.11	0.19	0.16
New Site Access to Hamble Lane S	0.03	0.03	1.12	***	0.04	0.04
Hamble Lane N to S & Site Access	0.06	0.06	0.17	0.15	0.18	0.15

**Table 9:** Approved Scheme: Site Access

- 4.20 The approved modelled has been updated to reflect the revised scheme traffic flows and is demonstrated in **Table 10**, with the modelling outputs included as **Appendix O**.

	AM Peak (8-9am)		PM Peak (4-5pm)		PM Peak (5-6pm)	
	Queue	Deg Sat	Queue	Deg Sat	Queue	Deg Sat
<b>Baseline 2018 + Dev (TW + HS + BF)</b>						
New Site Access to Hamble Lane N	0.22	0.181	0.20	0.166	0.13	0.114
New Site Access to Hamble Lane S	0.06	0.053	1.12	***	0.06	0.060
Hamble Lane N to S & Site Access	0.06	0.06	0.21	0.175	0.21	0.173

**Table 10:** Revised Scheme: Site Access

- 4.21 The new development access performs well within capacity (see **Table 10**), in both the AM and PM peaks, although some difficulty may be experienced in those rare vehicles waiting to

turn right out of the access in the 1600-1700 peak. The design of the junction is such that vehicles turning left out of the site would not be obstructed by those vehicles waiting to turn right. Given that the maximum queue is 1.12 and 2 vehicles are affected over the hour, this is considered negligible. The highest RFCs are 0.18 (0800-0900) as vehicles leave the site. This will not adversely affect the through flow of traffic on Hamble Lane, because of the dedicated right turn lane.

4.22 There would be no discernable impact on the operation of the site access between the 'approved' scheme and revised scheme scenarios, with the RFC and max queue values still within capacity.

Cunningham Gardens/Chamberlayne Road/Hamble Lane Junction

4.23 The approved 2018 scenario from the April 2014 Additional Highways Note (AHN) is recreated here as **Table 11**, with the modelling outputs included as **Appendix P**.

	AM Peak (8-9am)		PM Peak (4-5pm)		PM Peak (5-6pm)	
	Queue	Deg Sat	Queue	Deg Sat	Queue	Deg Sat
<b>Baseline 2018 + Dev (TW + HS + BF) (Agreed through Additional HN)</b>						
Hamble Lane N	16.4	76%	19.6	72%	15.5	71%
Chamberlayne Road	5.2	72%	5.5	81%	5.2	78%
Hamble Lane S	15.6	75%	42.9	94%	22.4	83%
Cunningham Gardens	0.4	7%	0.3	6%	0.36	7%

**Table 11:** Approved Scheme: Cunningham Gardens Crossroads

4.24 The results are based on optimised signal timings, with the junction operating on a MOVA system which fluctuates phasing timings based on the volume of traffic on each arm of the junction, and only incorporates an all-red phase at times when the trigger button is pushed by a pedestrian.

4.25 Average signal timing data was sourced from HCC ITS department, which confirmed that 2 seconds is the accurate intergreen time for the 'dummy' red phase i.e. the intergreen time should no pedestrian press the crossing button. The intergreen time has therefore been extended to incorporate a 7 second intergreen from the Hamble Lane phase to the all-red pedestrian phase, and a 6 second intergreen from the all red pedestrian phase to the side arm traffic phase. This is as per the approved Additional Highways Note (Ref: 041.0003/AHN2).

4.26 The approved modelled has been updated to reflect the revised scheme traffic flows and is demonstrated in **Table 12**, with the modelling outputs included as **Appendix P**.

	AM Peak (8-9am)		PM Peak (4-5pm)		PM Peak (5-6pm)	
	Queue	Deg Sat	Queue	Deg Sat	Queue	Deg Sat
<b>Baseline 2018 + Dev (TW + HS + BF)</b>						
Hamble Lane N	16.7	76.4%	19.9	72.1%	15.9	71.3%
Chamberlayne Road	5.2	71.5%	5.5	81.2%	5.2	78.2%
Hamble Lane S	16.1	75.4%	42.9	93.9%	22.4	83.3%
Cunningham Gardens	0.4	6.7%	0.3	6.4%	0.3	7.4%

**Table 12:** Revised Scheme: Cunningham Gardens Crossroads

- 4.27 Anticipated queue lengths on Hamble Lane North are 20 vehicles (PCUs) in the busiest period at this junction (1600-1700) with committed and proposed development traffic added.
- 4.28 Hamble Lane South does experience greater queuing during this period of 1600-1700, with the Baseline 2018 plus all 3 developments, identifying a queue of 43 vehicles which does not differ from the previous 'approved scheme'.
- 4.29 The Cunningham Gardens Crossroads operates within capacity in the AM Peak, with 76.4% degree of saturation and 83.3% in the 1700-1800 PM Peak.
- 4.30 The 1600-1700 PM model demonstrates that the junction copes with the 2018 level of traffic, apart from the Hamble Lane S arm, where it is approaching saturation (0.94 RFC).
- 4.31 The conclusions drawn from **Table 12** demonstrate that the revised scheme for 166 residential dwellings would not result in material alterations to the approved scenario. The AM peak scenario (when most residential traffic would be heading north on Hamble Lane) remains within capacity and the RFC value of 93.9% on Hamble Lane S in the PM Peak (4-5pm) and a queue of 42.9 remains consistent with the values 'approved' in the Additional Highways Note of the 'Approved Scheme'.
- 4.32 As a result, the collective developments with a revised 166 residential dwelling scheme on Hamble Lane would not result in a 'severe' impact upon highway safety or the operation of this junction.

#### Portsmouth Road/Hamble Lane Proposed Roundabout Junction

- 4.33 Although currently existing as a T-Junction, the site's previous application (O/14/73948) Transport Assessment demonstrated this junction operated above capacity and mitigation was deemed necessary. As a result PBA designed a roundabout at this junction which provided a greater capacity and reduced queues and received no objection from highways. Therefore the model outputs below only refer to the roundabout design at Portsmouth Road/Hamble Lane as this design and mitigation will be brought forward with the revised scheme.

4.34 The approved scenario from the April 2014 Additional Highways Note including the introduction of the roundabout proposals is recreated here as **Table 13**, with the modelling outputs included as **Appendix Q**.

	AM Peak (8-9am)		PM Peak (4-5pm)	
	Queue	RFC	Queue	RFC
<b>Baseline 2018 + Dev (TW + HS + BF) (Agreed through Additional HN)</b>				
Hamble Lane North	11.42	0.93	2.57	0.72
Hamble Lane South	4.99	0.84	16.19	0.96
Portsmouth Road	2.08	0.68	3.09	0.76

**Table 13:** Approved Scheme: Portsmouth Road

4.35 The approved modelled has been updated to reflect the revised scheme traffic flows and is demonstrated in **Table 14**, with the modelling outputs included as **Appendix Q**.

	AM Peak (8-9am)		PM Peak (4-5pm)		PM Peak (5-6pm)	
	Queue	RFC	Queue	RFC	Queue	RFC
<b>Baseline 2018 + Dev (TW + HS + BF)</b>						
Hamble Lane North	11.33	0.9	2.6	0.72	4.11	0.81
Hamble Lane South	4.96	0.8	16.18	0.96	12.75	0.94
Portsmouth Road	2.07	0.6	3.09	0.76	2.79	0.74

**Table 14:** Revised Scheme: Portsmouth Road

4.36 The conclusions drawn from **Table 14** demonstrate that the impact of the revised scheme would not result in material alterations to the approved scenario, and would remain a marked improvement over the 'Do Nothing' scenario as presented in the Transport Assessment of the 'approved scheme' (Ref: O/14/73948 and 041.0003/TA1).

4.37 As a result, the revised scheme would not have a 'severe' impact upon highway safety or the operation of this junction.

#### Lowford Roundabout Junction

4.38 The approved scenario from the April 2014 Additional Highways Note is recreated here as **Table 15**, with the modelling outputs included as **Appendix R**.

	AM Peak (8-9am)		PM Peak (4-5pm)	
	Queue	RFC	Queue	RFC
<b>Baseline 2018 + Dev (TW + HS + BF) (Agreed through Additional HN)</b>				
Hamble Lane North	1.88	0.65	1.26	0.56
Jurd Way	1.16	0.54	0.55	0.36
Hamble Lane South	1.60	0.62	1.99	0.67
TW Access	0.20	0.17	0.10	0.09

**Table 15:** Approved Scheme: Lowford Roundabout

4.39 The approved model has been updated to reflect the revised scheme traffic flows and is demonstrated in **Table 16**, with the modelling outputs included as **Appendix R**.

	AM Peak (8-9am)		PM Peak (4-5pm)		PM Peak (5-6pm)	
	Queue	RFC	Queue	RFC	Queue	RFC
<b>Baseline 2018 + Dev (TW + HS + BF)</b>						
Hamble Lane North	1.88	0.6	1.27	0.56	1.81	0.65
Jurd Way	1.16	0.54	0.55	0.36	0.54	0.35
Hamble Lane South	1.62	0.62	1.99	0.67	1.84	0.65
TW Access	0.20	0.17	0.10	0.09	0.10	0.09

**Table 16:** Revised Scheme: Lowford Roundabout

4.40 The modelling outputs demonstrate the roundabout to be working well within capacity with the 2018 baseline plus committed development, with a maximum RFC value of 0.65 on the Hamble Lane South arm and the largest queue value of 2 vehicles.

4.41 The conclusions drawn from **Table 16** demonstrate that the further impact of the revised scheme would not result in material alterations to the approved scenario. As a result, the revised scheme is not considered to have a 'severe' impact upon highway safety or the operation of this junction.

#### Tesco Roundabout

4.42 The approved scenario from the April 2014 Additional Highways Note is recreated here as **Table 17**, with the modelling outputs included as **Appendix S**.

	AM Peak (8-9am)		PM Peak (4-5pm)	
	Queue	RFC	Queue	RFC
<b>Baseline 2018 + Dev (TW + HS + BF) (Agreed through Additional HN)</b>				
Hamble Lane North	1.84	0.65	1.22	0.55
Tesco Access	0.49	0.33	1.62	0.62
Hamble Lane South	1.78	0.64	2.06	0.67

**Table 17:** Approved Scheme: Tesco Roundabout

4.43 The approved model has been updated to reflect the revised scheme traffic flows and is demonstrated in **Table 18**, with the modelling outputs included as **Appendix S**.

	AM Peak (8-9am)		PM Peak (4-5pm)		PM Peak (5-6pm)	
	Queue	RFC	Queue	RFC	Queue	RFC
<b>Baseline 2018 + Dev (TW + HS + BF)</b>						
Hamble Lane North	1.83	0.65	1.23	0.55	1.51	0.60
Tesco Access	0.49	0.33	1.63	0.62	1.30	0.57
Hamble Lane South	2.33	0.70	2.06	0.67	1.79	0.64

**Table 18:** Revised Scheme: Tesco Roundabout

4.44 The modelling results for the Tesco Roundabout demonstrate the junction operating well within capacity, with a maximum RFC value of 0.7 and maximum queue length of 2.33 vehicles in the AM peak on the Hamble Lane South arm.

4.45 The conclusions drawn from **Table 18** demonstrate that the impact of the revised scheme would not result in material alterations to the approved scenario. As a result, the revised scheme is not considered to have a 'severe' impact upon highway safety or the operation of this junction.

#### Windhover Roundabout

4.46 As previously mentioned, the Windhover Roundabout was not modelled as part of the 'approved scheme' Transport Assessment, however this was completed as part of the Additional Highways Note (*Ref: 041.0003/AHN/2*). This was modelled using HCC's approved junction model and the results are outlined below. HCC accepted within their consultation response that the proposals at Berry Farm would result in an increase of traffic through the Windhover Roundabout, with an additional 48 vehicles in the AM peak, 22 vehicles in the 1600-1700 network peak, and 26 in the 1700-1800 PM peak.

4.47 The approved scenario from the April 2014 Additional Highways Note is recreated here as **Table 19**, with the modelling outputs included as **Appendix T**.

	AM Peak (8-9am)		PM Peak (5-6pm)	
	Mean Max Queue	Deg Sat (%)	Mean Max Queue	Deg Sat (%)
<b>Baseline 2018 + Dev (TW + HS + BF) (Agreed through Additional HN)</b>				
West End Road	24.8	97.5%	58.9	108.1%
A3024 Bursledon Road	85.6	104.4%	49.5	102.3%
A27 Providence Hill	5.7	92.2%	1.9	71.0%
A3025 Hamble Lane	41.9	103.4%	23.9	97.7%
A3024 Link to M27	45.2	100.7%	25.1	94.3%

**Table 19:** Approved Scheme: Windhover Roundabout

4.48 The approved modelled has been updated to reflect the revised scheme traffic flows and is demonstrated in **Table 20**, with the modelling outputs included as **Appendix T**.

	AM Peak (8-9am)		PM Peak (5-6pm)	
	Mean Max Queue	Deg Sat (%)	Mean Max Queue	Deg Sat (%)
<b>Baseline 2018 + Dev (TW + HS + BF)</b>				
West End Road	24.9	97.6%	60.5	108.5%
A3024 Bursledon Road	85.7	104.4%	49.4	102.3%
A27 Providence Hill	5.7	92.2%	2.0	71.1%
A3025 Hamble Lane	44.00	103.8%	23.4	97.5%
A3024 Link to M27	45.2	100.7%	25.2	94.5%

**Table 20:** Revised Scheme: Windhover Roundabout

- 4.49 As per our Additional Highways Note, the greatest development-related impact in the AM Peak remains on the Hamble Lane arm of the junction. The revised scheme would generate an additional 2 vehicles to the mean maximum queue (when compared with the approved scheme) which is not considered to have a material impact in terms of highways safety or material impact on capacity.
- 4.50 There is next-to-no impact on the other junction arms.
- 4.51 As a result of this Windhover Roundabout assessment, PBA acknowledge that the Berry Farm development (as well as '*Land West of Hamble Lane*' and '*Hamble Station*' developments) would have an impact upon the Windhover Roundabout junction. PBA do not however consider this impact to be '*severe*', but rather consider it comparable to that of the approved TW scheme. Accordingly, it is acknowledged that HCC will likely allocate a proportion of strategic transport contribution funds secured from the Berry Farm development to improving the Windhover Roundabout.
- 4.52 HCC are currently undertaking an improvement study on Windhover Roundabout and the Hamble Lane corridor. This development will support the findings of this study through the contribution of the strategic transport contribution secured through a Section 106.

### Summary

- 4.53 The modelling assessment reviewed the impact of this scheme (for 166 dwellings) against the modelling results of the 'approved scheme' (125 dwellings and a 70 unit/100 resident care home) which found there are no material changes to either the degrees of saturation, RFC values or queue lengths. Where HCC did not object to the 'approved scheme', and where the modelling results demonstrate no material alterations to the operational capacity of the junctions we would encourage HCC to look favourably upon this scheme.
- 4.54 Overall, the revised 166 residential dwellings scheme at Berry Farm, with the approved Taylor Wimpey development at '*Land West of Hamble Lane*' and the currently refused Hallam Land development at '*Hamble Station*', could be accommodated on the northern section of Hamble Lane provided the schemes collectively implement the suggested

improvements to the Portsmouth Road junction (as per our suggested design or comparable scheme which HCC may wish to implement) and the Lowford and Tesco roundabouts (conditioned to the Taylor Wimpey development approved plans).

## 5. THE PORTSMOUTH ROAD/HAMBLE LANE JUNCTION DESIGN SOLUTION

- 5.1 The TA included with the 'approved application' on this site (O/14/73948) assessed the impact of the proposed development at Berry Farm on the Portsmouth Road/Hamble Lane T-Junction. This assessment deemed the junction as over capacity prior to the addition of the development traffic with maximum RFC values of 1.10 (AM), 1.17 (5-6PM) and 1.25 (4-5PM) on the Hamble Lane North arm waiting to turn right or travel south.
- 5.2 To inform the extent of potential improvements which could be completed at this junction highway boundary mapping records from HCC have been obtained demonstrating the extent of public highway land in the vicinity of the junction. These records are attached as **Appendix U** for reference.
- 5.3 PBA initially considered two options to potentially improve capacity:
- Option 1
    - Realign Portsmouth Road on approach to Hamble Lane
    - Provide increased flair for northbound movements from Portsmouth Road
    - Extend right turn lane on Hamble Lane by 12m (2 PCU lengths)
    - Retain existing signal crossing
  - Option 2
    - Realign Portsmouth Road on approach to Hamble Lane
    - Provide increased flair for northbound movements from Portsmouth Road
    - Extend right turn lane on Hamble Lane by 30m (5 PCU lengths)
    - Replace existing signal crossing with a 2.4m wide refuge island
- 5.4 Both scenarios were modelled for the 2018 AM and PM peak periods, using the baseline traffic flows from the Hallam Lane '*Hamble Station*' application and incorporating the additional development traffic generated by Berry Farm. Whilst these improvements appeared to improve conditions on Portsmouth Road and Hamble Lane North, RFCs remained over capacity and queuing was still extensive.
- 5.5 Signalisation of the junction was not considered desirable, as this would create greater delay on Hamble Lane when the red-phase permitted Portsmouth Road traffic to exit.
- 5.6 PBA therefore considered a more significant alteration to the junction, in providing a 28m ICD roundabout so as to aid right turn movements into Portsmouth Road (giving this manoeuvre priority over Hamble Lane's northbound movements). This option, along with car and articulated lorry tracking is demonstrated within **Appendix V**. The pedestrian crossing would be retained based on observed crossing demand and traffic volume. An independent Stage 1 Road Safety Audit was commissioned for the proposed roundabout design, with the issues raised accepted in the designer's response, both of which are attached as **Appendix W**.

- 5.7 This junction design would significantly reduce RFCs and queue lengths across all scenarios, and whilst modelling outputs for the Baseline 2018 plus '*Land West of Hamble Lane*' plus '*Hamble Station*' plus Berry Farm scenarios are summarised in **Table 13** and **14**, the ARCADY model outputs are included in full as **Appendix Q**. It is not anticipated that the proposed development would increase the pedestrian movements for the crossing on the Hamble Lane South approach currently in existence, as a signalised pedestrian crossing exists much closer to the site at the Cunningham Gardens crossroads.
- 5.8 Implementation of a 28m ICD roundabout would act to significantly reduce queuing on the Portsmouth Road and Hamble Lane North arms of the junction, whilst resulting in only modest increases in queues on Hamble Lane South.
- 5.9 The improvement of the Portsmouth Road/Hamble Lane junction would also improve queuing issues at other junctions to the north, where southbound through traffic is restricted when right-turning traffic for Portsmouth Road extends beyond the right turn lane facility.
- 5.10 We therefore consider that the strategic benefit of implementing such a junction would significantly outweigh the impact of the proposed development on the LRN. Where HCC are already considering strategic improvements to the strategic northern section of the Hamble Lane corridor as part of their Windhover Roundabout study, the development at Berry Farm could significantly support the corridor by delivering the Portsmouth Road roundabout scheme.
- 5.11 The proposed roundabout design received no objection from highways with the previous application and the design has not fundamentally changed since the previous application other than removing the overrun area and increasing the central island diameter as per HCC request. Therefore this has been revised and included in **Appendix V**.

## 6. MULTIMODAL TRIPS & TRANSPORT CONTRIBUTIONS

- 6.1 In order to calculate the transport contributions payable in association with the proposed development, Hampshire County Council's Transport Contributions Policy (2007) has been consulted.
- 6.2 The calculation of the payable transport contribution is outlined in **Table 21**. This is marginally reduced due to the existing on-site trips, as stated in the Transport Contributions Policy: "Where a site has previous use, the net increase in multi-modal trips will be used to calculate the contribution," (paragraph 6.3, p.4).

		HCC Cost per unit/ (£)	Number of Units	Total Costs (£)
<b>Proposed</b>	1 Bed Dwelling	1980	2	3,960
	2-3 Bed Dwelling	3745	148	554,260
	4+ Bed Dwelling	5457	16	87,312
		<b>HCC Cost per trip (£)</b>		
<b>Existing</b>	25 trips daily	230		5,750
<b>TOTAL</b>				<b>£639,782</b>

**Table 21:** Net Multi-Modal Trip Generation and Calculation of Transport Contributions

- 6.3 In terms of existing trips associated with the site, 20 daily vehicular trips were previously calculated. 5 non-vehicle trips have been added to account for multi-modal trips, based on HCC's multi-modal trip rate of 10.2 per 4+ bed house.
- 6.4 A total transport contribution of £639,782 has been calculated as payable in association with the redevelopment of the site.
- 6.5 The development will pay this as a strategic transport contribution which HCC has identified (through the previous application) will contribute to the Windhover Roundabout improvement scheme and other corridor improvements as they see fit.
- 6.6 The roundabout at Portsmouth Road/Hamble Lane junction would be implemented as site specific works. However if HCC identify another preferred solution at the Portsmouth Road/Hamble Lane junction through their assessment of Windhover Roundabout, then a comparable contribution towards this would be offered by Barratt Homes, as opposed to the developer completing the roundabout under a Section 278. This maintains the same approach as recommended by HCC as part of the 'approved scheme'.

## 7. SUMMARY AND CONCLUSION

- 7.1 This Transport Assessment has been prepared by Paul Basham Associates on behalf of Barratt Homes to support a planning application for the redevelopment of Berry Farm and has been informed by pre-application discussions with Hampshire County Council, Eastleigh Borough Council and extensive assessments completed on the previous application (ref: O/14/73948) which received no highways objections, subject to the identified mitigation works.
- 7.2 The scope of this TA reflects the principles of the recently withdrawn DfT's 'Guidance on Transport Assessments' (March 2007), reviewing site accessibility, Personal Injury Accident (PIA) data, the proposed accommodation schedule, car and cycle parking requirements, visibility and access arrangements, servicing arrangements, trip assessments, traffic impact and capacity assessment on the local road network (LRN), explores design solutions and draws conclusions from the overall assessment.
- 7.3 The proposed development consists of 166 residential dwellings, with 40% affordable housing. The development would be provided with 362 for resident parking spaces, 54 formal visitor spaces and 15 informal spaces, in line with Eastleigh Borough Council's standards, as well as appropriate levels of cycle parking.
- 7.4 The proposed site exhibits good accessibility to local amenities and pedestrian and cycle networks, and as such is an appropriate location for sustainable development, further assisted by regular local bus and rail services.
- 7.5 Access to the site would be provided broadly in line with the existing access location. The junction would take the form of a bellmouth arrangement supported by 9m corner radii and a ghost island right turn lane on Hamble Lane, in accordance with DMRB TD42/95 guidance.
- 7.6 The internal site carriageways would be designed to adoptable standards with the sections stemming from the access road, with the initial spine roads providing a 5.5m carriageway width supported by 2m footways in line with MfS guidance. As the internal roads move out toward the periphery of the site into quieter cul-de-sacs, shared-surface carriageways are proposed adopting 'home zone' principles with active property frontages. The geometries would accommodate the passing of 2 vehicles and allow cyclists and pedestrians to comfortably manoeuvre.

- 7.7 A comparison of the site to similar locations in terms of size and through the agreed trip rates of the 'approved scheme' using the TRICS 2013b database suggests that the proposed development would generate approximately 804 daily trips, with 90 in the AM peak and 78 in the network PM peak of 1600-1700 hours, and 98 in the residential development PM peak of 1700-1800. This would represent an increase in trips generated by the site by approximately 784 per day, compared to the existing site uses, but a reduction of 13 daily vehicle movements when compared to the 'approved scheme'.
- 7.8 It has been established through pre application discussions with Hampshire County Council highways, the 'approved scheme' and Highways Statement that several junctions on the local road network need to be assessed in terms of quantifying the impact of the development. These are:
- The Proposed Site Access
  - Cunningham Gardens/Chamberlayne Road/Hamble Lane Signalised Crossroads
  - Portsmouth Road/Hamble Lane T-Junction
  - Lowford Roundabout
  - Tesco Roundabout
  - Windhover Roundabout
- 7.9 The modelling scenario used was Baseline 2018 plus '*Land West of Hamble Lane*' plus '*Hamble Station*' plus Berry Farm, for all three peak periods previously identified, as agreed in pre-application discussions and the 'approved scheme'. Modelling of these junctions shows no discernable difference in degree of saturation, RFC values or queue length when compared to the 'approved scheme'.
- 7.10 The modelling results above include the re-design of Portsmouth Road/Hamble Lane T-junction into a 28m ICD roundabout which significantly improves capacity and congestion levels currently experienced on Hamble Lane. This design received no objections from highways in the previous application and is therefore put forward as part of this application and scheme.
- 7.11 A total payable transport contribution of £639,782 has been calculated, based on the net multi-modal trip generation and HCC Transport Contributions Policy. The transport contribution will be paid by the developer, and the developer would also fund the implementation of the roundabout at Portsmouth Road/Hamble Lane. However if HCC identify a preferred alternative solution at this junction as a result of their Windhover Roundabout Improvement Study then a comparable contribution would be paid as opposed to the developer implementing the roundabout. This alternative solution would then be implemented by HCC. This is in line with the 'approved scheme' at Berry Farm.

7.12 This report has analysed the transport related impacts of the proposed development, and suggested improvements to the local road network. The strategic benefit of such improvements would significantly outweigh the impact of the proposed development on the local road network. We would therefore encourage Hampshire County Council and Eastleigh Borough Council highways officers to look favourably upon this application.