



Tunbridge Wells Local Plan: Paddock Wood and East Capel & Tudeley Village

Access and Movement Report

On behalf of **Tunbridge Wells Borough Council**

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1 Introduction

1.1 Preamble

- 1.1.1 Tunbridge Wells Borough Council (TWBC) is preparing a Local Plan for the period to 2038. During this period, the Plan is required to meet the full assessed need within the borough for market and affordable housing of 678 per annum¹.
- 1.1.2 The council have sought external support to assess the suitability, capacity and infrastructure needs for several sites which have been suggested as potential options to provide housing on a strategic level. To achieve this TWBC procured masterplanning and technical support from David Lock Associates (DLA) and Stantec.

1.2 Purpose of Report

- 1.2.1 This report forms part of a suite of reviews and assessments prepared by DLA and Stantec to support the technical assessment of the sites. This Access and Movement report has been prepared to set out the transport methodology used to assess the sites, including a forecast of trip generation and distribution of people movements expected to arise from the development. Reference is made to the Baseline reports prepared for both settlements, where necessary. This has been used to inform the provisional infrastructure requirements to support the masterplanning of the sites.
- 1.2.2 There is a need to challenge the current 'predict and provide' method of planning for new development and to integrate sustainable transport into new developments from the start.² By using a more forward thinking approach such as the 'vision and validate', a clear vision for new developments can be established including long term mode share targets with a stronger bias towards sustainable travel modes than has been taken to date. This takes on board the advice set out in the Government's Garden Communities prospectus³, which sets out that garden communities should be integrated, forward looking and prioritise accessible transport options. The design process will then explore how this is can be delivered in a robust manner to achieve the vision.
- 1.2.3 The internalisation and calculations presented in this report represent a forecast for a situation upon completion and full occupation of each development. It is recognized that during the build out stages and for a period of time after, levels of external trips will be higher, particularly those made by car, however mode share targets should be challenging.
- 1.2.4 It is noted that a separate traffic modelling and Transport Assessment exercise has been undertaken by SWECO, which has been reviewed by Stantec in the Baseline reports. Whilst there are differences in approach to items such as trip generation, the assumptions made are broadly aligned and are fit for the purposes of each exercise in terms of the Local Plan.

1.3 Sites Reviewed

- 1.3.1 Potential site allocations within Paddock Wood and east Capel and a site within single ownership at Tudeley Village have been reviewed within this assessment and have been assessed cumulatively.
- 1.3.2 Figure 1.1 shows the locations of the sites within Paddock Wood and east Capel and Tudeley Village in the context of the surrounding area, current and proposed transport schemes, and

¹ Tunbridge Wells Borough, Draft Local Plan, Regulation 18 Consultation Draft 20 Sept to 1 Nov 2019

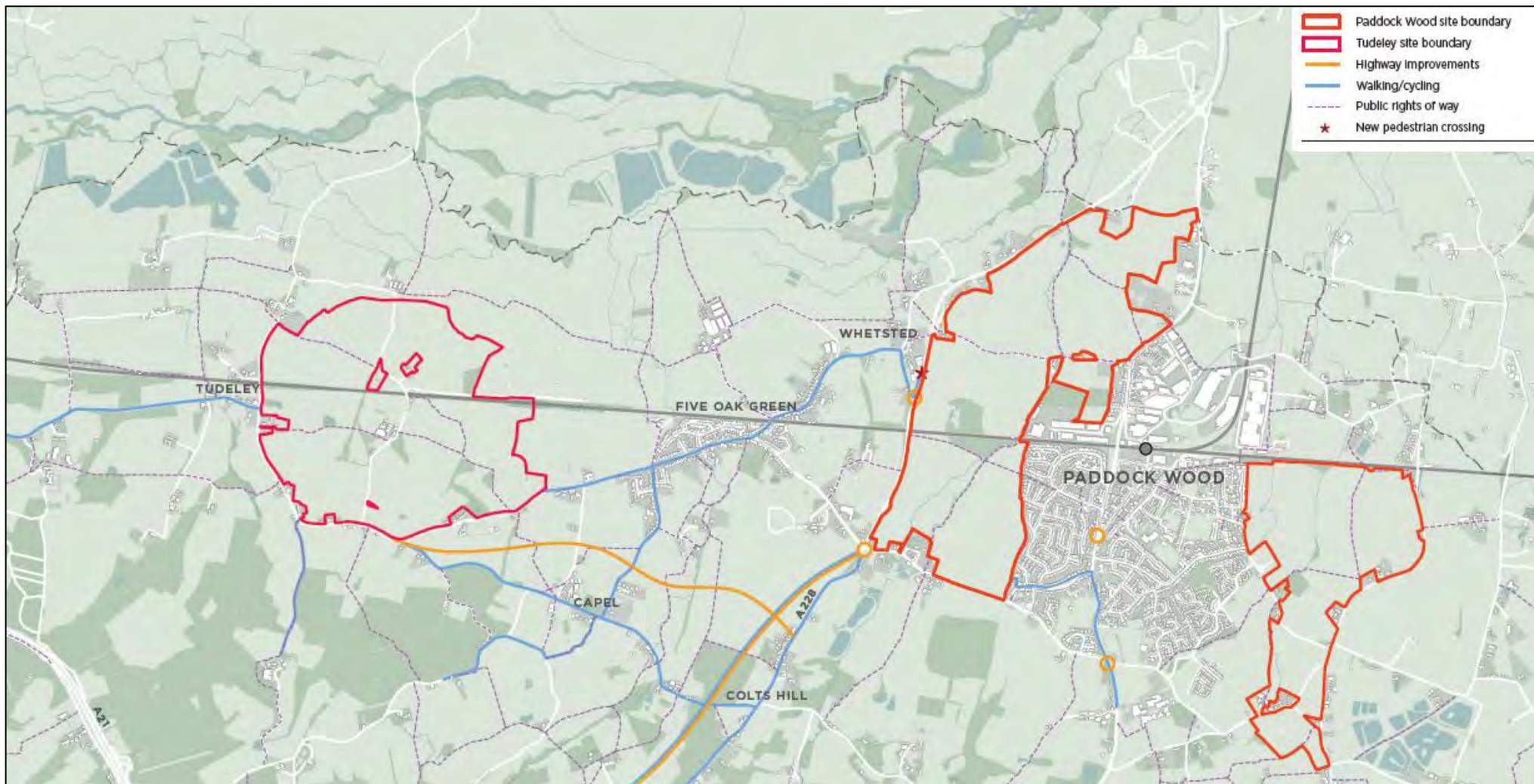
² Better planning, Better transport, better places CIHT, August 2019

³ Ministry of Housing, Communities and Local Government, August 2018

transport schemes considered necessary to deliver the development options discussed in this report.

- 1.3.3 At the time of writing this report, the plots within the Paddock Wood and east Capel allocation are referenced to as PW1-1 etc however, this has been changed by TWBC to merge land areas together. For the purpose of this report, each plot is referred to individually.

Figure 1.1: Future Access and Movement Options



1.4 Impact of COVID-19 and an Uncertain Future

- 1.4.1 The COVID-19 pandemic of 2020 has had fundamental impacts on the way people work and live their lives. Transport has been one of the areas impacted most significantly, with a massive reduction in all transport use during this time.
- 1.4.2 Technology has been a massive enabler of new work and lifestyle practices, for example working from home and the increase in demand for grocery and general deliveries ordered via websites and smartphone apps.
- 1.4.3 The changes that have been made during the lockdown period have made companies and individuals consider how they may travel in the future and indeed whether certain journeys will be necessary if there is a technology driven solution. It is evident that there is likely to be a sustained change in behaviours, but it is going to take a period of months, if not years to understand what any long-lasting change will look like.
- 1.4.4 This exercise has made some conservative assumptions as to what the future might look like, particularly in terms of external trips which are no longer made as a result of people working from home.
- 1.4.5 Government has acknowledged that the future holds many challenges and that these are likely to impact on the way people travel and go about their day to day lives. DfT TAG advice⁴ acknowledges that COVID, Net Zero, Brexit and OBR downside forecasts are all going to weigh on traffic forecasts for years to come, therefore reinforcing a need to plan for change and a more sustainable future.

1.5 Report Structure

- 1.5.1 The remainder of this report is structured as follows:
- Section 2 – Sets out a summary of the land use assumptions for development of the sites;
 - Section 3 – Provides the methodology used to calculate the forecast trip generation of the sites;
 - Section 4 – Presents the assumptions used to calculate the internalisation of forecast trips;
 - Section 5 – Analyses Census data to determine anticipated mode shares based on current characteristics;
 - Section 6 – sets out the forecast trip generation, distribution, modal share and transport infrastructure requirements associated with development at Paddock Wood and east Capel.
 - Section 7 - sets out the forecast trip generation, distribution, modal share and transport infrastructure requirements associated with development at Tudeley Village.

⁴ Appraisal and Modelling Strategy, A route map for updating TAG during uncertain times, Moving Britain Ahead (July 2020)

2 Land Use Assumptions

2.1 Introduction

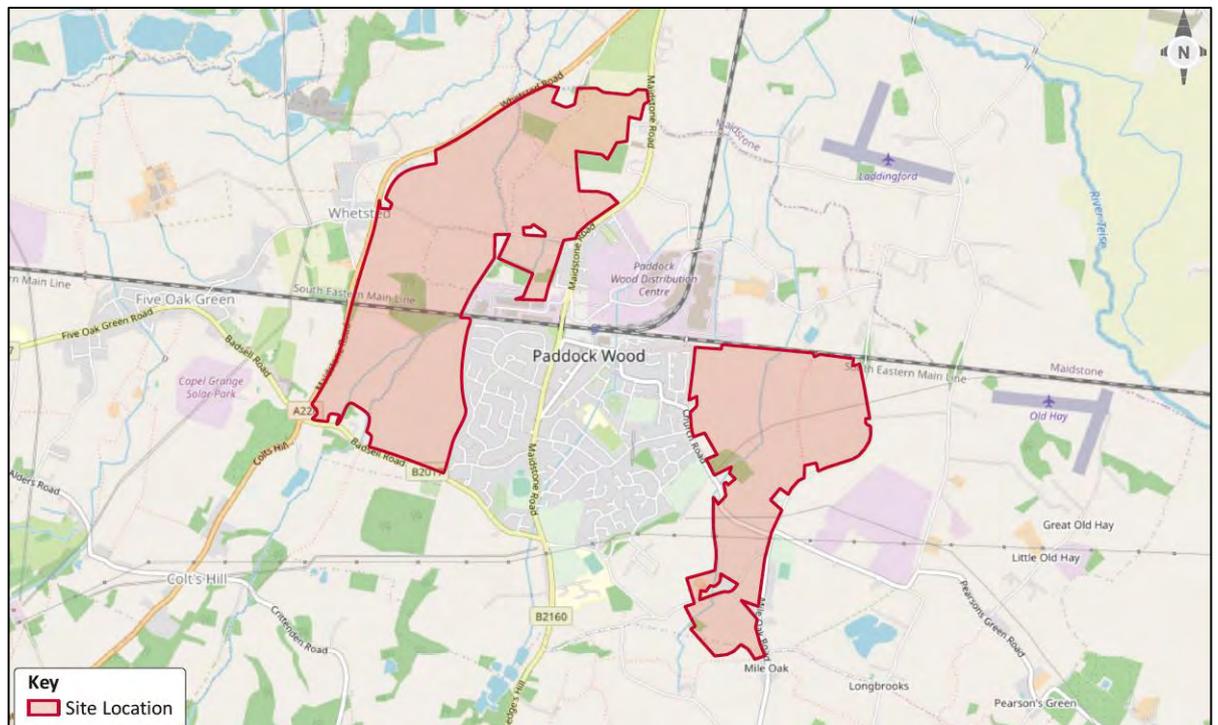
2.1.1 This section sets out the land use assumptions which have been considered in preparing this Access and Movement report. The land uses and quanta below are indicative and do not prejudice what could or should be developed on any of the sites.

2.2 Land Use Assumptions

Paddock Wood and east Capel

2.2.1 The potential development allocations at Paddock Wood and east Capel are predominately split on the north western and south eastern edge of Paddock Wood. Figure 2.1 below shows the site boundaries within Paddock Wood and east Capel.

Figure 2.1: Paddock Wood and east Capel Site Boundaries



2.2.2 Table 2.1 below sets out the land use assumptions for Paddock Wood and east Capel.

Table 2.1: Land Use Assumptions – Paddock Wood and east Capel

| Land Use | Paddock Wood and east Capel |
|---------------------------------|-----------------------------|
| Dwellings | Up to 3,590 |
| Local Centres (m ²) | 2,000 |
| 2 Form Entry Primary School | 2 |
| GP Surgery (Rooms) | 10 |

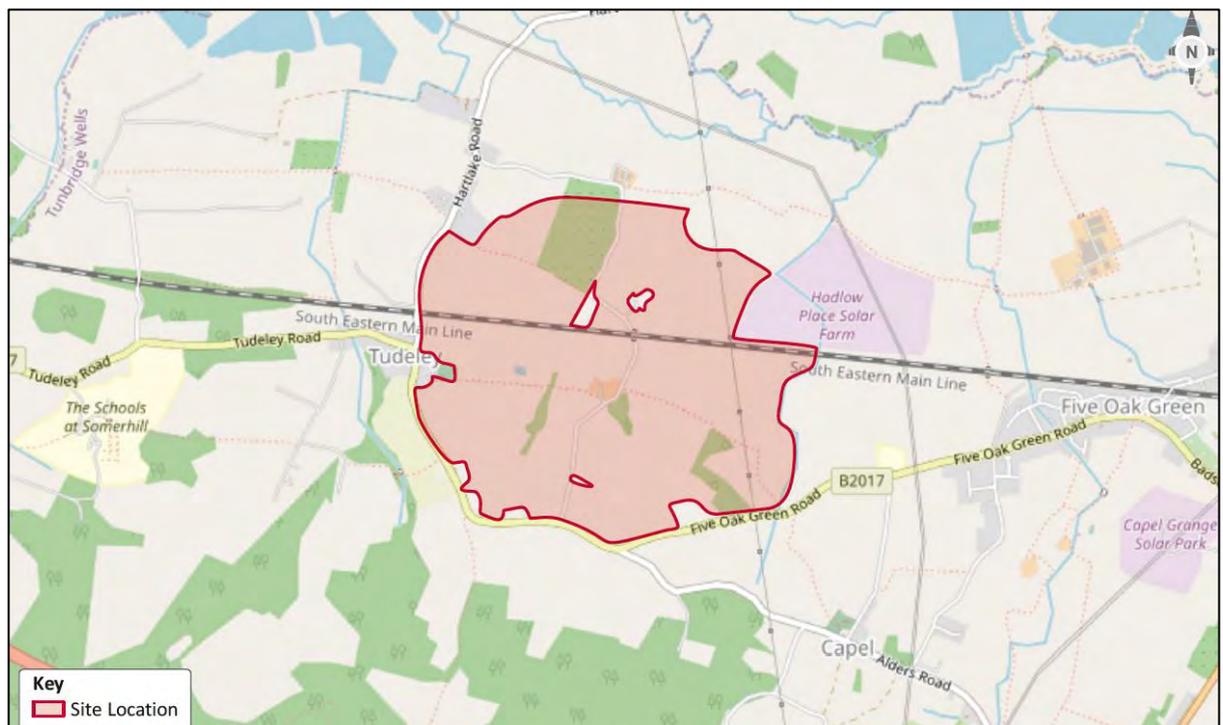
Source: David Lock Associates

2.2.3 It is also expected that community and sport facilities will be provided on site, but as the council's sports strategy is unknown at this time, no assessment has been undertaken and would need to be considered when an application comes forward for this use.

Tudeley Village

2.2.4 Figure 2.2 below shows the Tudeley Village site boundaries.

Figure 2.2: Tudeley Village Site Boundaries



2.2.5 Table 2.1 below sets out the land use assumptions for Tudeley Village.

Table 2.1: Land Use Assumptions – Tudeley Village

| Land Use | Tudeley Village |
|----------------------------------|-----------------|
| Dwellings | 2,800 |
| Class E Office (m ²) | 2,750 |
| Local Centres (m ²) | 7,250 |
| Supermarket (m ²) | 1,000 |
| 3 Form Entry Primary School | 1 |
| 6 Form Entry Secondary School | 1 |

Source: David Lock Associates & Turnberry Development Management

2.2.6 It is also expected that community and sport facilities will be provided on site, but as the council's sports strategy is unknown at this time, no assessment has been undertaken and would need to be considered when an application comes forward for this use. An assumption has been made that of the 8,250sqm of retail, 1,000sqm will be a supermarket.

3 Person Trip Generation Methodology

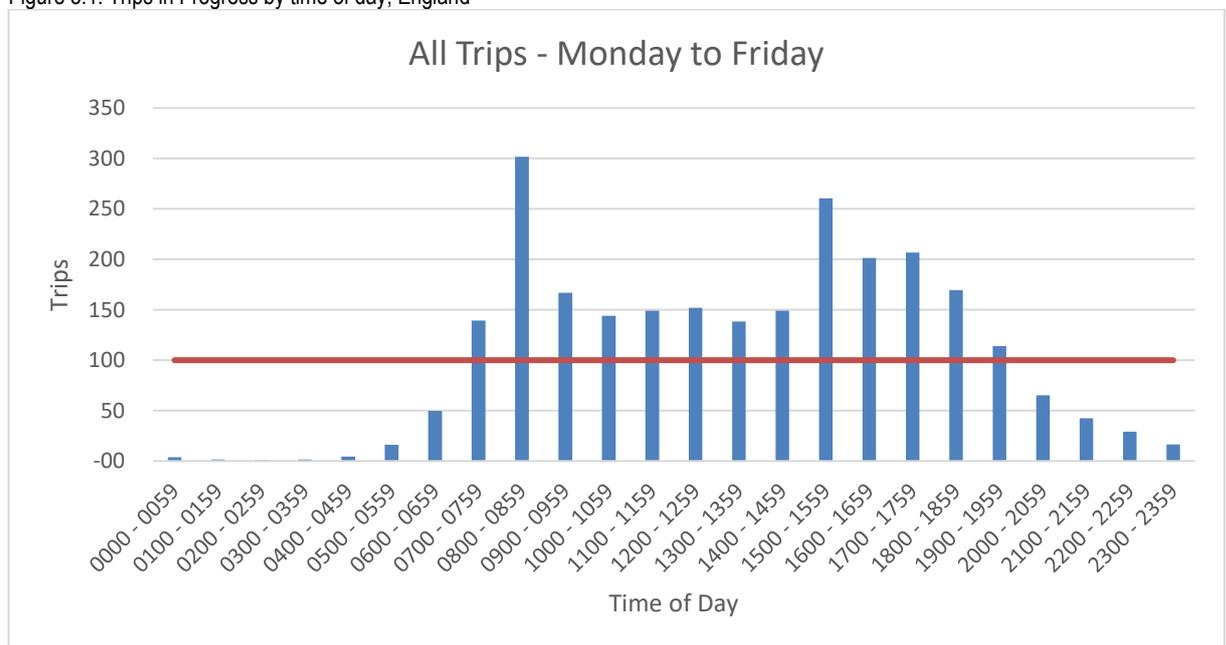
3.1 Introduction

3.1.1 This section sets out the background and methodology used to forecast the trip generation of the sites.

3.2 Background

3.2.1 Figure 3.1 below reproduces data from the National Travel Survey's 2019 dataset, which is the most recent dataset available at time of writing. The data shown in the graph 'normalises' the daily trip profile. The '100' on the left axis is equivalent to the number of trips made in an average hour across the 24-hour period.

Figure 3.1: Trips in Progress by time of day, England



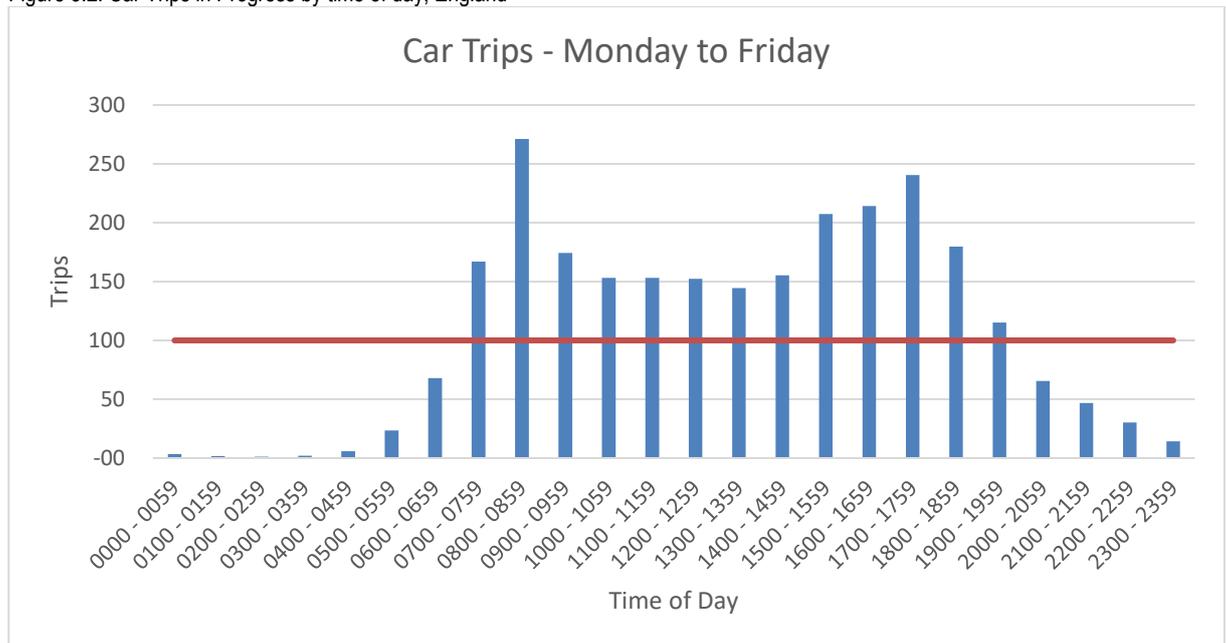
Source: NTS, 2019 (Table NTS0501)

3.2.2 As would be expected, travel demand in the evening and early morning is substantially lower than the average. During the hour 0800-0900 travel demand increases substantially, which NTS data shows is primarily driven by education-based trips, but also a substantial proportion of commuter trips.

3.2.3 The second highest period of demand during the day is 1500-1600 hours, which aligns with the end of the school day. As many school trips are made on foot or by cycle, this peak does not necessarily align with the peak demand for use of vehicle and public transport networks which, depending on location, typically falls between 1600 and 1900 hours.

3.2.4 Figure 3.2 below shows the NTS data on car trips on a typical weekday. The data shown in the graph 'normalises' the daily trip profile. The '100' on the left axis is equivalent to the number of trips made in an average hour across the 24-hour period.

Figure 3.2: Car Trips in Progress by time of day, England



Source: NTS, 2019 (Table NTS0501)

3.2.5 It can be seen from Figure 3.2 above that car trips broadly follow a similar pattern as the person trips in Figure 3.1. The key difference is the car trip peak between 1700 and 1800 hours, reflecting the higher proportion of car use in commuting when compared to education-based trips which peak in the previous hours.

3.2.6 To establish an indicative trip generation and travel patterns associated with development of the sites, an exercise has been undertaken considering the quantum and travel patterns of the potential land uses. The exercise focuses on the morning and evening peak hours of 0800-0900 and 1700-1800 during which transport infrastructure is most heavily impacted.

3.3 Trip Generation Methodology

3.3.1 The trip generation exercise has been undertaken in order to forecast an indicative number of trips which development at each of the sites may generate.

3.3.2 The traffic generation of each of the proposed development sites has been forecast using trip rates obtained from the TRICS database for the different land uses.

3.3.3 The data sources for each land use are shown below, along with the TRICS site selection methodology where applicable. The TRICS outputs can be found in **Appendix A**.

Residential

3.3.4 The vehicular trips rates used were obtained from TRICS database selected using the following criteria:

- Private Residential Units
- Sites within England (excluding Greater London)
- Located in Edge of Town or Suburban
- Weekday counts only

Primary School

3.3.5 Vehicle and total person trip rates have been derived from the TRICS database selected using the following criteria:

- Education: Primary
- Sites within England (excluding Greater London)
- Location: Suburban and Edge of Town Locations
- Weekday Counts only

Secondary School

3.3.6 Vehicle and total person trip rates have been derived from the TRICS database selected using the following criteria:

- Education: Secondary
- Sites within England (excluding Greater London)
- Location: Suburban and Edge of Town Locations
- Weekday Counts only

Supermarket

3.3.7 Vehicle and total person trip rates have been derived from the TRICS database selected using the following criteria:

- Retail: Food Superstore
- Sites within England (excluding Greater London)
- Location: Suburban and Edge of Town Locations
- Weekday Counts only

GP Surgery

3.3.8 Vehicle and total person trip rates have been derived from the TRICS database selected using the following criteria:

- Health: GP Surgeries
- Sites within England (excluding Greater London)
- Location: Suburban and Edge of Town Locations
- Weekday Counts only

B1 Office

3.3.9 Vehicle and total person trip rates have been derived from the TRICS database selected using the following criteria:

- Employment: Office
- Sites within England (excluding Greater London)
- Location: Edge of Town and Edge of Town Centre Locations
- Weekday Counts only

Local Centre

3.3.10 Vehicle and total person trip rates have been derived from the TRICS database selected using the following criteria:

- Retail: Shopping Centre – Local Shops
- Sites within England (excluding Greater London)
- Location: Edge of Town and Neighbourhood Centre Locations
- Weekday Counts only

3.4 Residential External Trip Generation

3.4.1 The vehicular trip rates for dwellings from TRICS and assumptions based on National Travel Survey Table 0502 which shows trip start time by purpose on a typical weekday, were used to derive vehicle trips from the dwellings on site to employment, retail, primary and secondary schools, and 'other' trip purposes.

3.4.2 The vehicle trips to each of these land uses were then assigned as either an internal or an external vehicle trip, with a bias towards more vehicle trips being external due to the development offering a number of land uses on site. This reflects circumstances like freedom of choice for schooling and demand for employment in destinations outside of the sites.

3.4.3 To avoid double counting, those trips which were considered to be internal were discounted at this stage as they are also captured in the trip generation of the non-residential uses on-site.

3.4.4 As is subsequently detailed, vehicle trip generation was then undertaken for the other land uses included in the concept layouts. The respective internal vehicle trips for residential were then shown as such for the non-residential land uses.

3.4.5 For each land use a ratio derived from multimodal TRICs data was applied to the residual (external) residential vehicular trips to derive the total number of person trips.

3.5 Non-Residential Trip Generation

3.5.1 Where vehicle trip rates from TRICS have been used to forecast trip generation for non-residential uses on site, firstly a vehicular trip generation has been undertaken. Then the TRICS derived ratio of person trips to vehicle trips specific to that land use was applied to arrive at total person trips.

4 Internalisation of Trips

4.1 Introduction

- 4.1.1 This section sets out the methodology which has been employed in determining the internal trips and external trips.
- Internal Trips: Trips which have both a start and an end point within the development.
 - External trips: Trips which have a start or end point within the development, but the opposite end of the journey is outside the development.
- 4.1.2 Review of SWECO traffic modelling and traffic assessment work has been undertaken and it is noted that the external trips assumed by SWECO are broadly aligned with the trip assumptions set out within this report. It is however noted that the SWECO and Stantec approaches are different but fit for the purposes of each study.

4.2 Internal Trips

- 4.2.1 Each land use/journey purpose has then been considered on an individual basis to determine the likely level of internalisation. It is highlighted that these levels of internalisation are based on full occupation of the development and are not necessarily reflective of the build out period, where facilities such as schools and local shops will have a material proportion of external trips until the surrounding housing reaches levels to sufficiently internalise the proportions set out below.
- 4.2.2 For Paddock Wood and east Capel it has been assumed that:
- 80% of trips to the primary schools on site will be internal.
 - 30% of trips to the local shops will be generated internally.
 - 60% of trips for the GP surgery will be generated internally.
- 4.2.3 For Tudeley it has been assumed that:
- 80% of trips to the primary schools on site will be internal
 - 50% secondary school trips will be internal.
 - Employment internalisation will be 10%; and
 - 75% of trips to the local shops will be generated internally.
 - 50% of trips to the supermarket will be generated internally
- 4.2.4 It has been stated by the developers of the Tudeley Village that a large internalisation factor will be encouraged as the development is proposed to be developed in line with Garden Village principals. However, for the robustness of this assessment the above assumptions have been used.

4.3 External Trips

- 4.3.1 The remaining trips are assumed to be heading to or arriving from a destination outside of the sites. These are deemed as external trips.

4.4 Linked Trips, Pass-by trips, Rerouted trips, Through trips.

- 4.4.1 Local centres would attract pass-by trips. This is where people passing the local centre with a different trip purpose would stop and make a purchase.
- 4.4.2 Rerouted trips include where a person would be making a trip for a specific purpose regardless, but it is now made to a different destination. For example, someone living outside the sites changes to job to one of the employment units on sites. If the development was never built, the trip would have been made anyway to a different location, but it diverts to the new employment provision instead.
- 4.4.3 This exercise also deals with the trips generated on the sites. It does not consider where new transport infrastructure is provided as part of a development which could result in additional existing trips passing through the development as a more attractive route to a destination.
- 4.4.4 Full analysis of all of the above trip types would be expected as part of a Transport Assessment at such time as a planning application is made. This could be in the form of strategic modelling undertaken using TWBC's highways model. For the purposes of this report, the trip generation forecasts should be considered as robust.

5 Mode Share

5.1 Introduction

5.1.1 This section sets out an indicative mode share for the external trips forecast to be generated by the proposed development sites.

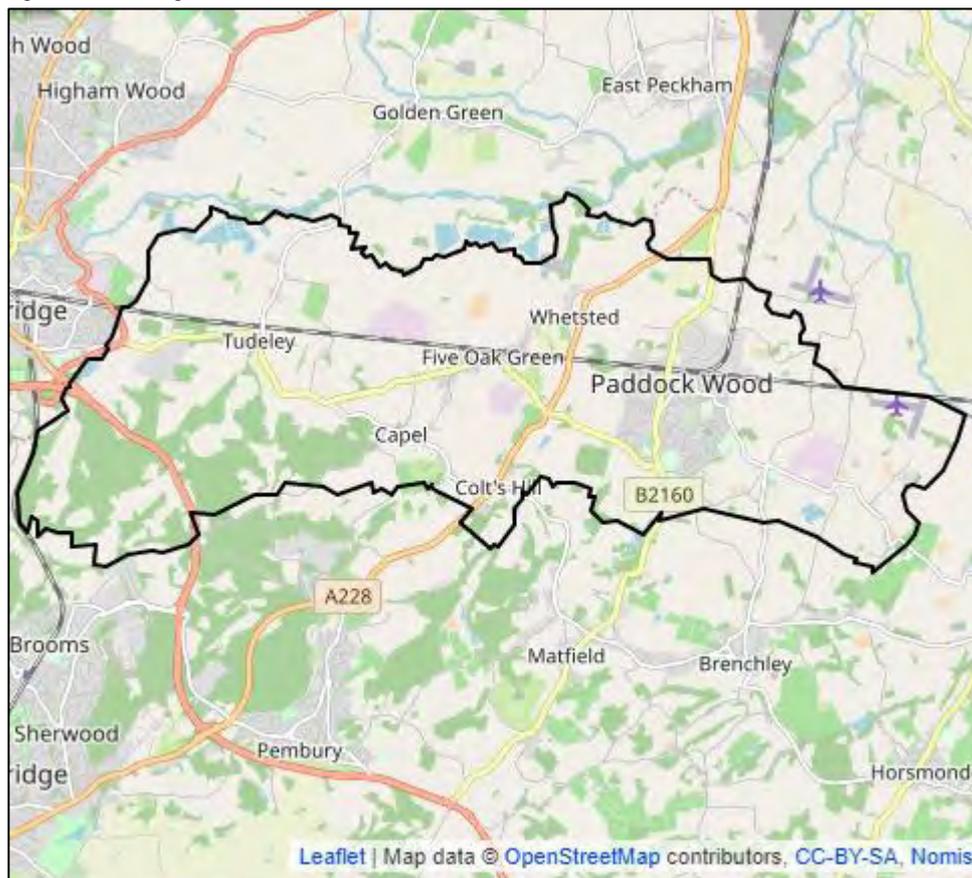
5.2 Mode Share Source

5.2.1 Mode share has been determined using 2011 Census Mode Share data. This data is based on the mode of travel which Census respondents indicated was their main mode of travel to work. Journey to work data has been extracted to determine indicative modal share for the development sites using the appropriate Middle Super Output Area (MSOA) as follows.

Paddock Wood and east Capel – Tunbridge Wells 001 MSOA

5.2.2 This area was selected as it covers the whole of Paddock Wood and therefore likely to best reflect the future travel patterns for residential developments at Paddock Wood and east Capel. The MSOA can be seen in Figure 5.1.

Figure 5.1: Tunbridge Wells 001 MSOA



Source: Nomis

5.2.3 The census modal share data has been used to split the trips generated for Paddock Wood across the travel modes. This is set out in detail in the following section.

Tudeley Village – Tonbridge and Malling 007 MSOA

- 5.2.4 Although Tudeley Village falls within the same MSOA as Paddock Wood, it is not located near a train station and therefore it is felt that the MSOA of Kings Hill in Tonbridge and Malling is more representative of the development proposal. It is considered that Kings Hill is more reflective of the proposed development as it is a self contained site of a similar size, with supermarkets and amenities on site, as well as local employment. Kings Hill also has several primary schools. It is also located in a similar proximity to a train station as the new development at Tudeley, with connecting bus services. Furthermore, the Tudeley promoter envisages a similar quality living experience built around 'beautification', likely attracting a similar type of new resident.
- 5.2.5 MSOA TM007 is considered to be the best reflecting of the future travel patterns for residential development at Tudeley Village. The MSOA can be seen in Figure 5.2.

Figure 5.2: Tonbridge and Malling 007 MSOA



Source: Nomis

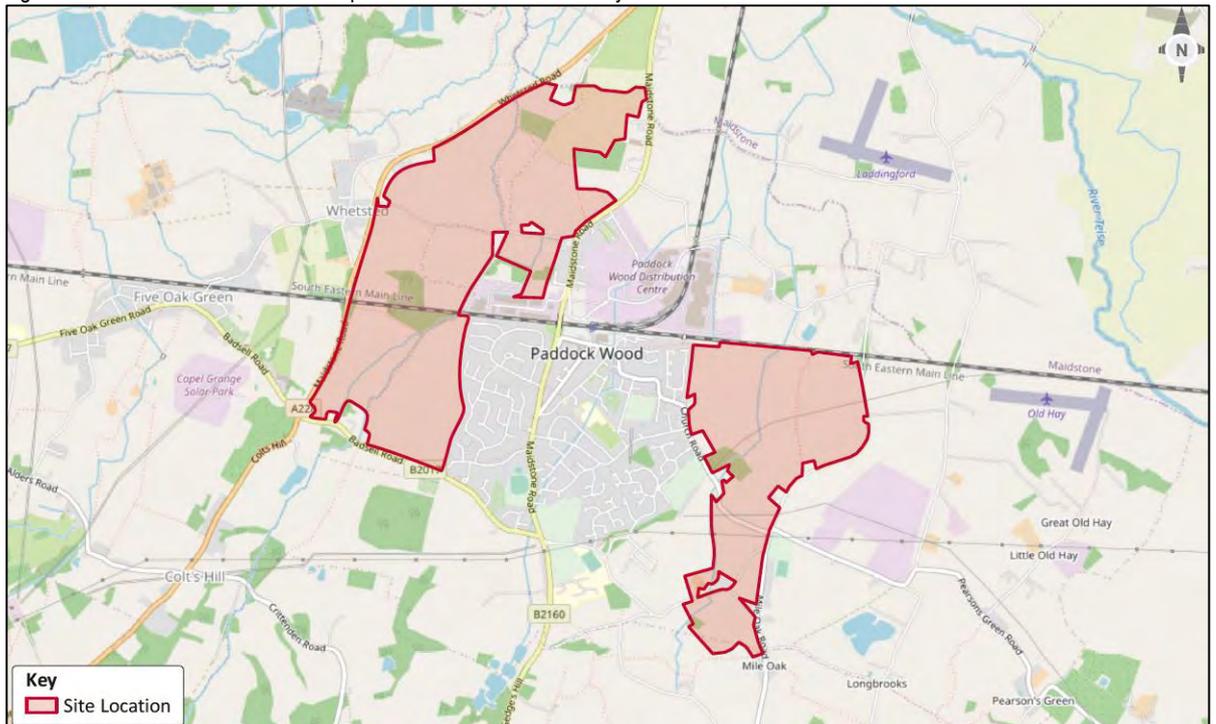
- 5.2.6 The census modal share data has been used to split the trips generated for Tudeley Village across the travel modes. This is set out in detail in the following section.

6 Paddock Wood and east Capel

6.1 Introduction

6.1.1 This section sets out the assumptions and forecast trip generation associated with the development at Paddock Wood and east Capel. In addition, it provides indicative future modal share targets and sets out the transport infrastructure required to deliver the site. Figure 6.1 below shows the site location.

Figure 6.1: Paddock Wood and east Capel Site Location and Boundary



6.2 Land Use Assumptions

6.2.1 Table 6.1 below sets out the land use assumptions for Paddock Wood and east Capel for the purposes of this trip generation exercise.

Table 6.1: Paddock Wood and east Capel Land Use Assumptions

| Land Use | Paddock Wood and east Capel |
|---------------------------------|-----------------------------|
| Dwellings | 3,590 |
| Local Centres (m ²) | 2,000 |
| 2 Form Entry Primary School | 2 |
| GP Surgery (Rooms) | 10 |

Source: David Lock Associates

6.2.2 It is also expected that community and sport facilities will be provided on site, but as this is expected to generate negligible numbers of external trips, these land uses have therefore not been considered further in this assessment.

6.3 Person Trips

6.3.1 Person trips have been derived using the methodology set out in Section 3. Each land use has been considered to determine the level of internalisation. Table 6.2 below summarises the resultant internal and external person trip generation.

Table 6.2: Person Trip Generation

| | AM Peak (0800-0900) | PM Peak (1700-1800) |
|-----------------------|---------------------|---------------------|
| Internal Person Trips | 2,596 | 633 |
| External Person Trips | 2,985 | 2,944 |
| Total | 5,581 | 3,577 |

Source: Consultant calculation

6.3.2 It can be seen from Table 6.2 that there is high level of internal trips, particularly during the AM Peak Hour. This is reflective of their being a primary school on site as a high proportion of education trips occurring during the AM Peak Hour.

6.3.3 Similarly, the local centre will provide opportunities for fulfilling retail and other daily needs which would otherwise be served by a trip outside the development.

6.4 External Trips

6.4.1 The remainder of the trips are external trips and will be those residents going off site for employment opportunities as well as secondary education and further retail or leisure opportunities.

6.5 Mode Share

6.5.1 Table 6.3 below sets out the mode share of the Tunbridge Wells 001 MSOA and applies it to the external peak hour person trips set out in Table 6.2. It demonstrates that driving or passengers in a private car equates for approximately 66% of total trips, whilst public transport use equates to approximately 17% and active travel modes 12%.

Table 6.3: External Trips Split by 2011 Census Local Mode Share

| Mode | 2011 Census Mode Share | AM Peak Hour Person Trips | PM Peak Hour Person Trips |
|--|------------------------|---------------------------|---------------------------|
| Work mainly at or from home | - | - | - |
| Underground, metro, light rail or tram | 0.1% | 3 | 3 |
| Train | 16.4% | 488 | 482 |
| Bus, minibus or coach | 0.7% | 22 | 22 |
| Taxi | 0.2% | 5 | 5 |
| Motorcycle, scooter or moped | 0.8% | 25 | 25 |
| Driving a car or van | 65.6% | 1,958 | 1,931 |
| Passenger in a car or van | 4.5% | 135 | 134 |
| Bicycle | 1.1% | 32 | 32 |
| On foot | 10.4% | 310 | 306 |
| Other method of travel to work | 0.2% | 6 | 5 |
| TOTAL | 100.0% | 2,985 | 2,944 |

Source: nomisweb.co.uk & consultant calculation. Includes Excel rounding.

- 6.5.2 Based on the 2011 Census data, with no interventions, a significant proportion of the forecast trips generated by the development would likely be undertaken by private car. It is crucial that any development of the site places a high priority on mode shift, turning car journeys into trips made via sustainable modes.

6.6 Trip Distribution

6.6.1 Table 6.4 indicates the main destinations future residents are likely to travel to and from for work derived from the Travel to Work census data for Tunbridge Wells 001 MSOA. The destinations categorised as Other North, East, West and South indicate destinations in that direction from the MSOA other than those explicitly set out in the table.

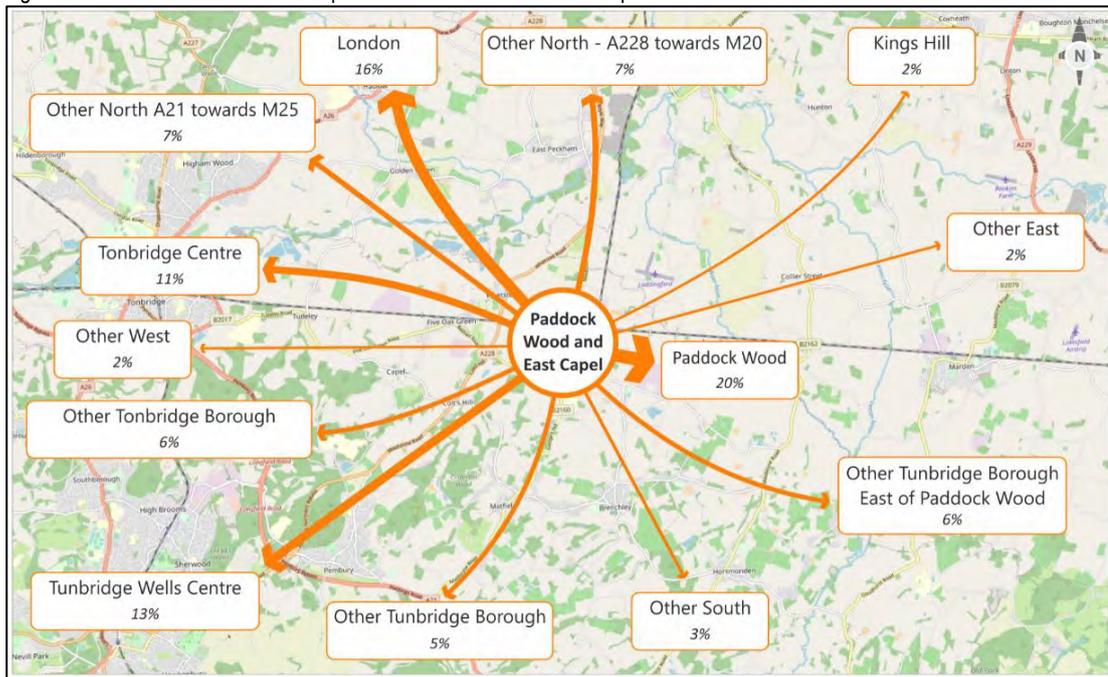
Table 6.4: Distribution of External Trips

| Origin / Destination | External Trip Proportions % |
|---|-----------------------------|
| Paddock Wood | 20% |
| Royal Tunbridge Wells | 13% |
| Other Tunbridge Wells Borough | 5% |
| Other Tunbridge Borough E of Paddock Wood | 6% |
| Tonbridge Centre | 11% |
| Kings Hill | 2% |
| Other Tonbridge Borough | 6% |
| Other North - A21 towards M25 | 7% |
| Other North – A228 towards M20 | 7% |
| Other South | 3% |
| Other East | 2% |
| Other West | 2% |
| London | 16% |
| Total | 100.0% |

Source: Consultant calculated from 2011 Census data. Includes Excel rounding.

6.6.2 Figure 6.2 below illustrates the indicative distribution of external trips generated by the development.

Figure 6.2: Distribution of External Trips – Paddock Wood and east Capel



6.6.3 It can be seen from the census data that a substantial proportion of external trips will be heading to Tunbridge Wells, Paddock Wood, Tonbridge and other North. Other North includes trips that either travel north towards the M25 or M20 to get to their destination.

6.7 Target Forecast Mode Share

6.7.1 It is an expectation that any development of the site would provide exceptional connectivity within the site for pedestrians and cyclists. Commodious, attractive and legible routes connecting housing, the local centre and the school are essential.

6.7.2 It will also be crucial to ensure that trips made outside of the development are made using sustainable modes where possible.

6.7.3 Due to the location of the sites and proximity of Paddock Wood railway station, the proposed sustainable infrastructure package could see a significant modal shift away from the private car. To that end, it is considered that the development targets at 40% reduction in the mode share percentage of external car driver trips could be achievable. Other mode shares have then been adjusted to reflect a change from car driver trips.

- 6.7.4 Table 6.5 below presents a comparison between the existing mode shares, and the indicative mode share targets. These targets are based on the responses to the 2011 Census indicating on the main model of travel to work. Participants may use multiple modes for their journey to work e.g. drive to the station and use the train, or use the underground and train, but can only indicate one mode in their Census response.

Table 6.5: Comparison of Existing Mode Share and Mode Share Targets

| Mode | Existing Share | Target Share |
|--|----------------|---------------|
| Work mainly at or from home | - | 5.2% |
| Underground, metro, light rail or tram | 0.1% | 0.1% |
| Train | 16.4% | 21.6% |
| Bus, minibus or coach | 0.7% | 8.6% |
| Taxi | 0.2% | 0.2% |
| Motorcycle, scooter or moped | 0.8% | 0.8% |
| Driving a car or van | 65.6% | 39.4% |
| Passenger in a car or van | 4.5% | 5.8% |
| Bicycle | 1.1% | 5.0% |
| On foot | 10.4% | 13.0% |
| Other method of travel to work | 0.2% | 0.2% |
| TOTAL | 100.0% | 100.0% |

Source: 2011 Census data and consultant calculation

- 6.7.5 The car mode share target of 39.4% is a significant reduction however due to the proximity of the site to Paddock Wood train station and future investment in sustainable and active travel opportunities this is considered to be achievable.
- 6.7.6 The percentage of trips which will change to people working at home is shown at 5.2%. There is scope for this to be higher, but the long-term effects of COVID-19 remain to be seen. Elsewhere, increases are shown in bus and rail travel and also in pedestrian and cyclist mode shares. These are all important modes in terms of reducing car dependency.
- 6.7.7 It is reiterated that the mode shares above are main mode of travel and therefore do not reflect multimodal journeys. For example, the rail mode share does not account for the mode of travel to the railway station.

Table 6.6: Indicative External Person Trip Generation by Mode

| Mode | Trips by Existing Mode Share | | Trips by Mode Share Target | |
|--|------------------------------|--------------|----------------------------|--------------|
| | AM Peak | PM Peak Hour | AM Peak | PM Peak Hour |
| Work mainly at or from home | - | - | 157 | 154 |
| Underground, metro, light rail or tram | 3 | 3 | 3 | 3 |
| Train | 488 | 482 | 645 | 636 |
| Bus, minibus or coach | 22 | 22 | 257 | 253 |
| Taxi | 5 | 5 | 5 | 5 |
| Motorcycle, scooter or moped | 25 | 25 | 25 | 25 |
| Driving a car or van | 1,958 | 1,931 | 1,175 | 1,158 |
| Passenger in a car or van | 135 | 134 | 175 | 172 |
| Bicycle | 32 | 32 | 150 | 148 |
| On foot | 310 | 306 | 388 | 383 |
| Other method of travel to work | 6 | 5 | 6 | 5 |
| TOTAL | 2,985 | 2,944 | 2,985 | 2,944 |

Source: Consultant calculation. Includes Excel rounding.

- 6.7.9 Achieving the mode share targets which are set out above would result in a material decrease in external car trips, as shown in Table 6.6 above.
- 6.7.10 The trips which are shown as working at home are not trips as such. Instead they represent trips which would previously have been made to a workplace, which would no longer be made at all.
- 6.7.11 The Census data from which the above was calculated is based on the main mode of travel used. Therefore, although there may be an increase in train journeys, the journey to Paddock Wood railway station is also an important factor which is not directly considered in the above table. Providing opportunities to travel sustainably from the development to the railway station is therefore important. This ties in with a need to provide attractive off-site pedestrian, cycle and bus infrastructure in order to increase these modes shares.

6.8 Transport Infrastructure Requirements

- 6.8.1 Stantec Drawing 49653/5501/001 in **Appendix B** present transport strategies for Paddock Wood and east Capel for general movement and for public transport respectively.
- 6.8.2 The proximity of the sites to Paddock Wood town centre and the rail station provides a good base for sustainable travel. However, to strengthen the connectivity of the developments with Paddock Wood and the surround area, sustainable infrastructure is proposed with cycle routes and improvements to bus services.
- 6.8.3 Public transport will also be a key measure in ensuring car trips are kept as low as possible. At present it is considered that the existing service through Paddock Wood would not be sufficient to provide a reasonable modal shift towards bus due to infrequency. As a result, shuttle type buses may be explored as part of Bus Rapid Transit (BRT) to provide frequent services to key destinations. Although this report concentrates on bus routes, the principle for the routes would be the same regardless of how transport evolves in the future.
- 6.8.4 In addition to hard infrastructure measures like pedestrian/cycle routes and bus services, soft measures such as Personal Travel Planning are essential. PTP will allow individuals to understand the best options to travel to regular destinations by sustainable modes. The key measures to encourage non-car travel should be in place from first occupation to ensure that car use does not become a default option for new residents that they then have to be encouraged out of.
- 6.8.5 There are a few highway infrastructure requirements that may need to come forward with the development in Paddock Wood and east Capel as a result of the additional traffic. These can be seen below;
- 6.8.6 A228 Colts Hill route improvements – Consideration has been given for a number of years for a bypass to avoid Colts Hill to address highway safety issues. This option is expensive and cuts into the AONB significantly. As such, alternative options have been explored for the provision of online route improvements or online/offline alternative routes which will not impact the surrounding area as significantly.
- 6.8.7 The KCC bypass scheme incorporates roundabout junctions at the north and south links to the A228, with junctions being sized to accord with the number of junction arms at each connection. It is apparent that the carriageway is designed to DMRB standards at 10m wide, plus 1m margins, and along the majority of its length is within cutting. The section south of Alders Road is within a deep cutting due to having to pass under Alders Road, which in turn results in a very deep cutting that has an impact on the AONB. The KCC scheme mentioned, isn't considered necessary to mitigate the impacts of the development in accordance with the NPPF and the CIL regulations. This is detailed further in the Masterplanning and Infrastructure Study undertaken by DLA.
- 6.8.8 The online / part offline 'hybrid' options explored by Stantec assumes the southern section of the A228 from Alders Road junction would be online, while the section north would be offline to the west of the row of cottages.
- 6.8.9 The online improvements section south of Alders Road comprises:
- 6.75m wide road width, plus margins of 225mm which accord with the Kent Design Guide for a Local Distributor type road, which is considered appropriate for an online widening scheme that would accommodate HGVs and buses;
 - Verges up to 3m wide which could also facilitate cycle/ pedestrian facilities;
 - Road curve radii which meets DMRB standards, improved junction and forward visibility;

- Roundabout junction with Alders Road and Crittenden Lane.
- 6.8.10 The offline section north of Alders Road would comprise:
- Road width up to 10.0m wide (as per KCC bypass scheme);
 - New roundabout at A228 / B2017 junction;
 - New side road / roundabout connections with Alders Road and Five Oak Green bypass routes;
 - Verges up to 3m wide which could also facilitate cycle/ pedestrian facilities;
 - Road curve radii which meets DMRB standards.
- 6.8.11 The online section would result in loss of roadside trees and hedgerows, and the loss of a single dilapidated outbuilding.
- 6.8.12 Stantec has explored the creation of a new link bypassing Five Oak Green village, which is constrained in the centre due to narrow road widths, parking and narrow footways. The scheme would comprise:
- 6.75m wide road width, plus margins of 225mm which accord with the Kent Design Guide for a Local Distributor type road;
 - Verges up to 3m wide which could also facilitate cycle/ pedestrian facilities;
 - Road curve radii which meets DMRB standards;
 - Roundabout junction with B2017 east of Church Lane.
- 6.8.13 The scheme option assumes an alignment that avoids flood land, ancient woodland and seeks to minimise the number of landholdings through which it passes. Given the short distance of the link (approximately 1.1 to 1.2 kilometres) there are limited options available for this route, hence that shown is the most logical and economical that minimises length of road and impact.
- 6.8.14 An option utilising Alders Road has been explored; however the alignment, width and forward visibility of the existing route is not considered appropriate for upgrade and would likely result in significant impacts on the AONB, hedgerows and trees,
- 6.8.15 The alternative options are shown as concept drawings in **Appendix B**, and are as follows:
- Drawing 49653/5501/007 – Online Improvements Option
 - Drawing 49653/5501/019 – Local Bypass of Colts Hill. This option largely follows the route of the bypass scheme proposed by Kent County Council, but will have a comparatively smaller corridor width. This would be less intrusive on the surrounding area than the KCC scheme.
- 6.8.16 As well as the options shown on the drawings referenced above, variants of these options could also be considered. This could include, for example, an alternative alignment for Alders Road which does not require the new bridge shown on Drawing 49653/5501/019. All alternatives to KCC's current bypass option would need to be subject to the thorough assessment process before they could proceed to ensure they represent a viable option and that there are not substantial costs relating to matters including level changes and ground conditions which would make the alternative less attractive than the current KCC option.

6.8.17 Table 6.7 below presents a comparison of the relative benefits and disbenefits of the two main options.

Table 6.7: Benefits and Disbenefits of Colts Hill Schemes

| Online Improvements (Stantec Drawing 49653/5501/007) | | Local Bypass of Colts Hill (Stantec Drawing 49653/5501/019) | |
|--|---|---|---|
| Benefits | Disbenefits | Benefits | Disbenefits |
| Improvement to road safety in Colts Hill. | Third party land requirement. | Improvement to road safety in Colts Hill. | More costly than online improvements. |
| Less costly than a bypass. | Full corridor improvement to standard not possible due to properties fronting A228 in Colts Hill. | Uses part of the alignment previously evaluated by KCC. | Comparatively more disruptive to greenfield areas |
| Comparatively less disruptive to greenfield areas. | Impact to operation of A228 during construction phase. | A northern section could be delivered early on bypassing part of the A228 with a safety issue. | Removal of a number of trees. |
| Avoids ancient woodland and loss of significant number of trees. | Loss of trees lining the online route. | Avoids local flood zones. | Substantial third-party land requirement. |
| Avoids local flood zones | | The current A228 through Colts Hill could be closed to through traffic and become a ped/cycle/public transport route. | Can be viewed from AONB. |
| Lesser impact on AONB | | Vehicular capacity increase. | |
| | | Offline construction with minimal impact to existing A228. | |
| | | Avoids ancient woodland. | |
| | | Air Quality improvement in Colts Hill. | |
| | | Provides option to remove Alders Road bridge structure and such a deep cutting for full bypass scheme | |

6.8.18 With the added vehicle trip movements expected from the sites the following junctions are expected to need some form of junction improvement:

- A228 Whetsted Road/A228 Bransbridges Road/B2160 Maidstone Road roundabout
- A228 Maidstone Road / Whetsted Road priority junction
- A228 Maidstone Road / B2017 Badsell Road (Colts Hill) roundabout
- B2017 Badsell Road / B2160 Maidstone Road signalised junction
- B2160 Maidstone Road / Commercial Road priority junction
- Shuttle signal Bridge Paddock Wood High Street

6.8.19 The A228 Maidstone Road/B2017 Badsell Road roundabout and B2017 Badsell Road/B2160 Maidstone Road signalised junction has partial funding for a scheme from contribution from local developments, but it is expected that strategic development at Paddock Wood and east Capel will necessitate further improvements at these locations.

6.8.20 Table 6.8 below sets out the highways and transport infrastructure which it is considered would be required to induce a mode shift in the order of that shown above. It also lists the infrastructure which would be necessary in order to access the site. The infrastructure shown forms part of a wider list covering multiple facets of the development's requirements.

Table 6.8: Recommended Transport Infrastructure – Paddock Wood and east Capel

| Ref | On Site Transport Infrastructure |
|--------------|--|
| Redrow Land | |
| 15 | Internal road off main access road |
| 33 | Bus / cycle / ped 'causeway' to Countryside |
| 18 | Hop Pickers Line integration to the Pedestrian and cycle infrastructure. |
| 16 | Proposed cycleway/footway routes through site (x3) |
| 17 | 3m shared cycleway/footway along internal link road |
| | Bus stops on site along link road |
| Crest Land | |
| 5 | Internal link road between the A228 and B2160 Maidstone Road |
| 6 | Internal road between link road and northern & southern parcels |
| 29 | Road/bus/cycle/ped 'causeway' over river (x1) |
| 8 | Pedestrian/cycle Bridge across Railway |
| 7 | Proposed cycleway/footway route |
| 5 | 3m shared cycleway/footway along internal link road |
| | Bus stops on site along link road |
| Dandara Land | |
| 30 | Road/bus/cycle/ped 'causeway' over river |
| 12 | Internal road off Badsell Road |
| 10 | Internal road off A228 |
| 9 | Pedestrian/cycle Bridge across Railway - immediately east of A228 |

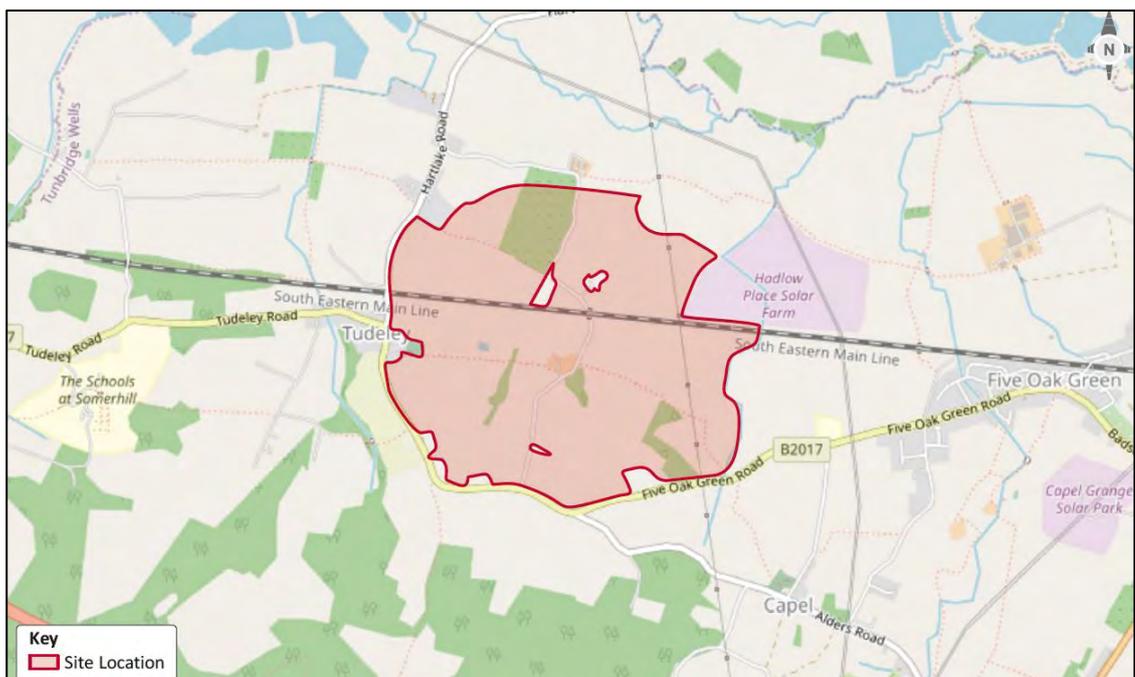
| Ref | On Site Transport Infrastructure |
|----------|--|
| 10 | 3m shared cycleway/footway along internal link road |
| | Bus stops on site along access road |
| 11 | Pedestrian/cycle route through site |
| | Site Access Arrangements |
| | Redrow Land |
| 17 | Access road with loop within site |
| 26 | Internal road off main access road |
| | Crest Land |
| 27 | Roundabout Access with A228 |
| 28 | Priority access with Maidstone Road |
| | Dandara Land |
| 31 | Access with A228 |
| 32 | Access with Badsell Road |
| | Off Site Pedestrian and Cycle Improvements |
| | Five Oak Green to A26 on road cycle route - on B2017 |
| 2 | Pedestrian/Cycle Route to Tunbridge Wells - A228 Route |
| 13,14,20 | Pedestrian and cycle improvements - Stantec assumed upgrades and PJA presentation routes |
| 4 | Crossing on A228 |
| 19 | Improvement to NE existing pedestrian/cycle bridge over Railway |
| | Cycle storage improvements at Paddock Wood Station |
| | Off-site Highway Improvements |
| 1 | Colts Hill route improvements / Bypass |
| 23 | A228 Whetsted Road/A228 Bransbridges Road/B2160 Maidstone Road roundabout |
| 24 | A228 Maidstone Road / Whetsted Road priority junction; |
| 22 | A228 Maidstone Road / B2017 Badsell Road (Colts Hill) roundabout |
| 21 | B2017 Badsell Road / B2160 Maidstone Road signalised junction; |
| 25 | B2160 Maidstone Road / Commercial Road priority junction |
| | Shuttle signal Bridge Paddock Wood High Street |
| | Other Off-Site Infrastructure |
| - | Bus Subsidy |
| | Personal Travel Planning |

7 Tudeley Village

7.1 Introduction

- 7.1.1 This section sets out the assumptions and forecast trip generation associated with the development option for Tudeley Village. In addition, it provides indicative future modal share targets and sets out the transport infrastructure required to deliver the site. Figure 7.1 below shows the site location.
- 7.1.2 This site offers the chance to adapt a forward-thinking approach to delivery of a new community, by combining planning and transport innovation to create a development where the preferred travel options are to walk, cycle or choose public transport.
- 7.1.3 The mode share targets set out later in this section will not be achievable if a 'car first' attitude is taken to providing the development. Existing attitudes and perceptions will require changing, but this can only be achieved through the Council and developers sharing the same vision and by not compromising on what the final community should look like.

Figure 7.1: Tudeley Village Site Location and Boundary



7.2 Land Use Assumptions

- 7.2.1 Table 7.1 below sets out the land use assumptions for Tudeley Village for the purposes of this trip generation exercise.

Table 7.1: Tudeley Village Land Use Assumptions

| Land Use | Tudeley Village |
|----------------------------------|-----------------|
| Dwellings | 2,800 |
| Class E Office (m ²) | 2,750 |
| Local Centres (m ²) | 7,250 |
| Supermarket (m ²) | 1,000 |
| 3 Form Entry Primary School | 1 |
| 6 Form Entry Secondary School | 1 |

Source: David Lock Associates & Turnberry

7.2.2 At this stage it is unknown exactly what employment and commercial land uses will occupy the local centre.

7.2.3 It is expected that community and sport facilities will be provided on site, but as these are expected to generate negligible numbers of external trips. It has therefore not been considered further in this assessment.

7.3 Person Trips

7.3.1 Person trips have been derived using the methodology set out in Section 3. Each land use has been considered to determine the level of internalisation. Table 7.2 below summarises the resultant internal and external person trip generation.

Table 7.2: Person Trip Generation

| | AM Peak (0800-0900) | PM Peak (1700-1800) |
|-----------------------|---------------------|---------------------|
| Internal Person Trips | 3,706 | 1,952 |
| External Person Trips | 2,920 | 2,838 |
| Total | 6,626 | 4,790 |

Source: Consultant calculation

7.3.2 It can be seen in Table 7.2 that a significant of trips especially in the AM peak hour will be internal. As noted previously, a substantial proportion of trips in the AM Peak Hour are education based and as there will be primary schools and a secondary school on the site, the majority of these trips will not need to go externally once the development is fully occupied.

7.3.3 Similarly, the local centres will provide opportunities for fulfilling retail and other daily needs which would otherwise be served by a trip outside the development.

7.4 External Trips

7.4.1 The remainder of the trips are expected to go externally to the site. These will be residents going off site for employment opportunities as well as secondary grammar education and further retail and leisure purposes.

7.5 Mode Share

7.5.1 Although Tudeley Village falls within the same MSOA as Paddock Wood, it is not located near a train station and therefore the mode share extracted from NOMIS is expected to not be reflective fully. It is felt that the full development would reflect Kings Hill in both size and relationship to a train service. MSOA TM007 is considered to be the best reflecting of the future travel patterns for residential development in Tudeley.

7.5.2 Table 7.3 below sets out the mode share of the Tonbridge and Malling MSOA 007 and applies it to the peak hour person trips set in Table 7.2. These are based on the responses to the 2011 census indicating main mode to travel to work. It demonstrates that driving or passengers in a private car equates for approximately 71% of all trips, whilst public transport use equates to approximately 17.5% and walking and active travel modes only 7%.

Table 7.3: External Trips Split by 2011 Census Local Mode Share

| Mode | 2011 Census Mode Share | AM Peak Hour Person Trips | PM Peak Hour Person Trips |
|--|------------------------|---------------------------|---------------------------|
| Work mainly at or from home | - | - | - |
| Underground, metro, light rail or tram | 0.3% | 8 | 8 |
| Train | 16.0% | 468 | 455 |
| Bus, minibus or coach | 1.5% | 44 | 42 |
| Taxi | 0.1% | 3 | 3 |
| Motorcycle, scooter or moped | 0.8% | 24 | 23 |
| Driving a car or van | 70.9% | 2071 | 2012 |
| Passenger in a car or van | 3.4% | 98 | 95 |
| Bicycle | 0.9% | 26 | 25 |
| On foot | 6.0% | 174 | 169 |
| Other method of travel to work | 0.2% | 5 | 5 |
| TOTAL | 100% | 2920 | 2838 |

Source: nomisweb.co.uk & consultant calculation. Includes Excel rounding.

7.5.3 Based on the current Census data, with no interventions, a high proportion of the forecast trips generated by the development would be undertaken by private car. It is crucial that any

development of the site places a high priority on mode shift, turning car journeys into trips made via sustainable modes.

7.6 Trip Distribution

7.6.1 Table 7.4 indicates the main destinations future residents are likely to travel to and from for work derived from the Travel to Work census data for Tunbridge Wells 001 MSOA. The destinations categorised as Other North, East, and South indicate destinations in that direction from the MSOA other than those explicitly set out in the table.

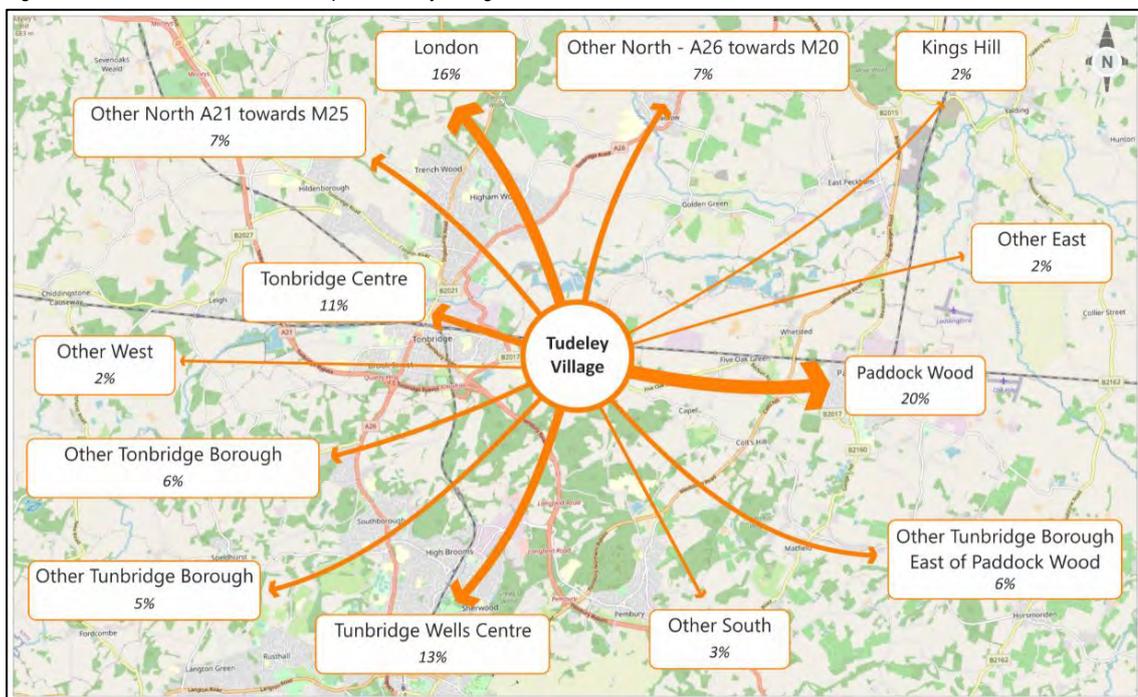
Table 7.4: Distribution of External Trips

| Origin / Destination | External Trip Proportions % |
|---|-----------------------------|
| Paddock Wood | 20% |
| Royal Tunbridge Wells | 13% |
| Other Tunbridge Wells Borough | 5% |
| Other Tunbridge Borough E of Paddock Wood | 6% |
| Tonbridge Centre | 11% |
| Kings Hill | 2% |
| Other Tonbridge Borough | 6% |
| Other North A21 towards M25 | 7% |
| Other North – A26 towards M20 | 7% |
| Other South | 3% |
| Other East | 2% |
| Other West | 2% |
| London | 16% |
| Total | 100.0% |

Source: Consultant calculated from 2011 Census data

7.6.2 Figure 7.2 below illustrates the indicative distribution of external trips generated by the development.

Figure 7.2: Distribution of External Trips –Tudeley Village



7.6.3 It can be seen from the census data that a substantial proportion of external trips will be heading to Tunbridge Wells, Paddock Wood, Tonbridge and other North. Other North includes trips that either travel north towards the M25 or M20 to get to their destination.

7.6.4 Due to the site location to Paddock Wood rail station and town centre, it is anticipated that many additional trips are made using other methods other than the distribution by car mentioned above.

7.6.5 The above distribution shows destinations based on all modes. When considering the distribution of vehicular trips from the Tudeley proposals, the review of census data suggests that the demand for vehicular trips to the west on the B2017 would be higher than the comparative proportion of trips across all modes.

7.7 Target Forecast Mode Share

7.7.1 It is an expectation that any development of the site would provide exceptional connectivity within the site for pedestrians and cyclists. Commodious, attractive and legible routes connecting housing, the local centre and the schools are essential.

7.7.2 However, it will also be crucial to ensure that trips made outside of the development are made using sustainable modes where possible.

7.7.3 To that end, it is considered reasonable that the development targets at least a 40% reduction in external car driver trips. Other mode shares have then been adjusted to reflect a change from car driver trips to sustainable modes and working from home. It is considered that as the site is following Garden Village principles, sustainable connections will be high quality and provide key connections.

7.7.4 It is important to aim for a high modal shift in order to focus all parties on delivering a development that is as well planned for promoting movement by sustainable modes to destinations inside and outside of the development.

7.7.5 Table 7.5 below presents a comparison between the existing mode shares, and the indicative mode share targets. These targets are based on the responses to the 2011 Census indicating on the main model of travel to work. Participants may use multiple modes for their journey to work e.g. drive to the station and use the train, or use the underground and train, but can only indicate one mode in their Census response.

Table 7.5: Comparison of Existing Mode Share and Mode Share Targets

| Mode | Existing Share | Target Share |
|--|----------------|--------------|
| Work mainly at or from home | - | 8.5% |
| Underground, metro, light rail or tram | 0.3% | 0.3% |
| Train | 16.0% | 18.9% |
| Bus, minibus or coach | 1.5% | 7.2% |
| Taxi | 0.1% | 0.1% |
| Motorcycle, scooter or moped | 0.8% | 0.8% |
| Driving a car or van | 70.9% | 42.6% |
| Passenger in a car or van | 3.4% | 4.8% |
| Bicycle | 0.9% | 9.4% |
| On foot | 6.0% | 7.4% |
| Other method of travel to work | 0.2% | 0.2% |
| TOTAL | 100% | 100% |

Source: 2011 Census data and consultant calculation

7.7.6 The car mode share target is 42.6% which is considered to be a significant reduction.

7.7.7 The percentage of trips which will change to people working at home is shown at 8.5%, which is actively being promoted by the developer with a commitment to provide high quality fast internet provision. There is scope for this to be higher, but the long-term effects of COVID-19 remain to be seen. Elsewhere, increases are shown in bus and rail travel and also in pedestrian and cyclist mode shares. These are all important modes in terms of reducing car dependency.

7.7.8 Tables 7.6 below translate the above mode shares into indicative external trips generated by the development. The forecast trips prior to mode share adjustment are also shown for comparison purposes.

Table 7.6: Indicative External Person Trip Generation by Mode

| Mode | Trips by Existing Mode Share | | Trips by Mode Share Target | |
|--|------------------------------|--------------|----------------------------|--------------|
| | AM Peak Hour | PM Peak Hour | AM Peak Hour | PM Peak Hour |
| Work mainly at or from home | - | - | 249 | 241 |
| Underground, metro, light rail or tram | 8 | 8 | 8 | 8 |
| Train | 468 | 455 | 551 | 535 |
| Bus, minibus or coach | 44 | 42 | 209 | 203 |
| Taxi | 3 | 3 | 3 | 3 |
| Motorcycle, scooter or moped | 24 | 23 | 24 | 23 |
| Driving a car or van | 2071 | 2012 | 1243 | 1207 |
| Passenger in a car or van | 98 | 95 | 139 | 135 |
| Bicycle | 26 | 25 | 275 | 267 |
| On foot | 174 | 169 | 215 | 209 |
| Other method of travel to work | 5 | 5 | 5 | 5 |
| TOTAL | 2920 | 2838 | 2920 | 2838 |

Source: Consultant calculation. Includes Excel rounding.

7.7.9 Achieving the mode share targets which are set out above would result in a material decrease in external car trips. The trips which are shown as working at home are not trips as such. Instead they represent trips which would previously have been made to a workplace, which would no longer be made at all.

7.7.10 The Census data from which the above was calculated is based on the main mode of travel used. Therefore, although there may be an increase in train journeys, the journey to Tonbridge railway station is also an important factor which is not directly considered in the above table. Providing opportunities to travel sustainably from the development to the railway station is therefore important. This ties in with a need to provide improvements to the off-site pedestrian/cycle infrastructure and bus infrastructure in order to increase these mode shares.

7.8 Tudeley Village Transport Strategies

7.8.1 Stantec Drawings 49653/5501/002 in **Appendix B** present transport strategies for Tudeley for general movement and for public transport respectively.

7.9 Transport Infrastructure Requirements

7.9.1 It has been identified that there are a number of gaps in the sustainable transport infrastructure in the vicinity of the site that would need to be addressed to provide a more comprehensive network for non-motorised users. This includes pedestrian and cycle improvements towards Tonbridge, Paddock Wood and Tunbridge Wells. This would make these routes more attractive for occupiers of the development and also more widely amongst the existing population.

7.9.2 Public transport will also be a key measure in ensuring car trips are kept as low as possible. At present it is considered that an increase in frequency of bus service in the area to every 15 minutes with a midi size bus will cater for the proposed development.

- 7.9.3 Although a high level of internalisation is aimed for on the development there will be some need to travel off site. It is expected that the majority of traffic would travel west from the site towards the A26 and therefore highway improvements may be required at the A21/A26 roundabout and the A26/ B2017 roundabout. It is anticipated that a bypass link to the south of Five Oak Green would also be beneficial.
- 7.9.4 A228 Colts Hill route improvements – The A228 Colts Hill improvements are beneficial for both Paddock Wood and east Capel and Tudeley Village and therefore has been considered here in addition to paragraph 6.8.6 .
- 7.9.5 The alternative options are shown as concept drawings in **Appendix B**, and are as follows:
- Drawing 49653/5501/007 – Online Improvements Option
 - Drawing 49653/5501/019 – Local Bypass of Colts Hill. This option largely follows the route of the bypass scheme proposed by Kent County Council, but will have a comparatively smaller corridor width. This would be less intrusive on the surrounding area than the KCC scheme.
- 7.9.6 As well as the options shown on the drawings referenced above, variants of these options could also be considered. This could include, for example, an alternative alignment for Alders Road which does not require the new bridge shown on Drawing 49653/5501/019. All alternatives to KCC’s current bypass option would need to be subject to the thorough assessment process before they could proceed to ensure they represent a viable option and that there are not substantial costs relating to matters including level changes and ground conditions which would make the alternative less attractive than the current KCC option.
- 7.9.7 Table 7.7 below presents a comparison of the relative benefits and disbenefits of the two main options.

Table 7.7: Benefits and Disbenefits of Colts Hill Schemes

| Online Improvements (Stantec Drawing 49653/5501/007) | | Local Bypass of Colts Hill (Stantec Drawing 49653/5501/019) | |
|--|---|--|---|
| Benefits | Disbenefits | Benefits | Disbenefits |
| Improvement to road safety in Colts Hill. | Third party land requirement. | Improvement to road safety in Colts Hill. | More costly than online improvements. |
| Less costly than a bypass. | Full corridor improvement to standard not possible due to properties fronting A228 in Colts Hill. | Uses part of the alignment previously evaluated by KCC. | Comparatively more disruptive to greenfield areas |
| Comparatively less disruptive to greenfield areas. | Impact to operation of A228 during construction phase. | A northern section could be delivered early on bypassing part of the A228 with a safety issue. | Removal of a number of trees. |
| Avoids ancient woodland and loss of significant number of trees. | Loss of trees lining the online route. | Avoids local flood zones. | Substantial third-party land requirement. |
| Avoids local flood zones | | The current A228 through Colts Hill could be closed to through | Can be viewed from AONB. |

| Online Improvements (Stantec Drawing 49653/5501/007) | | Local Bypass of Colts Hill (Stantec Drawing 49653/5501/019) | |
|---|-------------|---|-------------|
| Benefits | Disbenefits | Benefits | Disbenefits |
| | | traffic and become a ped/cycle/public transport route. | |
| Lesser impact on AONB | | Vehicular capacity increase. | |
| | | Offline construction with minimal impact to existing A228. | |
| | | Avoids ancient woodland. | |
| | | Air Quality improvement in Colts Hill. | |
| | | Provides option to remove Alders Road bridge structure and such a deep cutting for full bypass scheme | |

- 7.9.8 To access Paddock Wood, traffic would be required to pass through Five Oak Green if a southern link is not included. Notwithstanding the southern link, traffic calming measures are likely to be necessary in Five Oak Green.
- 7.9.9 A concept option for the southern link has been prepared, which is shown as connecting to the local bypass option of Colts Hill referenced above. This is shown on Stantec Drawing 49653/5501/014/B in **Appendix B**.
- 7.9.10 The B2017 would also require localised widening to be more suitable for the volume of traffic that would be using the road and to facilitate regular two-way bus movements.
- 7.9.11 Personal Travel Planning will be required to ensure that new residents adopt sustainable travel practices at the earliest opportunity.
- 7.9.12 Significant walking and cycling improvements would also be required and have been put forward to provide connectivity to Tonbridge, Tunbridge Wells and Paddock Wood.
- 7.9.13 Table 7.8 below sets out the highways and transport infrastructure which is considered would be required to induce a mode shift in the order of that shown above. It also lists the infrastructure which would be necessary in order to access the site. The infrastructure shown forms part of a wider list covering multiple facets of the development's requirements. Table also provides a reference number which reflects the infrastructure shown on Stantec Drawings 49653/5501/002.

Table 7.8: Recommended Transport Infrastructure – Tudeley Village

| Ref | On Site Transport Infrastructure |
|--|--|
| 10 | Primary Roads (x5) |
| 9 | Secondary Roads (x8) |
| 15 | Internal link road with 3m footway/cycleway |
| 11 | Pedestrian links |
| 16 | Bridge upgrades across railway |
| | Works to reduce existing rail bridge |
| | Bus stops on site along internal road |
| 11 | Greenways/Cycle routes |
| Site Access Arrangements | |
| 14 | Site Access to East of Tudeley |
| 13 | Site Access to West of Tudeley |
| Off Site Pedestrian and Cycle Improvements | |
| | Pedestrian / Cycle upgrades |
| | Pedestrian and cycle crossings |
| 17 | Cycle route west to the A26 |
| 5 | Cycle route south to A21 via Half Moon Lane |
| 3 | Cycle route east towards Paddock Wood |
| Off-site Highway Improvements | |
| 1 | Colts Hill route improvements / Bypass |
| | A26/A21 Roundabout |
| | A26/B2017 Roundabout |
| | Five Oak Green Bypass |
| | A228 Maidstone Road / Whetsted Road priority junction; |
| | Traffic Calming Measures at Five Oak Green |
| | Widening of the B2017 |
| Other Off-Site Infrastructure | |
| - | Midi Bus Service |
| | Personal Travel Planning |

7.10 Recommendation

Should TWBC wish to proceed with promotion of Paddock Wood and east Capel and Tudeley Village for allocation, it is strongly recommended that a more detailed evaluation of the transport impacts is conducted. It is noted that the SWECO traffic modelling work includes all the improvements suggested for Colts Hill and the Five Oak Green bypass section, however, at the relevant planning application stages further assessment work would be anticipated to determine the appropriate point in time when this infrastructure, and others, would be necessary.