



Transport Assessment

Scenarios for the Distribution of Housing
Growth - Stage 4 Report

June 2016

Waverley Borough Council



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1 Introduction

Mott MacDonald has been commissioned by Waverley Borough Council (WBC) to provide advice in relation to planning for new development as part of their Local Plan. This report covers Stage 4 of the work.

1.1 Background

WBC consulted on a new Local Plan from 3 September - 17 October 2014, through the 'Consultation on Potential Housing Scenarios and Other Issues for the Waverley Local Plan' document. Four scenarios to meet the predicted demand for new housing were presented:

"Each would deliver 8,450 homes over the period from 2013 to 2031, equivalent to just over 469 homes per year on average. This includes the 3,400 on sites within settlements. The distribution of the remaining 5,050 homes differs between the scenarios as follows:

- Scenario 1 – Around 4,450 on greenfield sites at the four larger settlements, some growth at villages (600) but no development at Dunsfold Aerodrome
- Scenario 2 – Around 2,650 on greenfield sites at the four larger settlements, some growth at the villages (600) plus 1,800 at Dunsfold Aerodrome
- Scenario 3 – Around 1,900 on greenfield sites at the four larger settlements, some growth at the villages (550) plus 2,600 at Dunsfold Aerodrome
- Scenario 4 – Around 1,200 on greenfield sites at the four larger settlements, some growth at the villages (450) plus 3,400 at Dunsfold Aerodrome."

Supporting evidence for this consultation included a Strategic Transport Assessment (STA) of scenarios undertaken by Surrey County Council (SCC) on behalf of WBC, as well as a 'Planning Position Statement from Promoters of Dunsfold Aerodrome: August 2014'.

The main difference between the scenarios is in the number of homes provided in 3 main areas as below:

Table 1.1: Number of New Homes in Each Scenario

Scenario	Farnham	Cranleigh	Dunsfold Aerodrome
1	3,800	1,800	0
2	2,600	1,200	1,800
3	2,100	1,050	2,600
4	1,800	650	3,400

1.2 Scope of Stage 4 Report

Stage 4 of the work is to contribute to the evidence base that covers wider transport sustainability issues, as set out in the Government's Planning Practice Guidance: "Transport evidence bases in plan making and decision taking".

The main requirements of Stage 4 are to:

- Determine existing modal split for each area;
- Determine existing destinations of work trips by mode;
- Identify existing transport services;
- Identify existing levels of employment;
- Identify existing access to other local facilities; and
- Investigate transport capacity and the potential to improve sustainable modes.

Stage 4 follows on, and refers to, previous stages of work:

Stage 1 - review of previous work and associated data inputs and modelling outputs, with development of an approach to assess the impact of increased traffic on the A281 as a result of 1,800 new homes at Dunsfold;

Stage 2 – detailed analysis of the impacts on the A281. Expanded to include the impact of more than 1,800 new homes at Dunsfold and an alternative scenario with more new homes in Cranleigh;

Stage 3 – use of the Farnham traffic model to assess the impact of predicted traffic growth in and around the town, as a result of new homes in Farnham, and consideration of potential mitigation measures.

2 Mode of Travel to Work

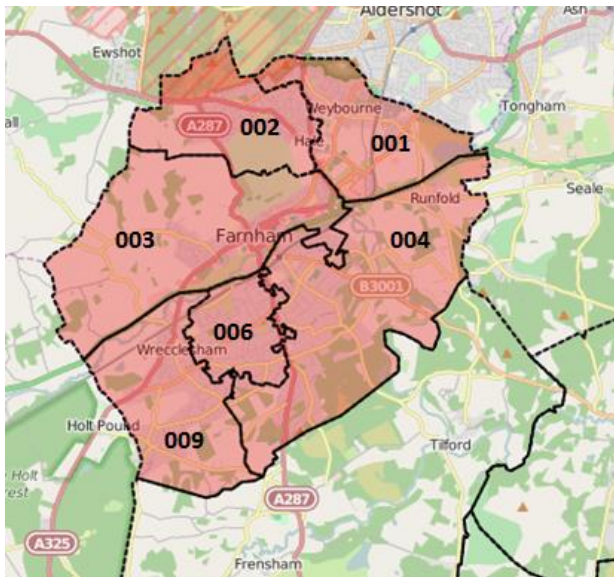
2.1 2011 Census Data on Travel Modes

The 2011 Census Database contains information on travel modes used by existing residents for their usual journey to work. Data on the usual workplace of residents is also available, with the greatest level of detail in terms of home locations being ‘middle layer super output areas’ which are somewhat larger than Census wards.

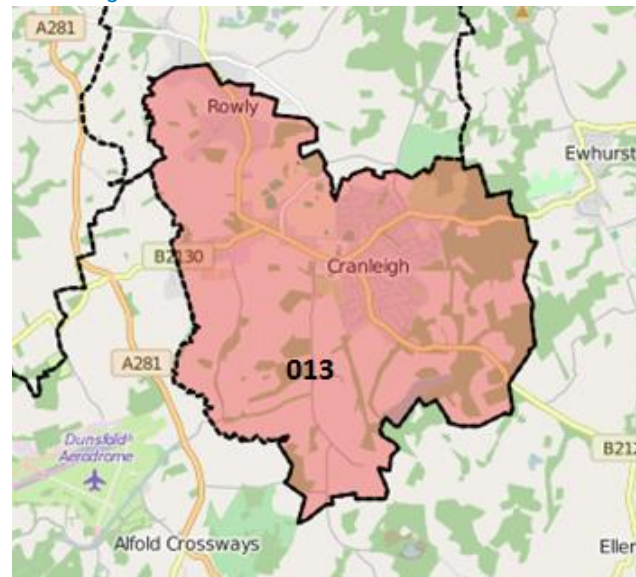
Farnham is split into six middle layer super output areas, as shown below, whereas all of Cranleigh is covered by one area:

Figure 2.1: Census Middle Layer Super Output Areas

Farnham



Cranleigh



Source: © OpenStreetMap contributors

The modes of travel to work used by residents of each of these areas is detailed in **Table 2.1** overleaf. For Farnham, the average for the whole town is also shown, weighted based on the number of residents in each area.

Estimates of the travel modes that would be used by new Dunsfold residents for trips to work are also shown, based on the data for Cranleigh but adjusted to take into account the likely lower level of ‘internalisation’ of trips. 31% of existing Cranleigh residents also work in the town; it is unlikely that a similar figure would be achieved for the Dunsfold development, with 20% internalisation being the highest realistic level. For comparison, there is 28% internalisation for Farnham as a whole.

The modal split is also shown for a sensitivity test with a lower internalisation rate of 10%. Both of these mode distributions are calculated by factoring down the ‘internal’ trips, which reduces the walk and cycle modes, and factoring up ‘external’ trips, giving increases in car driver, rail and bus modes.

Table 2.1: Existing Modes of Travel to Work by Farnham, Cranleigh and New Dunsfold Residents

Area		Car Driver	Car Pass	Rail	Bus	Walk	Cycle	Motor cycle	Other	Total
Badshot Lea	1	77.4%	5.2%	5.4%	2.0%	6.8%	1.2%	1.2%	0.8%	100.0%
Hale	2	76.5%	4.9%	5.7%	4.3%	5.7%	1.4%	0.9%	0.5%	100.0%
Centre and west Farnham	3	58.6%	3.8%	12.2%	2.0%	20.4%	1.5%	0.5%	1.0%	100.0%
South Farnham	4	67.3%	2.7%	17.2%	0.7%	9.4%	1.2%	0.6%	0.8%	100.0%
Central urban area	6	69.5%	4.3%	11.8%	1.6%	9.6%	1.6%	0.7%	0.8%	100.0%
Wrecclesham / Rowledge	9	74.6%	4.5%	9.2%	1.4%	7.1%	1.5%	0.7%	0.9%	100.0%
Farnham Average		70.5%	4.3%	9.9%	2.2%	10.1%	1.4%	0.8%	0.8%	100.0%
Cranleigh	13	70.2%	5.2%	5.3%	2.4%	12.6%	3.0%	0.5%	0.8%	100.0%
Dunsfold Park – 20% Internalisation		74.2%	4.7%	6.2%	2.7%	8.6%	2.4%	0.6%	0.7%	100.0%
Dunsfold Park – 10% Internalisation		77.5%	4.3%	6.9%	2.9%	5.3%	1.9%	0.6%	0.7%	100.0%

2.2 Employees Working in Each Area

The 2011 Census Database gives numbers of full and part time employees who live in each area, as well as the total number of employees who work in each area, as detailed in **Table 2.2**. Comparing these two figures shows that the ratio of total employed in the area to working residents is higher in Farnham than Cranleigh.

Table 2.2: Numbers of Residents and Employees in Each Area

Area	Residents in Area	Employed Residents in Area (FTE)	Total Employed in Area (FTE)	Ratio of Employees to Residents
Farnham Total	39,488	16,253	26,732	1.64
Cranleigh	10,692	4,344	6,052	1.39

2.3 Average Mode Split for Development Scenarios

Data on the number of new homes assumed in each of the Census areas for the four different development scenarios was provided by WBC and is detailed in **Table 2.3**. By applying the journey to work mode splits for each Census area to the number of homes contained it, the average mode split for each scenario was determined. The results assuming 20% internalisation at Dunsfold are shown in **Table 2.4**, demonstrating a consistent mode split across all scenarios. The biggest difference is 1.2% more car drivers in Scenario 4 compared to Scenario 1, with a similar reduction in walking in Scenario 4.

Table 2.5 shows the corresponding figures with 10% internalisation which increases the difference between Scenario 4 and Scenario 1 to 3.2% for car drivers. Scenarios 2 and 3 are shown to have mode splits that are very similar to each other with 10% internalisation.

Table 2.3: Distribution of New Homes to Census Areas

Area	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Badshot Lea	1634	969	594	459
Hale	162	122	72	72
Centre and west Farnham	1187	902	1107	942
South Farnham	313	233	123	123
Central urban area	95	95	95	95
Wrecclesham/ Rowledge	409	279	109	109
Farnham total	3800	2600	2100	1800
Cranleigh	1450	850	700	300
Dunsfold Park	0	1800	2600	3400
Total	5250	5250	5400	5500

Table 2.4: Average Modes of Travel for Each Scenario – 20% Internalisation at Dunsfold

Scenario	Car Driver	Car Pass	Rail	Bus	Walk	Cycle	Motor cycle	Other	Total
1	70.2%	4.6%	8.0%	2.1%	11.7%	1.8%	0.8%	0.8%	100.0%
2	71.1%	4.6%	7.7%	2.3%	10.8%	2.0%	0.7%	0.8%	100.0%
3	70.6%	4.6%	7.6%	2.4%	11.3%	2.1%	0.6%	0.8%	100.0%
4	71.4%	4.5%	7.5%	2.4%	10.6%	2.1%	0.6%	0.8%	100.0%

Table 2.5: Average Modes of Travel for Each Scenario – 10% Internalisation at Dunsfold

Scenario	Car Driver	Car Pass	Rail	Bus	Walk	Cycle	Motor cycle	Other	Total
1	70.2%	4.6%	8.0%	2.1%	11.7%	1.8%	0.8%	0.8%	100.0%
2	72.3%	4.5%	7.9%	2.3%	9.7%	1.8%	0.7%	0.8%	100.0%
3	72.2%	4.4%	8.0%	2.5%	9.7%	1.9%	0.6%	0.8%	100.0%
4	73.4%	4.3%	8.0%	2.6%	8.6%	1.8%	0.6%	0.7%	100.0%

3 Destinations of Work Trips by Mode

3.1 2011 Census Data

As mentioned earlier, data on the mode of travel to work from specified areas of residence to areas of workplace is available from the 2011 Census. The distribution of trips to work from the residents of Farnham and Cranleigh for each of the main modes of car driver, rail and bus are illustrated in plans contained in **Appendix A**.

For trips to work in Waverley Borough, the distribution is shown at the middle layer super output area level. For the rest of Surrey and its neighbouring counties, the district boundaries have been used, with Boroughs used in London. For trips further afield, the county/unitary authority boundaries have been used.

For car drivers, the plans show that Farnham residents travel in all directions from the town. Significant numbers are shown to the districts of Winchester, Basingstoke & Deane, West Berkshire, Wokingham, Bracknell Forest, Runnymede, Woking, Elmbridge and Mole Valley, as well as more local towns.

In contrast, the distribution for Cranleigh residents who drive to work shows a greater concentration nearer to the town, including 29% to Guildford and 21% in total to the nearby rural areas such as Ewhurst, Dunsfold, Chiddingfold, Bramley and Shamley Green. There are also over 5% of trips to Mole Valley and Horsham.

For travel to work by rail, Cranleigh has large proportions with a destination in the City of London (50%) and the rest of central London (34%). For the remainder of rail trips, Reading is the only destination that accounts for more than 2%. For Farnham, there are also high proportions to City of London (42%) and central London (34%), with the other main destinations being Guildford, Woking, Farnham, Reading and Aldershot.

The distance between each of the combinations of home and workplace locations recorded in the Census was calculated based on the 'crow fly' distance between the centroids of the zones. This allowed the average distance travelled from each residential area to be estimated for each travel mode, as shown in **Table 3.1**.

It should be noted that any trips contained within an area are assumed to be zero in length, so the average length of walk trips for Cranleigh is shown to be much lower than areas in Farnham (where most walk trips move from one area to another).

Table 3.1: Existing Distance Travelled to Work by Farnham and Cranleigh Residents (km)

Area		Car Driver	Car Pass	Rail	Bus	Walk	Cycle	Motor cycle	Other	Average
Badshot Lea	1	14.2	10.9	44.0	8.0	3.9	6.6	16.4	5.5	14.7
Hale	2	14.7	9.5	45.9	7.1	3.4	8.5	16.5	8.2	15.1
Centre and west Farnham	3	17.1	11.3	46.1	14.2	2.3	8.2	12.7	16.1	17.2
South Farnham	4	17.7	11.4	51.1	18.2	3.3	14.9	15.1	12.5	21.9
Central urban area	6	16.1	11.1	49.4	8.9	4.5	5.2	12.4	25.3	18.4
Wrecclesham / Rowledge	9	17.0	11.8	53.5	12.0	5.5	5.8	19.4	28.9	19.2
Farnham Average		16.0	10.9	48.7	9.8	3.4	7.8	15.8	16.4	17.5
Cranleigh	13	13.5	7.3	45.4	10.8	1.5	4.2	17.4	19.3	13.1

For car driver trips, the weighted average trip length for the whole of Farnham is shown to be around 18% higher than for Cranleigh (16.0km compared to 13.5km).

Using the above data for Cranleigh, the likely travel distances by new Dunsfold residents has been estimated assuming lower proportions of internalisation as before. With 20% internalisation, the average car driver trip length is lower than that for Farnham at 15.0km but this increases to 16.2km with 10% internalisation (as there are fewer short car trips).

Table 3.2: Estimated Distance Travelled to Work by New Dunsfold Residents (km)

Area		Car Driver	Car Pass	Rail	Bus	Walk	Cycle	Motor cycle	Other	Average
Dunsfold Park – 20% Internalisation		15.0	9.5	45.7	11.5	2.2	5.7	19.8	23.2	15.3
Dunsfold Park – 10% Internalisation		16.2	11.7	45.9	11.9	3.8	7.9	21.6	27.8	17.2

3.2 Total Travel Distances for Development Scenarios

The total distance travelled by residents in the new development areas has been estimated for each the four development scenarios, using the mode shares and average trip lengths for the relevant Census areas. The results are shown in **Table 3.3-Table 3.6** for 20% internalisation at Dunsfold, for the one-way trip to work each day.

Each household currently has an average of 1.01 employed residents (full time equivalent), based on existing Census data for Farnham and Cranleigh, assuming part-time employees work 3 days/week. Therefore, the number of homes can be used directly to estimate employee trips.

Similar results with 10% internalisation are contained in **Table 3.7 - Table 3.10**.

Table 3.3: Scenario 1 – Estimated Total Distance Travelled Each Day – 20% Internalisation at Dunsfold

Area	No. of homes	Total Distance Travelled (km)		
		Car driver	Rail	Bus
Badshot Lea	1634	18010	3894	265
Hale	162	1816	424	50
Centre and west Farnham	1187	11877	6680	341
South Farnham	313	3734	2756	39
Central urban area	95	1063	554	14
Wrecclesham/ Rowledge	409	5199	2016	70
Farnham total	3800	41698	16324	779
Cranleigh	1450	13733	3493	375
Dunsfold Park	0	0	0	0
Total	5250	55431	19816	1154
Average Distance per home (km)		10.6	3.8	0.2

Table 3.4: Scenario 2 – Estimated Total Distance Travelled Each Day – 20% Internalisation at Dunsfold

Area	No. of homes	Total Distance Travelled (km)		
		Car driver	Rail	Bus
Badshot Lea	969	10680	2309	157
Hale	122	1368	319	37
Centre and west Farnham	902	9025	5076	259
South Farnham	233	2780	2052	29
Central urban area	95	1063	554	14
Wrecclesham/ Rowledge	279	3546	1375	48
Farnham total	2600	28462	11685	545
Cranleigh	850	8050	2047	220
Dunsfold Park	1800	20087	5140	554
Total	5250	56600	18872	1318
Average Distance per home (km)		10.8	3.6	0.3

Table 3.5: Scenario 3 – Estimated Total Distance Travelled Each Day – 20% Internalisation at Dunsfold

Area	No. of homes	Total Distance Travelled (km)		
		Car driver	Rail	Bus
Badshot Lea	594	6547	1415	96
Hale	72	807	188	22
Centre and west Farnham	1107	11076	6230	318
South Farnham	123	1467	1083	15
Central urban area	95	1063	554	14
Wrecclesham/ Rowledge	109	1385	537	19
Farnham total	2100	22346	10008	485
Cranleigh	700	6629	1686	181
Dunsfold Park	2600	29015	7424	800
Total	5400	57991	19118	1465
Average Distance per home (km)		10.7	3.5	0.3

Table 3.6: Scenario 4 – Estimated Total Distance Travelled Each Day – 20% Internalisation at Dunsfold

Area	No. of homes	Total Distance Travelled (km)		
		Car driver	Rail	Bus
Badshot Lea	459	5059	1094	74
Hale	72	807	188	22
Centre and west Farnham	942	9425	5302	271
South Farnham	123	1467	1083	15
Central urban area	95	1063	554	14
Wrecclesham/ Rowledge	109	1385	537	19
Farnham total	1800	19207	8758	415
Cranleigh	300	2841	723	78
Dunsfold Park	3400	37943	9708	1046
Total	5500	59992	19188	1539
Average Distance per home (km)		10.9	3.5	0.3

Table 3.7: Scenario 1 – Estimated Total Distance Travelled Each Day – 10% Internalisation at Dunsfold

Area	No. of homes	Total Distance Travelled (km)		
		Car driver	Rail	Bus
Badshot Lea	1634	18010	3894	265
Hale	162	1816	424	50
Centre and west Farnham	1187	11877	6680	341
South Farnham	313	3734	2756	39
Central urban area	95	1063	554	14
Wrecclesham/ Rowledge	409	5199	2016	70
Farnham total	3800	41698	16324	779
Cranleigh	1450	13733	3493	375
Dunsfold Park	0	0	0	0
Total	5250	55431	19816	1154
Average Distance per home (km)		10.6	3.8	0.2

Table 3.8: Scenario 2 – Estimated Total Distance Travelled Each Day – 10% Internalisation at Dunsfold

Area	No. of homes	Total Distance Travelled (km)		
		Car driver	Rail	Bus
Badshot Lea	969	10680	2309	157
Hale	122	1368	319	37
Centre and west Farnham	902	9025	5076	259
South Farnham	233	2780	2052	29
Central urban area	95	1063	554	14
Wrecclesham/ Rowledge	279	3546	1375	48
Farnham total	2600	28462	11685	545
Cranleigh	850	8050	2047	220
Dunsfold Park	1800	22557	5797	625
Total	5250	59069	19529	1390
Average Distance per home (km)		11.3	3.7	0.3

Table 3.9: Scenario 3 – Estimated Total Distance Travelled Each Day – 10% Internalisation at Dunsfold

Area	No. of homes	Total Distance Travelled (km)		
		Car driver	Rail	Bus
Badshot Lea	594	6547	1415	96
Hale	72	807	188	22
Centre and west Farnham	1107	11076	6230	318
South Farnham	123	1467	1083	15
Central urban area	95	1063	554	14
Wrecclesham/ Rowledge	109	1385	537	19
Farnham total	2100	22346	10008	485
Cranleigh	700	6629	1686	181
Dunsfold Park	2600	32582	8373	903
Total	5400	61557	20067	1569
Average Distance per home (km)		11.4	3.7	0.3

Table 3.10: Scenario 4 – Estimated Total Distance Travelled Each Day – 10% Internalisation at Dunsfold

Area	No. of homes	Total Distance Travelled (km)		
		Car driver	Rail	Bus
Badshot Lea	459	5059	1094	74
Hale	72	807	188	22
Centre and west Farnham	942	9425	5302	271
South Farnham	123	1467	1083	15
Central urban area	95	1063	554	14
Wrecclesham/ Rowledge	109	1385	537	19
Farnham total	1800	19207	8758	415
Cranleigh	300	2841	723	78
Dunsfold Park	3400	42607	10949	1181
Total	5500	64655	20429	1674
Average Distance per home (km)		11.8	3.7	0.3

As each development scenario does not contain exactly the same number of homes, the average trip length by mode is also shown in the tables as a fairer comparison. The differences in average lengths between scenarios are shown graphically in **Figure 3.1** and **Figure 3.2**.

Scenario 1 has the lowest car trip length. This is partly due to the other scenarios having fewer homes in Cranleigh which has the lowest car mode share and lowest average car trip length of the three main home locations (Farnham, Cranleigh and Dunsfold).

There is a much more marked increase assuming 10% internalisation at Dunsfold as this results in a higher car mode share and higher average car trip length for Dunsfold residents.

Table 3.11 and **Table 3.12** gives an estimate of the total vehicle-kilometres travelled to work by car for each scenario over a whole year, based on the following assumptions:

- A total of 5,250 homes in each scenario to allow direct comparison;
- On average each employee would travel to work on 225 days of the year.

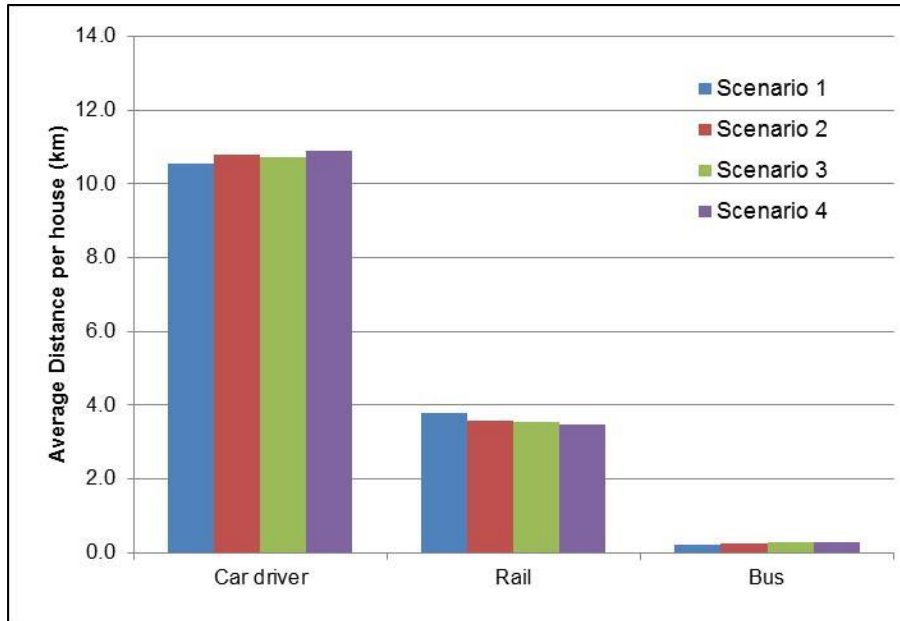
Table 3.11: Annual Distance Travelled to Work by Car - 20% Internalisation at Dunsfold

Car distance travelled	Scenario 1	Scenario 2	Scenario 3	Scenario 4
One-way to work on one day (veh-kms)	55,431	56,600	56,380	57,265
Two-way total over one year (veh-kms)	24,944,000	25,470,000	25,371,000	25,769,000
Difference to Scenario 1 (veh-kms)		526,000	427,000	825,000
Difference to Scenario 1 (%)		2.1%	1.7%	3.3%

Table 3.12: Annual Distance Travelled to Work by Car - 10% Internalisation at Dunsfold

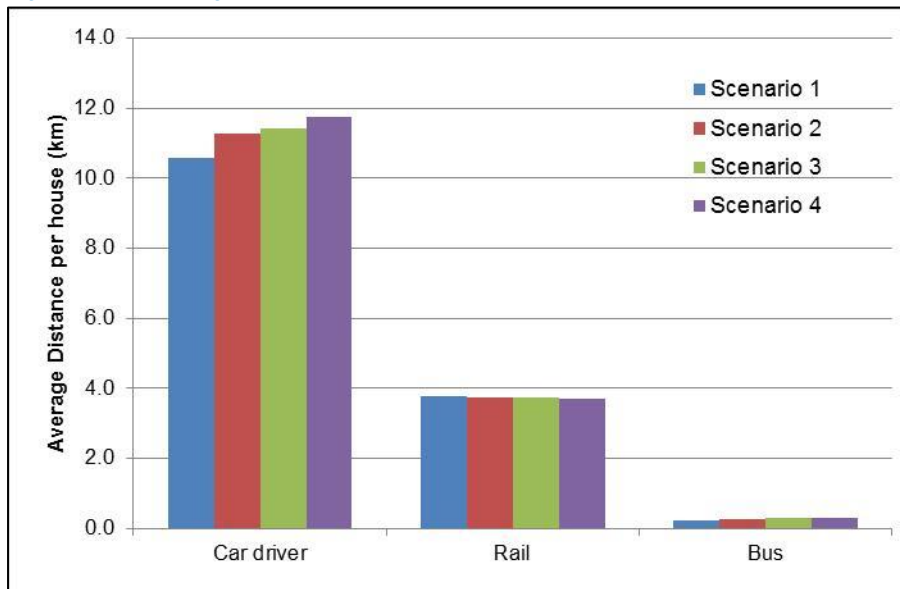
Car distance travelled	Scenario 1	Scenario 2	Scenario 3	Scenario 4
One-way to work on one day (veh-kms)	55,431	59,069	59,848	61,717
Two-way total over one year (veh-kms)	24,944,000	26,581,000	26,931,000	27,772,000
Difference to Scenario 1 (veh-kms)		1,637,000	1,987,000	2,828,000
Difference to Scenario 1 (%)		6.6%	8.0%	11.3%

Figure 3.1: Average Distance Travelled per Home – 20% Internalisation at Dunsfold (km)



Source: MM analysis

Figure 3.2: Average Distance Travelled per Home – 10% Internalisation at Dunsfold (km)



Source: MM analysis

4 Existing Transport Services

A review of the existing bus and rail services was undertaken for the Farnham and Cranleigh/Dunsfold areas, using up to date online resources through passenger travel information websites.

4.1 Existing Bus Provision

Table 4.1 below presents the existing bus services in Farnham, detailing routes, operators, frequencies and the main locations that each route travels through, based on 2015 timetables.

Table 4.1: Existing Bus Services in Farnham

Route	Service Area	Operator	Weekday	Saturday	Sunday
4 - 5	North Town - Aldershot-Hale/Folly Hill - Farnham (4 via Folly Hill and 5 via Hale)	Stagecoach	2 per hour until 20:00 1 per hour until 24:00	2 per hour until 20:00	1 per 2 hours
17	Aldershot - Farnham - Wrecclesham - Rowledge	Stagecoach	1 per hour	1 per hour	No service
18	Aldershot - Farnham - Wrecclesham - Bordon-Lindford - Headley Down - Hindhead - Haslemere	Stagecoach	1 per hour	1 per hour	1 per 2 hours
19	Aldershot - Farnham - Beacon Hill - Hindhead - Haslemere - Guildford	Stagecoach	1 per hour	1 per hour	No service
46	Guildford - Compton - Godalming - Hurtmore - Shackelford - Elstead - Farnham - Aldershot	Stagecoach	1 per hour	1 per hour	No service
65	Guildford - Puttenham - Runfold - Farnham - Bentley - Alton	Stagecoach	1 per hour	1 per hour	No service
565	Woking - Sheerwater - New Haw - Addlestone - Chertsey	Waverley Hoppa	Farnham Station to Coxbridge Business Park route has been withdrawn		
16	Dockenfield/Rowledge - Shortheath - Farnham - Weybourne	Stagecoach	1 per hour between 10:00 - 13:00	No service	No service

Source: <http://www.surreycc.gov.uk/roads-and-transport/buses-and-trains>

There are a total of seven existing bus routes that service Farnham town centre, all of which are operated by Stagecoach. The services generally run hourly Monday-Saturday, but only two services run on Sundays. The 4-5 routes combine to give a 30-minute service Monday-Saturday. It should be noted that the 565 service has been withdrawn as the funding provided by the developer of the business park ended after the agreed period (August 2015).

Figure 4.1 shows the distribution of the bus routes through Farnham. All routes serve the town centre and all but the 65 service also connect to the rail station. The majority of Farnham residential areas are within walking distance of a bus stop giving an hourly service to the rail station and town centre.

Figure 4.1: Existing Bus Routes in Farnham



Source: <http://www.surreycc.gov.uk/roads-and-transport/buses-and-trains>

Table 4.2 below presents the existing bus services in Cranleigh and Dunsfold areas, detailing routes, operators, frequencies and the main locations that each route travels through.

There are nine bus routes that service the Cranleigh area, operated by five different bus operators. The 24, 25, 42, 53 and 63 services run on an hourly or every other hour basis, with most of the other services only running one trip on one or two weekdays. Only the 53 service runs on Sunday.

There is a good service between Cranleigh and Guildford, with a combined frequency of 4 buses/hour from the 24, 53 and 63 services.

There are only two bus routes that service the Dunsfold area, both of which are operated by Compass Travel. One route offers a fairly frequent service of one to two buses per hour, whilst the other only consists of one return journey per week, Monday-Saturday. There is no service on Sunday.

There are no bus services that currently provide a direct connection to the Dunsfold Aerodrome site

Figure 4.2 shows the distribution of the bus routes through the Cranleigh/Dunsfold area.

Table 4.2: Existing Bus Services in Cranleigh/Dunsfold

Route	Service Area	Operator	Weekday	Saturday	Sunday
Cranleigh					
24	Guildford - Shalford - Bramley - Elmbridge - Cranleigh	Buses Excetera	1 per hour	1 per hour	No service
42	Guildford - Farncombe- Catteshall - Godalming - Hascombe - Dunsfold - Alfold - Elmbridge -Cranleigh – Ewhurst (1 service per day via Plaistow - Ifold – Loxwood)	Compass Travel	Alternating: 1 per hour to 1 per 2 hours	Alternating: 1 per hour to 1 per 2 hours	No service
53	Ewhurst - Cranleigh - Wonersh - Bramley - Shalford - Guildford	Arriva	2 per hour until 10:00 1 per hour until 23:00	2 per hour until 10:00 1 per hour until 23:00	1 per hour
63 - 63X	Horsham - Slinfold - Bucks Green - Rudgwick -Cranleigh - Wonersh -Bramley - Shalford - Guildford	Arriva	1 per hour until 10:00 2 per hour until 16:00 1 per hour until 19:00	2 per hour until 18:00	No service
525	Albury - Chilworth - Wonersh - Smithwood Common - Cranleigh	Carlone Buses	1 return journey every Thursday	No service	No service
599	Holmbury St Mary - Forest Green - Ewhurst - Cranleigh - Smithwood Common - Wonersh -Chilworth - Guildford	Carlone Buses	1 return journey Thursdays and Fridays only	No service	No service
25	Guildford - Boxgrove -Morrow - Gomshall -Peaselake - Ewhurst -Cranleigh	Buses Excetera	1 per 2 hours between 10:30 - 16:30	1 per 2 hours between 10:30 - 16:30	No service
533	Ewhurst - Walliswood -Forest Green - Ockley -Dorking - Ranmore	Carlone Buses	1 return journey every Tuesday	No service	No service
50	Horsham - Walliswood - Ewhurst - Forest Green -Ockley - Coldharbour -Dorking	Buses4u	1 service every Tuesday	No service	No service
Dunsfold					
42	Guildford - Farncombe- Catteshall - Godalming - Hascombe - Dunsfold - Plaistow - Ifold - Loxwood - Alfold - Elmbridge -Cranleigh - Ewhurst	Compass Travel	Alternating: 1 per hour to 1 per 2 hours	Alternating: 1 per hour to 1 per 2 hours	No service
69	Alfold - Loxwood - Ifold - Plaistow - Kirdford - Wisborough - Green - Billingshurst - Pulborough Arundel - Worthing	Compass Travel	1 return journey every Tuesday	No service	No service

Source: <http://www.surreycc.gov.uk/roads-and-transport/buses-and-trains>

Figure 4.2: Existing Bus Routes serving Cranleigh and Dunsfold



Source: <http://www.surreycc.gov.uk/roads-and-transport/buses-and-trains>

4.2 Existing Rail Provision

Table 4.3 below presents the existing rail services for Farnham, detailing key destinations, frequencies and number of journey legs.

Table 4.3: Existing Rail Services for Farnham

Area	Time	Weekday	Saturday	Sunday
Woking	23 minutes (direct)	Every 30 minutes	Every 30 minutes	Every hour until 14:00 then every 30 minutes
Clapham Junction	50 minutes (direct) 1 hour (1 change) alternating services	Every 30 minutes	Every 30 minutes	Every hour until 13:30 then every 30 minutes
London Waterloo	1 hour direct /1 change alternating services	1 to 2 trains every 30 minutes (1 direct, 1 change)	1 to 2 trains every 30 minutes (1 direct 1 change)	Every hour until 13:30 then every 30 minutes
Reading	1 hour 20 min (2 changes)	Every 30 minutes	Every 30 minutes	Every hour until 15:30 then every 30 minutes
Portsmouth	1 hour 35 minutes (2 changes) 2 hours (1 change) alternating services	1 to 2 trains every 30 minutes	1 to 2 trains every 30 minutes	Every hour until 13:30 then every 30 minutes
Southampton	1 hour 20 minutes (1 change) 1 hour 40 minutes (2 changes)	Every 30 minutes	Every 30 minutes	Every hour until 13:30 then every 30 minutes
Basingstoke	1 hour (1 change)	Every 30 minutes	Every 30 minutes	Every hour until 13:30 then every 30 minutes
Guildford	27 - 40 minutes (1 change)	Every 30 minutes	Every 30 minutes	1 to 2 trains every hour until 13:30 then every 30 minutes
Dorking	1 hour 10 minutes (2 changes)	Every 30 minutes	Every 30 minutes	2 trains every hour until 13:30 then every 30 minutes
Aldershot	6 minutes (direct)	Every 30 minutes	Every 30 minutes	Every 30 minutes
Farnborough (main)	34 minutes (1 change)	Every 30 minutes	Every 30 minutes	Every 30 minutes to 1 every hour

Source: <http://www.nationalrail.co.uk/>

The majority of Farnham residents who travel by rail to work do so to London. Farnham is on the Alton-London Waterloo line, giving a 30-minute direct service at commuting times.

Cranleigh and Dunsfold do not have rail stations, so residents in these areas have to travel to Witley, Milford, Ockley or Chilworth station. **Table 4.4** below presents the existing direct rail services available from these stations to a range of major destinations.

Table 4.4: Existing Rail Services from Witley/Milford, Ockley and Chilworth (direct services only)

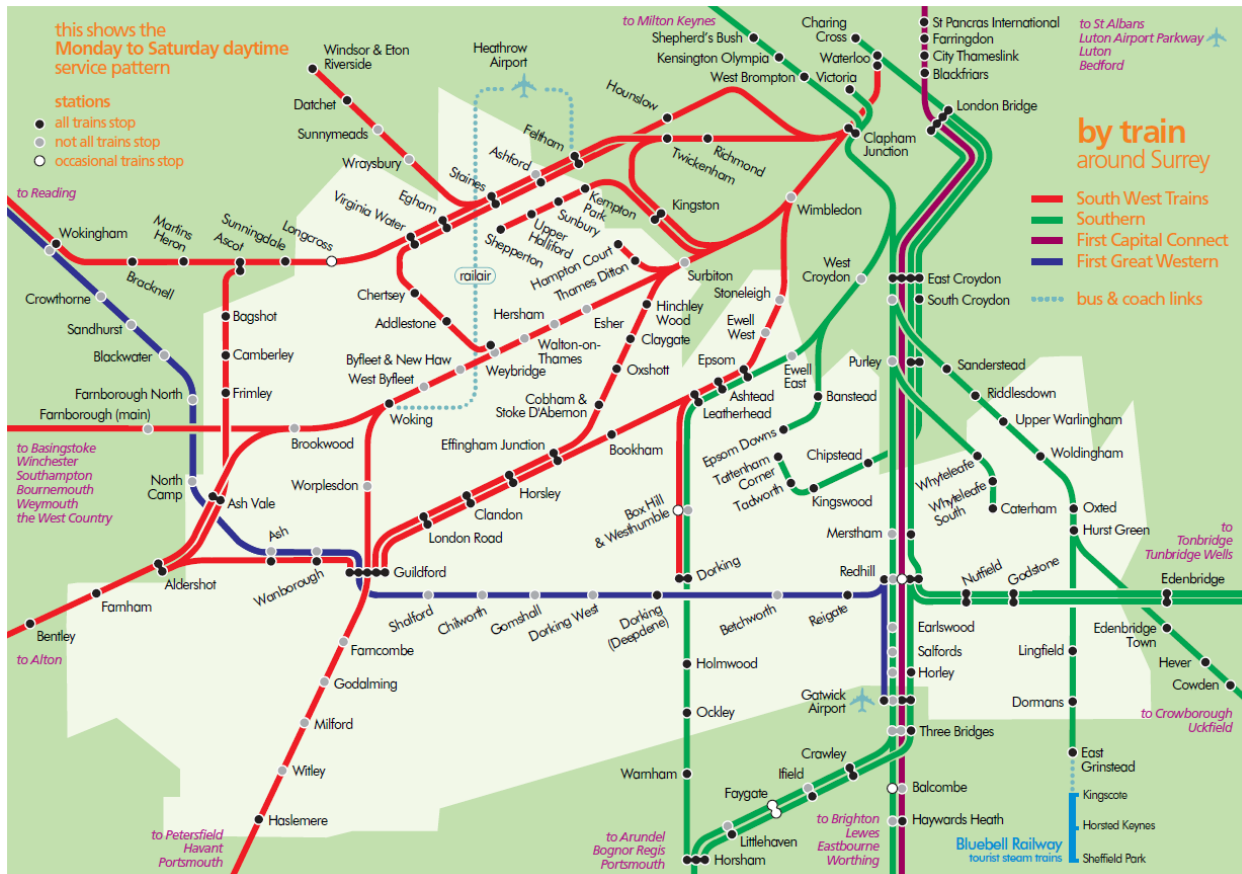
Destination	Origin	Weekday	Saturday	Sunday
Woking	Witley/Milford (26/21 minutes)	1 every hour	1 every hour	1 every hour
Clapham Junction	Witley/Milford (50/45 minutes)	1 every hour	1 every hour	1 every hour
	Ockley (56 minutes)	1 every hour	1 every hour	No service
London Waterloo	Witley/Milford (58/53 minutes)	1 every hour	1 every hour	1 every hour
Reading	Chilworth (45 minutes)	1 every hour/1 every 2 hours (alternating)	1 every 2 hours	1 every 2 hours
Redhill	Chilworth (25 minutes)	1 every 2 hours	1 every 2 hours	1 every 2 hours
Farnborough North	Chilworth (27 minutes)	1 every hour/1 every 2 hours (alternating)	1 every 2 hours	No service
Wokingham	Chilworth (36-44 minutes)	1 every hour	1 every 2 hours	1 every 2 hours
Guildford	Witley/Milford (16/12 minutes)	1 every hour	1 every hour	1 every hour (43/38 minutes)
	Chilworth (8 minutes)	1 every hour/1 every 2 hours (alternating)	1 every 2 hours	1 every 2 hours
Dorking Dorking (Deepdene)	Ockley (10 minutes)	1 every hour	1 every hour	No service
	Chilworth (14 minutes)	1 every 2 hours	1 every 2 hours	1 every 2 hours
Leatherhead	Ockley (20 minutes)	1 every hour	1 every hour	No service
Victoria	Ockley (1 hour 6 minutes)	1 every hour	1 every hour	No service

Source: <http://www.nationalrail.co.uk/>

Figure 4.3 shows the distribution of the rail routes from Farnham, Witley, Milford, Ockley and Chilworth, showing a range of connecting destinations from the local areas.

As for Farnham, the majority of rail commuters from the Cranleigh area travel into central London. Guildford station provides an attractive alternative to the local stations as there are more direct services to London (around 4 per hour at peak times), with a travel time of 37-43 minutes.

Figure 4.3: Existing Rail Routes in Surrey



Source: https://www.surreycc.gov.uk/_data/assets/pdf_file/0020/7922/Surrey_Rail_Map_WEB.pdf

5 Existing Access to Other Local Facilities

5.1 Background

The levels of access to local facilities for all of the settlement areas in the Borough was assessed by WBC in the Waverley Settlement Hierarchy report (2010) and Factual Update (2012). These documents state:

“One of the primary aims of establishing a settlement hierarchy is to promote sustainable communities by bringing housing, employment opportunities and services closer together in an attempt to reduce the need for travel, particularly by private vehicle.”

Farnham, Godalming, Haslemere and Cranleigh are considered to be the most sustainable settlements within Waverley (in that order), as they provide the greatest number and range of community services and facilities to meet the needs of the local community. ‘Heat maps’ have been produced by WBC to illustrate the accessibility of all areas of the Borough to key services. These maps are contained in **Appendix B**, with a summary of the results detailed in **Table 5.1**. In relation to the development scenarios under consideration, new homes in Farnham would have best access to a range of local facilities, followed by Cranleigh and then Dunsfold, which will have very limited local facilities.

Table 5.1: Accessibility to Local Services

	Farnham	Cranleigh	Dunsfold Aerodrome
Primary Schools by walking	Majority of area within 20 minutes Large areas within 10 minutes	Majority of area within 20 minutes Large areas within 10 minutes	None within walking distance
Secondary Schools by Public Transport	Majority of area within 30 minutes Large areas within 20 minutes	All of area within 30 minutes Large areas within 20 minutes	No existing bus services
Colleges by Public Transport	Majority of area within 30 minutes Some areas within 20 minutes	All of area within 60 minutes Large areas within 50 minutes	No existing bus services
GP Surgeries by walking	Large areas within 20 minutes Some areas within 10 minutes	Majority of area within 20 minutes Some areas within 10 minutes	None within walking distance
Hospitals by Public Transport	Majority of area within 30 minutes Large areas within 20 minutes	All of area within 30 minutes Majority of area within 20 minutes	No existing bus services
Town Centres by walking	Some areas within 20 minutes	All of area within 30 minutes	None within walking distance
Town Centres by Public Transport	Majority of area within 30 minutes Large areas within 20 minutes	All of area within 30 minutes Majority of area within 20 minutes	No existing bus services
Local shops by walking	Majority of area within 20 minutes Large areas within 10 minutes	Majority of area within 20 minutes Large areas within 10 minutes	None within walking distance
Railway stations by walking	Some areas within 10 minutes	No station within walking distance	None within walking distance
Bus stops by walking	Majority of area within 5 minutes	Some areas within 5 minutes	None within walking distance but potential for new bus services to be introduced

6 Transport Capacity and the Potential to Improve Sustainable Modes

6.1 Road Network and Potential Increase in Traffic

Stages 2 and 3 of the Transport Assessment work for WBC have considered the impact on the local road network of additional homes in Dunsfold (and Cranleigh) and Farnham respectively. Stage 2 demonstrated that the A281 / Kings Road roundabout in Shalford and A281 / Station Road mini-roundabout in Bramley are likely to represent the largest constraint to traffic on the A281. However, possible improvement schemes were shown to be able to accommodate the predicted increased traffic demand in the future.

The other main concern on the A281 is its junctions with the A248 at Broadford Road and Kings Road in Shalford. Improvement schemes should be able to provide sufficient capacity to accommodate 1,800-3,400 homes at Dunsfold but they would require road widening into existing common land. Such schemes would require complicated and lengthy approval procedures, with replacement of lost common land at a suitable nearby location. However, these problems are not insurmountable and do not rule out the potential to implement the schemes.

Stage 2 also considered the scenario with additional new homes being provided at Cranleigh, with no new homes at Dunsfold. Similar improvement schemes to those proposed at the A281 Shalford junctions and Nanhurst crossroads with the Dunsfold development would be able to accommodate additional traffic from Cranleigh with no significant delays.

The Strategic Transport Assessment undertaken by SCC identified key links/junctions with increased traffic congestion with a number of different development scenarios. STA Scenarios 2 and 4 contained 1,800 and 3,400 new homes at Dunsfold respectively and neither of these showed significant congestion on the A281. However, as noted in the Stage 1 Report, using average **peak period** traffic demand does not consider the flows during the morning **peak hour** which will be significantly higher. Therefore, the strategic traffic model is not the best tool for assessing impacts on congestion at the busiest times.

Stage 3 modelled the impact of additional traffic in and around Farnham associated with around 2,300 and 3,800 new homes in the town. Based on SCC's strategic model, total growth in car traffic between 2009-2031 was predicted to be 30% and 35% for these two scenarios respectively, compared to a 'Do Minimum' level of 18% with no additional housing. The Farnham micro-simulation traffic model showed that such growth would lead to long delays on some of the main routes into and through Farnham. Key junctions on the A31 at Hickleys Corner and Shepherd and Flock roundabout were shown to be constraints to traffic growth, as well as other junctions on the radial routes into Farnham.

Improvements at the two key A31 junctions and on the A325 were modelled and were shown to increase capacity and reduce journey times on these two routes. However, increasing the A31 throughput has implications for other routes due to a combination of more queuing on some arms and increased traffic volumes reaching downstream junctions. The overall conclusion of the modelling was that it should be possible to largely mitigate for the impacts of additional traffic demand resulting from new housing allocations in Farnham, through junction improvements on the A31 and A325.

In Farnham, the STA predicted that a number of links would be over capacity even with the 'base' level of development (STA Scenario 1) and for the average peak period demand:

- A325 at Heath End;
- B3001 Station Hill;
- B3007 Hale Road;
- A287 Firgrove Hill; and
- A31 Westbound Off-slip to A331.

In terms of impact on the A3, all STA scenarios showed an increase of around 150 vehicles/hour, averaged over the peak period 07:00-10:00, between the Hindhead Tunnel and Milford. This was not predicted to cause significant additional congestion.

6.2 Rail Network and Potential Increase in Trips

It has been estimated that the rail mode share for trips to work under each of the development scenarios considered would be roughly the same at around 8%. With a total of around 5,000 new homes, this is likely to result in a demand for around 400 new rail trips, the majority of which would be to London.

For the commuting trip into London in the morning, there is likely to be spare capacity to accommodate this demand as the trains passing through Farnham and Witley/Milford/Guildford gain passengers along their route so should not be full as they reach these stations (although this would be at the expense of other users further towards London, notably at Guildford and Woking).

In contrast, for the trip out of London Waterloo in the evening, the services are already running at capacity. Therefore, new Waverley residents would be competing with all other passengers that use the Farnham-Alton and Guildford-Haslemere lines. This would add to congestion on the concourse at London Waterloo and result in more standing passengers on departing trains.

6.3 Potential Transport Measures to Increase Sustainable Travel

In Farnham, there is a desire to reduce traffic volumes to or passing through the town centre. Demand management measures would help in this regard by encouraging sustainable modes for relatively short trips in the town i.e. increased walking, cycling and bus use. An overall transport strategy for the town could be developed, balancing the need for traffic management measures in the town centre and capacity enhancements on other routes.

Currently, 55% of those that live and work in Farnham drive to work, with only 3.0% using bus and 2.9% cycling (31.6% walking). As working in Farnham accounts for 28% of all trips to work by Farnham residents, there is high potential to reduce traffic volumes in the town by encouraging a switch from car to walking, cycling and bus.

In Cranleigh, 46% of those that live and work in the town drive to work but cycling is relatively popular at 7.3%, whereas only 1.1% take the bus (36.4% walking). Given the size of the town, a significant increase in bus use is unlikely for such trips but more walking could be encouraged. However, it is not believed that traffic congestion in the town is a serious problem, so there would be less incentive to reduce traffic volumes, compared to Farnham.

For residents in a new Dunsfold development, internal trips to work are assumed to be made by walking and cycling. Therefore, encouraging sustainable travel modes would have to address external trips away from the site. Given the location, walking to other work locations is unlikely and there is low potential for a frequent bus service to major employment centres to be viable in the long term. Therefore, it is difficult to see how increases in sustainable travel could be encouraged at the Dunsfold site.

7 Conclusions

Table 7.1 below summarises the key issues for sustainability in relation to transport for the three main areas where new homes could be provided in Waverley Borough. A RAG analysis has been used to highlight the relative merits of each location against each key issue, where **Green** is most sustainable and **Red** is least sustainable.

Table 7.1: Assessment of Transport Sustainability

Criteria	Farnham	Cranleigh	Dunsfold
Internalisation of trips	28%	31%	10-20%
Modal split – car driver	71%	70%	74-78%
Trip Length – Car Trips to Work	16.0 km	13.5 km	15.0-16.2 km
Bus accessibility	Good access to town centre from most areas in town	Good service to Guildford	No existing services
Rail accessibility - non-car modes	Good access by bus and walking/cycling an option for many	Only via bus to Guildford	Potential new bus link to nearby station(s)
Accessibility to local facilities - non-car modes	Good access by bus and walking/cycling an option for many	Access to some local facilities by walking/cycling	Limited on-site facilities
Potential impact on traffic congestion	Mitigation measures possible but some increased congestion likely	Increased traffic can be mitigated for range of number of homes being considered	Increased traffic can be largely mitigated
Potential to encourage greater use of sustainable modes	Greatest potential to encourage walking, cycling and bus use	Some potential to encourage walking and further cycling	Difficult for new bus services to remain viable. No scope for higher levels of walking trips

Source: MM analysis

Based on the above analysis, Farnham is considered to be the most sustainable location overall for provision of new homes given its current transport options and the potential to address local car trips by transferring them to other modes, followed by Cranleigh and then Dunsfold. It follows that Scenario 1 of the development scenarios that were subject to public consultation by WBC is considered the most sustainable, given the following numbers of new homes in each scenario:

Table 7.2: Number of New Homes in the Development Scenarios

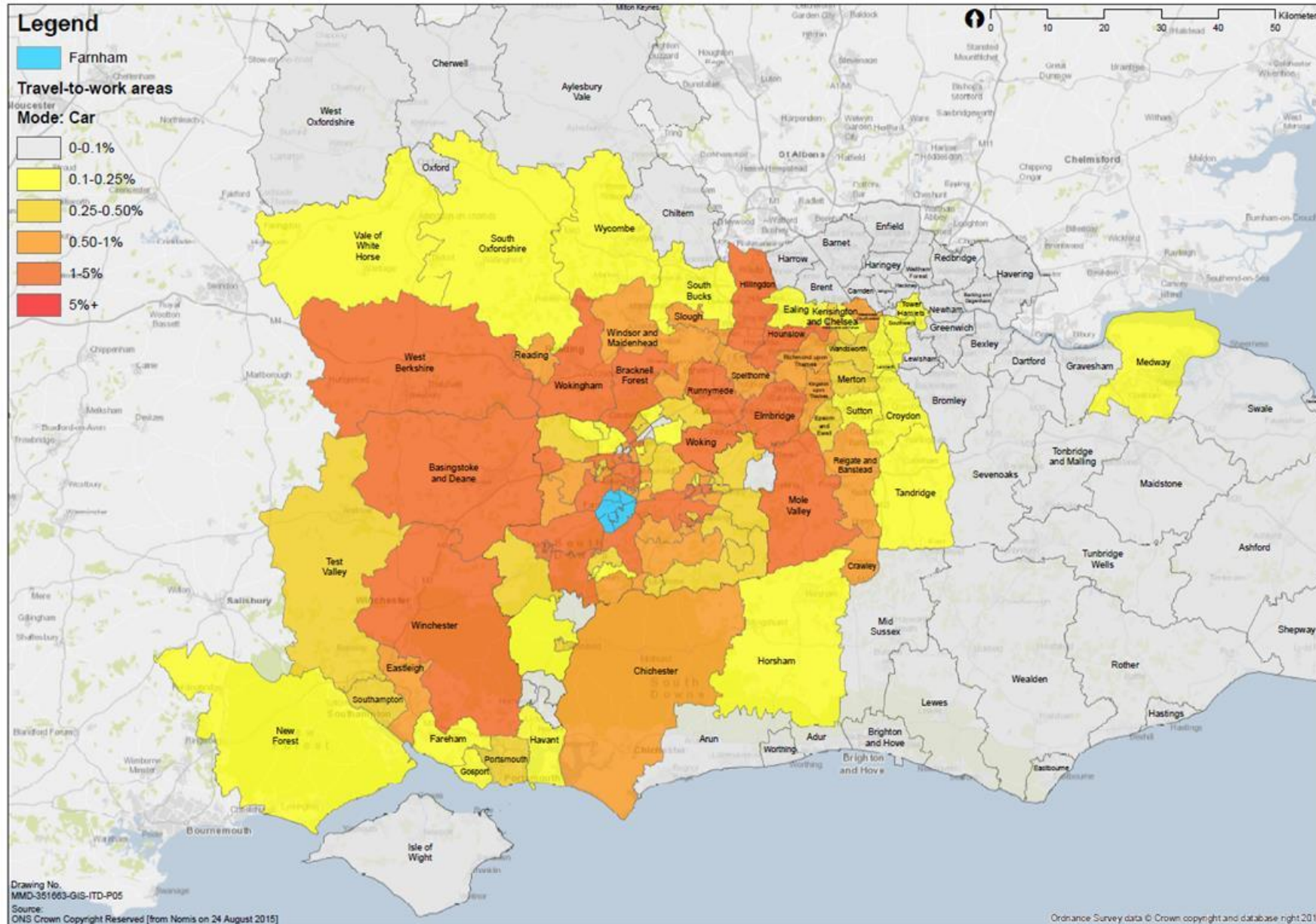
Scenario	Farnham	Cranleigh	Dunsfold Aerodrome
1	3,800	1,800	0
2	2,600	1,200	1,800
3	2,100	1,050	2,600
4	1,800	650	3,400

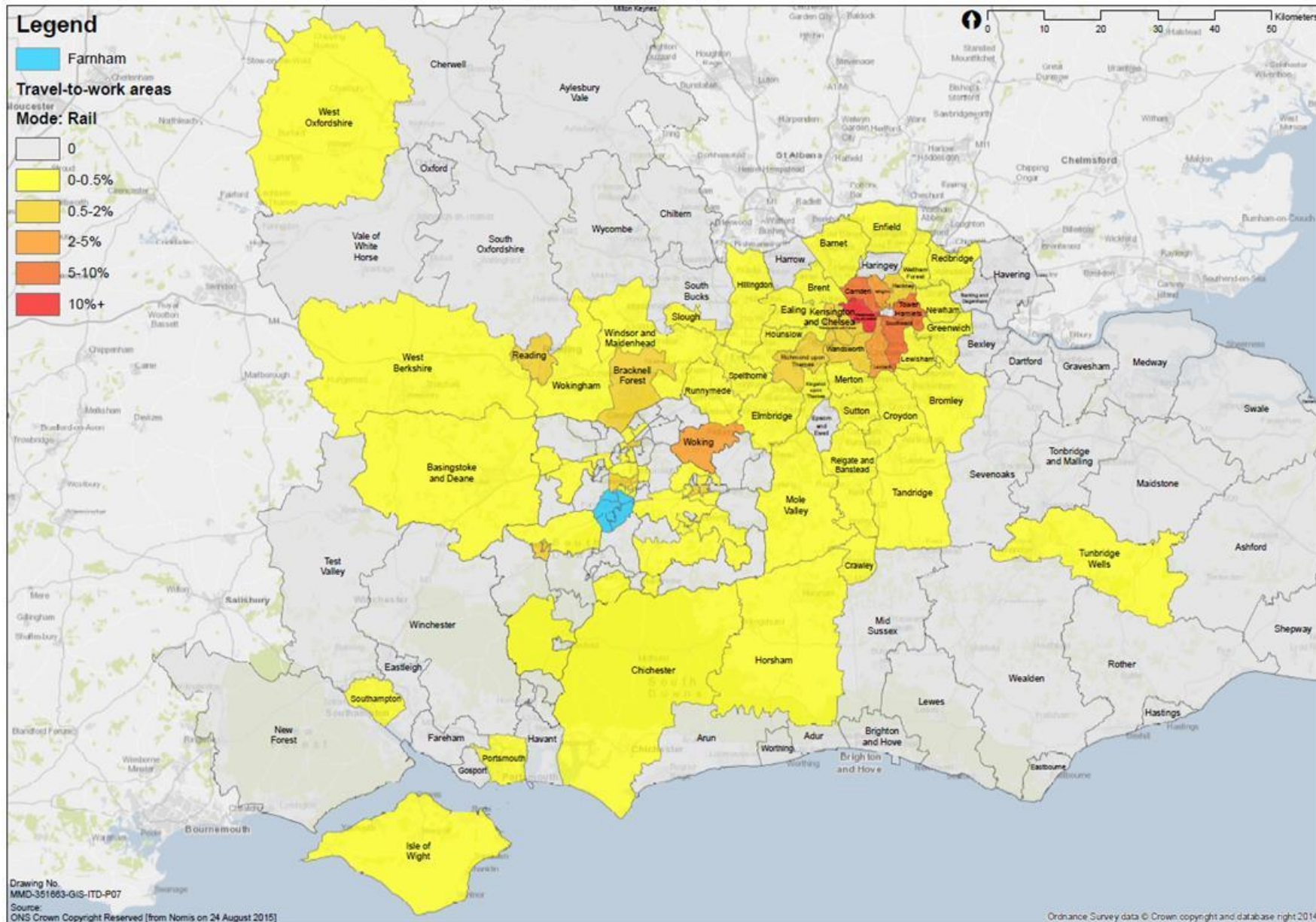
Scenarios 2, 3 and 4 have increasing numbers of new homes at Dunsfold which are considered to give corresponding reductions in the level of transport sustainability.

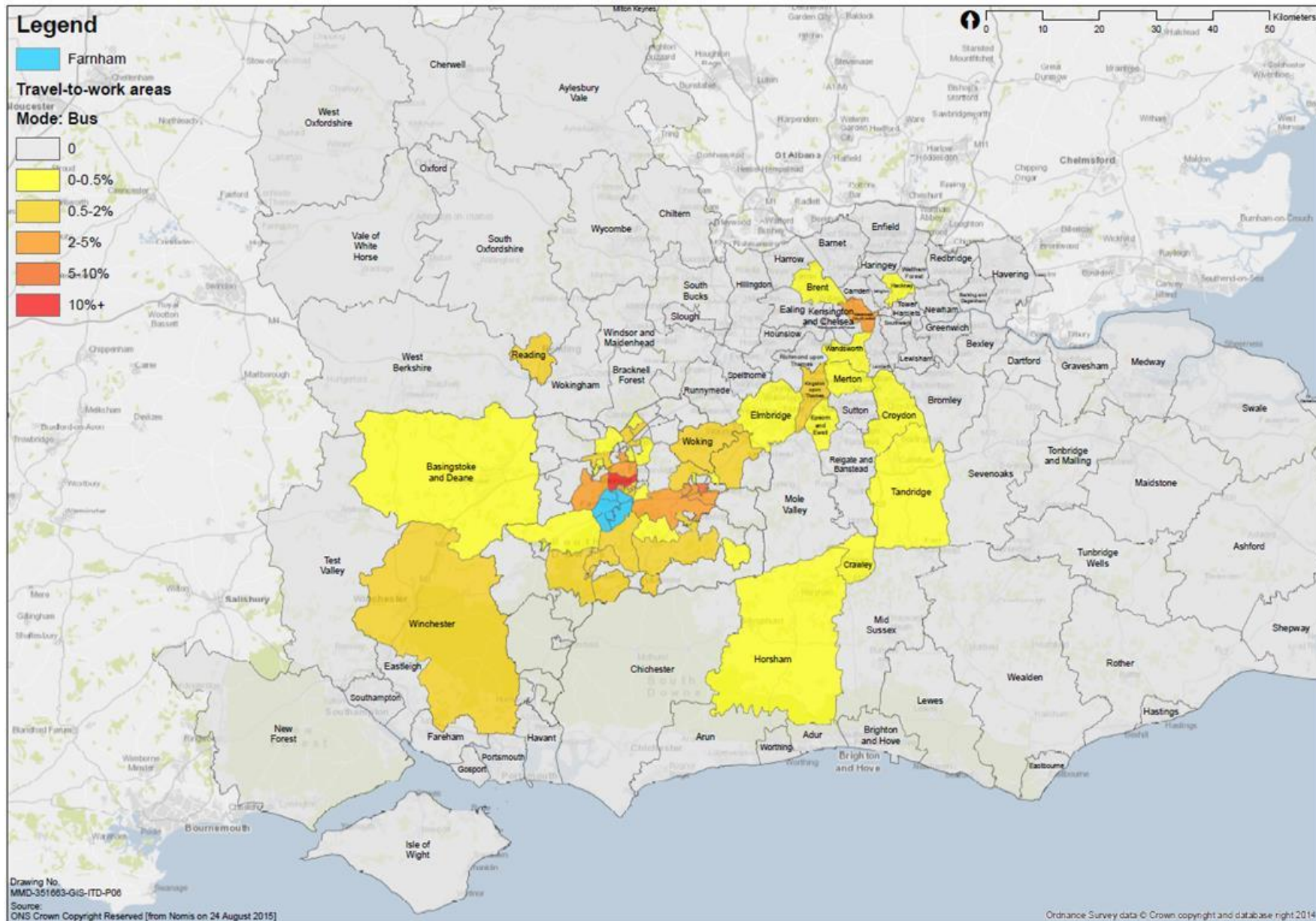
Appendices

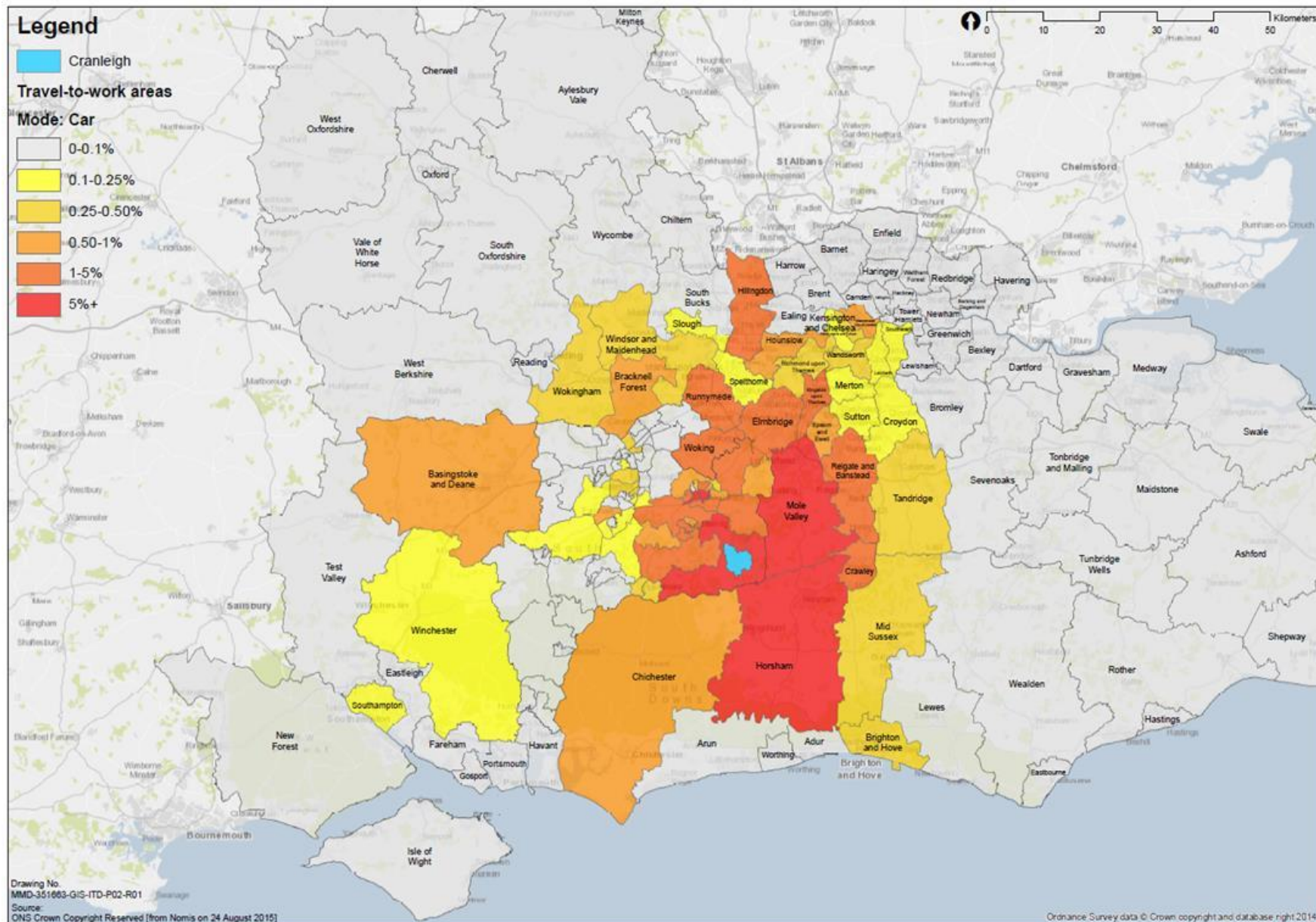
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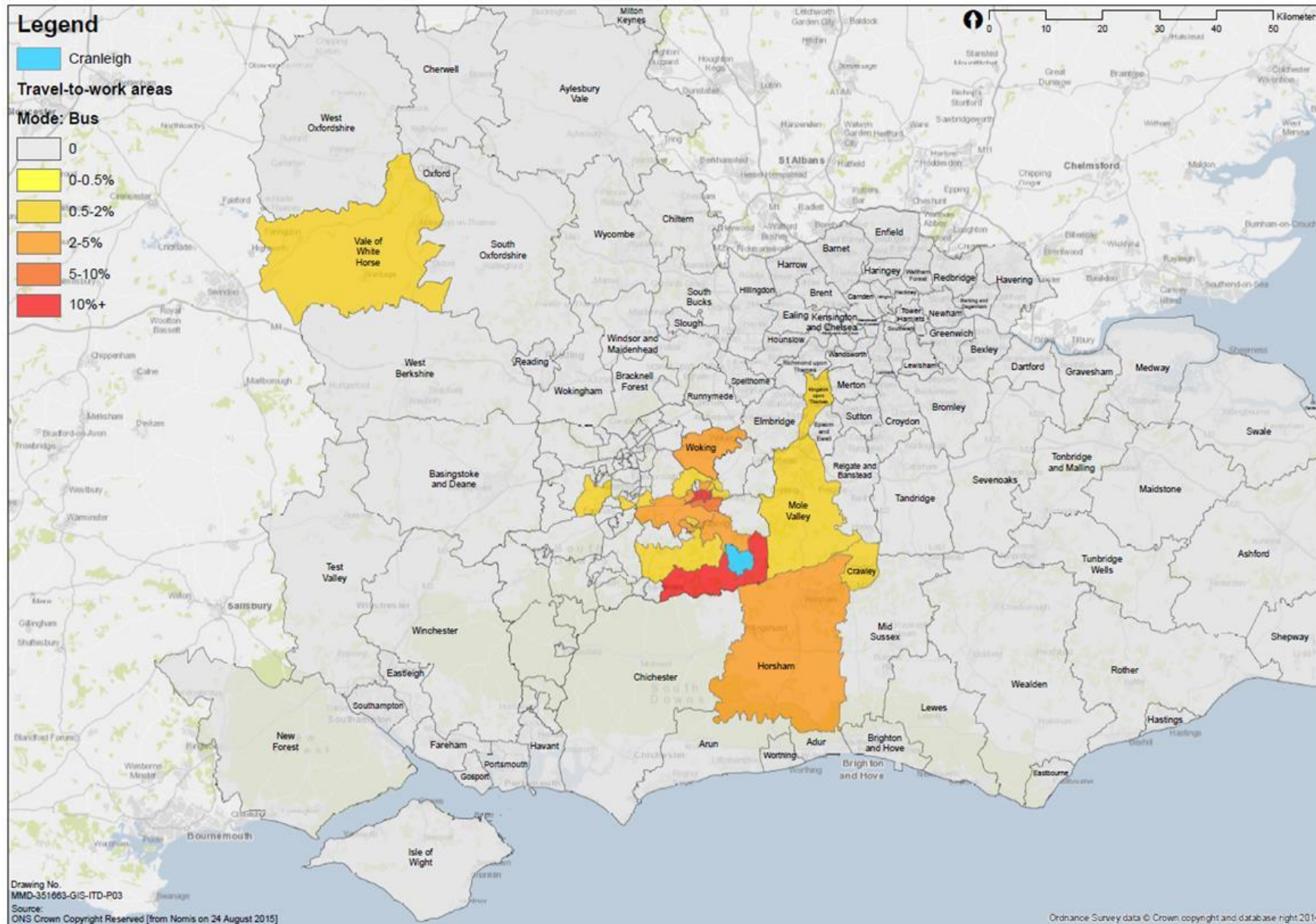
Appendix A. Distributions of Trips to Work by Mode

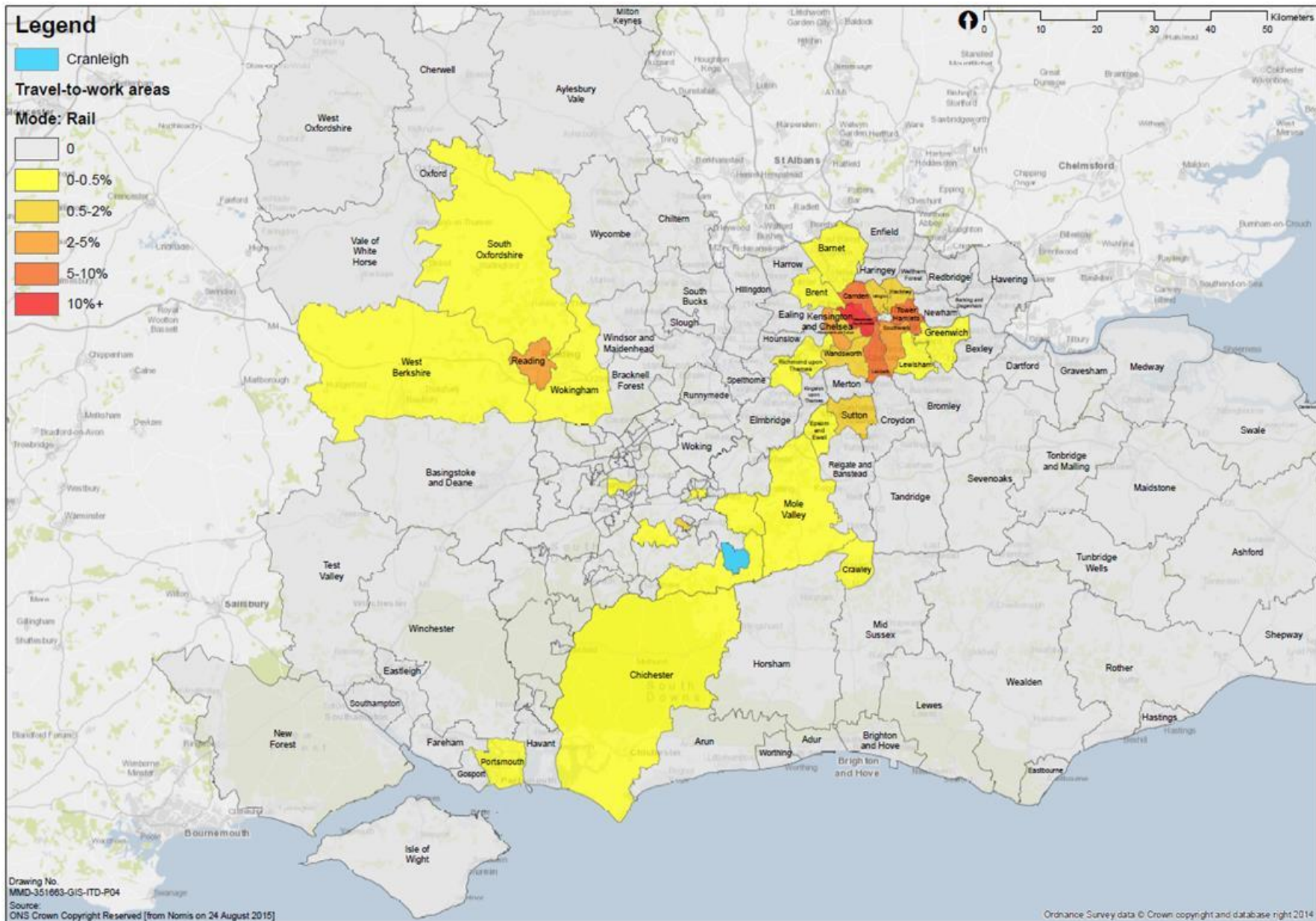












Appendix B. Heat Maps

