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## 1 Introduction

This document sets out the Sustainable Accessibility Appraisal that has been undertaken as part of the overall Transport Assessment being produced by Basildon Borough Council (BBC) and Essex County Council (ECC) to support the Basildon Local Plan.

A Sustainable Accessibility Appraisal forms a key element of the Local Plan Transport Evidence Base, as identified in the 2015 guidance from the Department of Communities and Local Government: *'Transport evidence bases in plan making and decision taking'*, which advises that the evidence base should address the potential options for the provision of sustainable access at locations of proposed land allocations.

The methodology used for this appraisal has been created from the WebTAG Appraisal Summary Table Sub-Objectives for site/scheme appraisal. It is the same methodology that was used for the evidence to inform Epping Forest Local Plan, and a similar assessment was undertaken for the Braintree Local Plan. The methodology is more sophisticated than some approaches used in other areas where a simple red, amber, green is applied to criteria as this methodology allows for the ranking of sites and avoids difficulties in differentiating between sites with the same overall score.

The appraisal considers the relative accessibility of the sites identified for potential inclusion in the local plan. The criteria against which each site has been assessed are outlined in detail in Section 3 of this report and are related to access to the site by public transport; walking and cycling; and proximity to services such as healthcare and education, as well as access to town centres.

The Basildon Draft Local Plan includes a number of Housing Allocation Policies (HA policies) which relate to specific development areas. The majority of the HA policies comprise of a number of smaller, individual *Housing and Employment Land Availability Assessment (HELAA)* sites. The final composition and yield of the HELAA sites that will be included in each HA policy will be determined by the Council after consideration of all evidence collated. This Sustainable Accessibility appraisal considers the merits of all sites considered: the HA policies as they stand in the Draft Local Plan; and some alternative options for each HA policy which have either been identified in the Draft Local Plan or put forward subsequently.

The purpose of this appraisal is to provide BBC with a comparison of the relative level of sustainable accessibility of each HA policy and its alternatives, as well as a relative comparison between each of the 23 HAs. Many of the alternative options assessed are for different densities of development on the sites and/or changes to site boundaries. Consideration of this sustainable accessibility appraisal, alongside other elements of the site appraisal process, will assist decisions regarding the final make up of individual sites that should be included within the final Local Plan.

This technical note documents the assessment findings in Section 2, as well as the methodology used to assess the HA options, reasonable alternatives, and the additional sites based on their existing and potential levels of sustainable accessibility in Section 3. A complete list of sites assessed is shown in Appendix A.

The next steps are for BBC to review the results and refine their preferred development options, taking account of many other factors that will influence the best options for development to be included in the Local Plan.

## **2 Sustainable Accessibility Ranking – Results Summary**

For ease of reference, a summary of findings is presented at the start of this note. This section is then followed by a detailed description of the methodology used in the development and application of the ranking and appraisal approach.

### **2.1 Summary of Findings**

The 23 separate HA policies (referred to in the Draft Local Plan as H7 to H29) and some 32 ‘reasonable alternative’ options were initially identified for inclusion as part of this appraisal. In addition, the appraisal has also taken into consideration a number of new and alternative sites that were identified by the Council as a consequence of the Draft Local Plan consultation in early 2016, with further focussed consultation occurring on these sites in late 2016. Following this consultation, the Council determined that these additional options were to be appraised within the evidence base to support the Local Plan. For reference, these are referred to as “new & alternative sites” within this note. All sites included within the assessment are shown in maps in Appendix A.

In total, some 72 different options have been appraised. All options considered are outlined in Appendix Table A-1. The results shown in summary Table 2-1 indicate whether the site is an HA policy site, a ‘reasonable alternative’ option or a newly identified site and when it was added to the assessment.

The scores provided here have been based on the combined existing and potential levels of sustainable accessibility at each of the HA policy locations and reasonable alternatives, with scores categorised from “Low”, “Limited”, “Good” and “High”. The best option for each HA policy from a sustainable access perspective is highlighted in bold in the table below. Where alternative sites perform equally to the Housing Allocation, only the Housing Allocation site has been shown in bold. The best options are also outlined in Table 2-2.

Full details of the methodology applied for scoring the sites is provided in section 3 below. Sites have been scored for their existing sustainable access capability as well as their potential (for example large sites have potential to allow for a new bus route or stop to be provided). The existing and potential scores have been added together to provide the summary in Table 2-1. A full breakdown of the scores is provided in Appendix A in Tables A-1 through to A-11.

Table 2-1: Housing Allocation Site Sustainability Appraisal – Existing & Potential Scores

Housing Policy	Settlement	Existing and Potential Score					New and Alternative Site(s)
		Draft Local Plan sites 2016 – see note					
		Housing Allocation	Reasonable Alternative 1	Reasonable Alternative 2	Reasonable Alternative 3		
H7	Basildon	337	337	287			
H8	Basildon	324					
H9	Basildon	287	287			343	
H10a	Basildon	272	272	243	257		
H10b	Basildon	144	144				
H11	Basildon	197	197			197	
H12	Basildon	277	305	311		311	
H13	Basildon	330	259	351	180	188	
H14	Wickford	225	225				
H15	Wickford	310	310				
H16	Wickford	351	351				
H17	Wickford	231	231			231	
H18	Wickford	216	216			216	
H19	Billericay	271	271	272			
H20	Billericay	236	236	126			
H21	Billericay	297	249				
H22	Billericay	326	326				
H23	Billericay	110	321	126		321	
H24	Billericay	281	308			296	
H25	Billericay	282	282				
H26	Billericay	269	257			257	
H27	Billericay	303	303				
H28	Ramsden Bellhouse	167	167				
H29	Crays Hill	167	194				

Level of Sustainable Accessibility	Appraisal Score
HIGH	300+
GOOD	200 - 299
LIMITED	100 - 199
LOW	0 - 99

Note: Details of each housing allocation and alternatives including the number of dwellings anticipated for each option are provided at Appendix A.

A summary of findings which can be made from the appraisal of Housing Allocation sites and their alternatives is as follows:

- The majority of HAs within each settlement of Basildon, Billericay and Wickford scored within a “High” or “Good” range, with only H10b, H11, H23, H28 and H29 achieving scores within the “Limited” range. No HA was appraised to score within the “Low” range.
- HAs which ranked towards the higher end of the scale included those which are either located within close proximity to a town centre, or are located on a main route

to/from a town centre, and which enjoy access to higher frequency bus services with good connections to other transport modes such as rail. These sites are more conducive to public transport and also cycling (particularly for commuting trips), thus achieve higher scores in terms of sustainable accessibility.

- H23 (located at the southern fringe of Billericay) was appraised with the lowest score of all HAs, largely due to its distance from a nearby town centre and isolation from public transport services. Sites H10b, H28 and H29 also received low scores, they are also located away from town centres and public transport services. H10b has potential to be more accessible when considered in combination with H10a.
- As with most development sites located at the outer fringe of established settlements, housing in these areas may still expect to generate private vehicle trip rates typical of a rural location if an alternate transport option is unavailable.
- The appraisal demonstrates that each settlement (Basildon, Billericay and Wickford) generally has good levels of sustainable access in place, but could likely benefit from bus route extensions and/or improved walking and cycling links to realise the potential for sustainable transport uptake. This is especially the case for development sites located on the urban fringes, or those that are not located on main routes (e.g. between settlements) where bus services typically operate.
- Of the areas deemed to have a limited level of current sustainable accessibility, Housing Allocations such as H10 (west Basildon), H13 (east Basildon), H20-H23 (south Billericay) and H14 (southeast Wickford) have been identified with significant potential population, which could support the provision of additional sustainable transport infrastructure in the form of new or improved bus services into town centre areas, and have been scored accordingly. For these HAs planned with significant growth, it will be important to engage with local commercial bus companies at the early planning stage<sup>1</sup> to ensure that public transport can be provided as early in development as possible.
- Many of the reasonable alternative options that have been identified in the Draft Local Plan have a similar level of sustainable accessibility as the Housing Allocation sites. This is due generally each alternative having a similar physical location to one another, and therefore having similar accessibility to public transport / services / town centres. However, 10 of the alternative options offer better sustainable accessibility than their Housing Allocation sites. Three of the alternative options are significantly better in terms of sustainable accessibility than the Housing Allocation sites: H12, H23 and H24. In each case the alternative site location was found to have better access to existing facilities (bus routes, pedestrian infrastructure etc) as well as a higher potential to

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<sup>1</sup> Provision of a bus service would be dependent on site location both in regard to general services and the rest of the bus network, social mix, design of the development etc. Isolated developments in rural areas would be less likely to sustain a service than those on the edge of town. It should also be noted that a small development (20 to 30 houses) could support a change to an existing bus service (i.e. looping through the estate and re-joining the existing route) if required resources were limited to kick-starting and marketing/publicity for example.

encourage cycling due to distance to local services. H23 (Reasonable Alternative 2 and new & alternative site) were found to be significantly better in terms of sustainable access across almost all of the indicators than its Housing Allocation.

- Further to this, a number of the new & alternative sites improved on the sustainable accessibility scores of their HAs, specifically H9, H12, H23, and H24. For these sites, the new & alternative sites scored higher than their respective HAs, again for reasons similar to those explained in the point above.

For reference, Table 2-2 has been prepared to show which of the HAs and/or their reasonable alternatives achieved the highest score in terms of sustainable accessibility. Those HAs where an alternative option received the higher score have been highlighted either yellow or orange.

**Table 2-2: Site Sustainability Appraisal – Highest ranking option for each HA**

Housing Policy	Settlement	Existing and Potential Score (see legend)
H7	Basildon	HA or RA1
H8	Basildon	HA
H9	Basildon	Alt. sites
H10a	Basildon	RA 3
H10b	Basildon	RA3
H11	Basildon	Equal
H12	Basildon	RA 2 or Alt. sites
H13	Basildon	RA 2
H14	Wickford	Equal
H15	Wickford	Equal
H16	Wickford	Equal
H17	Wickford	Equal
H18	Wickford	Equal
H19	Billericay	RA 2
H20	Billericay	HA or RA1
H21	Billericay	HA
H22	Billericay	Equal
H23	Billericay	RA 1 or Alt. sites
H24	Billericay	RA1
H25	Billericay	Equal
H26	Billericay	HA
H27	Billericay	Equal
H28	Ramsden Bellhouse	Equal
H29	Crays Hill	RA 1

<b>Equal</b>	All options achieved the same score
<b>HA</b>	The Housing Allocation achieved the top score
<b>RA#</b>	Reasonable Alternative <1/2/3> achieved the top score
<b>Alt. sites</b>	Option with the Nov 2016 alternative sites achieved the top score

Further to the above, the 7 new sites submitted as part of the Draft Local Plan consultation have also been appraised, adopting the same method as for the Housing Allocation options. The results are summarised in Table 2-3.

**Table 2-3: “Additional Sites” Sustainability Appraisal – Existing & Potential Scores**

Site Name	Settlement	Existing and Potential Score
New Site 1	Billericay	285
New Site 2	Billericay	274
New Site 3	Billericay	274
New Site 4	Basildon	103
New Site 5	Billericay	249
New Site 6	Basildon	256
New Site 7	Basildon	94

As shown, the majority of new sites scored well within the “Good” range for sustainable accessibility. The sites in Billericay are located on key routes into and out of the town centre, while New Site 6 in Basildon is located within proximity to Pitsea town centre and rail station. New Site 4 and New Site 7 both ranked much lower comparatively, with both sites located on the northern edge of the A127 and located some distance away from town centres and public transport services.

### 3 Methodology

The methodology outlined below has been used for carrying out similar sustainable accessibility appraisals for Local Plan development in Essex, for example in Epping Forest and Braintree Districts.

#### 3.1 Sustainable Accessibility Weighting

Step 1: Derive and weigh measurements of sustainable accessibility

The indicators of sustainable accessibility, along with the weighting system adopted for this study, have been structured around a number of the sub-objectives contained within the WebTAG Appraisal Summary Table (AST)<sup>2</sup>, provided in Table 3-1.

<sup>2</sup> <https://www.gov.uk/government/publications/webtag-appraisal-tables>

**Table 3-1: Measurement of sustainable accessibility linked to WebTAG Appraisal Summary Table Sub-Objectives**

AST Objective	AST Sub-Objectives	Interpretation for Accessibility Appraisal
Economy	Business users & transport providers	Typical commuter journey time
	Reliability impact on Business users	Commuter journey time reliability
Environment	Noise	Noise and air quality linked to vehicle flow and congestion
	Local air quality	
Social	Commuting and Other users	Typical non-commuter journey time
	Reliability impact on Commuting and Other users	Non-commuter journey time reliability
	Physical activity	Physical activity related to walking/cycling
	Access to services	Access to local services (shops, schools, GP's etc.)

As per Table 3-1, an interpretation / appraisal method for each of the AST sub-objectives has been identified. Each of these appraisal elements has then been allocated a “weighting” based on perceived importance – as shown in Table 3-2. The weighting selected for this appraisal has been based on discussions with Basildon Borough Council, and has been determined in consultation with the Cabinet Member with the portfolio for Planning Policy following the public consultation on the Draft Local Plan. The appraisal therefore reflects the objectives which are considered a higher priority for the borough’s residents and key stakeholders.

**Table 3-2: Weighted score for each Sustainable Accessibility Measurement**

Weighting		
Appraisal objectives	AST Objective Ref No.	Weighting
<b>Economy</b>		
Typical commuter journey time	1	18
Commuter journey time reliability	2	18
<b>Environment</b>		
Noise and air quality linked to vehicle flow and congestion	3	18
<b>Social (health, education etc.)</b>		
Typical non-commuter journey time	4	16
Non-commuter journey time reliability	5	10
Physical activity related to walking/cycling	6	10
Access to local services	7	10
	Total	100

**Step 2: Determine a list of ‘indicators’ of sustainable accessibility**

A list of indicators used to appraise each housing option has subsequently been drawn up and is shown in Table 3-3 below. Each indicator can be linked to one or more appraisal objectives as referenced in Table 3-2.

Table 3-3: Indicators of sustainable accessibility linked to AST objective measurements

Indicators		Appraisal (AST) objectives addressed
<b>Bus access</b>	Walking distance to nearest bus stop (with at least peak hourly day service)	1, 4, 7
<b>Rail access</b>	Distance to nearest rail/tube station	1, 2, 4, 5
	Bus service frequency to rail/tube station (av. per hr of AM & PM peaks)	2, 5
	Typical bus journey time to nearest rail/tube station	1, 4
<b>Town access</b>	Distance to nearest town centre	1, 2, 4, 5, 7
	Bus service frequency to town centre (av. per hr of AM & PM peaks)	2, 5, 7
	Typical bus journey time to town centre	1, 4
<b>Health access</b>	Distance to nearest GP surgery	4, 5, 7
	Bus service frequency to nearest GP surgery (av. per hr of AM & PM peaks)	5, 7
	Typical bus journey time to nearest GP surgery	4
<b>Education access</b>	Distance to nearest nursery/pre-school	4, 5, 7
	Distance to nearest infant/primary school	4, 5, 7
	Distance to nearest secondary school	4, 5, 7
	Bus service frequency to nearest secondary school	5, 7
<b>Ped / Cycle access</b>	Proximity of bus route to nearest secondary school	4, 7
	Current level of cycle access to/from HA site	3, 6, 7
	Current level of pedestrian facilities in vicinity of HA site	3, 6, 7
<b>Traffic Impact</b>	Proximity of HA site access to an identified key congested junction	2, 3, 5
	Scale of peak hour congestion expected in vicinity of site	2, 3, 5
	Existing local residents' propensity to drive to work based on 2011 Census	N/A
<b>Potential</b>	Distance to nearest bus route if no nearby bus stop (assuming potential for new stop to be added)	1, 4, 7
	Potential to direct bus services to serve HA development (based on proximity of nearest bus route and size of site)	1, 2, 4, 5, 7
	Potential for better public transport serviced to/from site (based on size of development proposed)	1, 2, 4, 5, 7
	Potential for encouraging cycle use to/from HA site (based on proximity of local services)	3, 6, 7
	Potential for encouraging walking to/from HA site (based on proximity of local services)	3, 6, 7

Step 3: Calculate an overall value for each indicator

With reference to Table 3-4 below, an 'indicator value' has then been calculated for each indicator from the sum of the weighted sustainability measurements that each indicator can be attributed to. For example, the indicator 'Walking distance to nearest bus stop' can be attributed to the measurement of 'Typical Commuter Journey Time', 'Typical Non-Commuter Journey Time' and 'Access to Local Services' as shown in Table 3-3. Which have weightings of 18, 16 and 10 respectively (as per table Table 3-2). These weightings have been added together to give an indicator value of 44, as shown in Table 3-4.

Step 4: Calculate a weighting factor for each indicator

The indicator value has then been used to calculate further weighting factors to be applied to the scoring of each HA site and reasonable alternative option. Weighting factors have been determined by normalising values around an average of 1.00 (representing a value of 37.15 – this is the average of the ‘Indicator Value’ provided in Table 3-4).

**Table 3-4: Indicator values and weighting factors used in the HA site accessibility scoring**

Indicators		Indicator Value	Weighting Factor
Bus access	Walking distance to nearest bus stop (with at least peak hourly day service)	44	1.18
	Distance to nearest rail/tube station	62	1.67
Rail access	Bus service frequency to rail/tube station (av. per hr of AM & PM peaks)	28	0.75
	Typical bus journey time to nearest rail/tube station	34	0.92
Town access	Distance to nearest town centre	72	1.94
	Bus service frequency to town centre (av. per hr of AM & PM peaks)	38	1.02
	Typical bus journey time to town centre	34	0.92
Health access	Distance to nearest GP surgery	36	0.97
	Bus service frequency to nearest GP surgery (av. per hr of AM & PM peaks)	20	0.54
	Typical bus journey time to nearest GP surgery	16	0.43
Education access	Distance to nearest nursery/pre-school	36	0.97
	Distance to nearest infant/primary school	36	0.97
	Distance to nearest secondary school	36	0.97
	Bus service frequency to nearest secondary school	20	0.54
Ped / Cycle access	Proximity of bus route to nearest secondary school	26	0.70
	Current level of cycle access to/from HA site	38	1.02
Traffic Impact	Current level of pedestrian facilities in vicinity of HA site	38	1.02
	Proximity of HA site access to an identified key congested junction	46	1.24
	Scale of peak hour congestion expected in vicinity of site	46	1.24
Potential	Existing local residents' propensity to drive to work based on 2011 Census	37	1.00
	Distance to nearest bus route if no nearby bus stop (assuming potential for new stop to be added)	44	1.67
	Potential to direct bus services to serve HA development (based on proximity of nearest bus route and size of site)	72	2.73
	Potential for better public transport serviced to/from site (based on size of development proposed)	72	2.73
	Potential for encouraging cycle use to/from HA site (based on proximity of local services)	38	1.44
	Potential for encouraging walking to/from HA site (based on proximity of local services)	38	1.44

Site ‘potential’ indicators have been included in the assessment to ensure that HA sites with no pre-existing sustainable travel facilities are not scored poorly on sustainable accessibility if there is a possibility that such developments, once built, would facilitate the provision and/or encourage the uptake of sustainable travel modes.

Weighting factors have been calculated separately for the five site ‘potential’ indicators and the resultant values have been doubled to help provide a better balance to the scoring system. Through iterative testing of the weighting system, a double weighting applied to these indicators was shown to offer the best means of redressing subsequent poor scores in the evaluation of existing sustainable accessibility.

### 3.2 Methodology: Sustainable Accessibility Scoring

Each HA site has been scored under the 25 sustainable accessibility indicators listed in Table 3-4 above. The basic scoring system assigns 0, 10, or 20 points under each indicator based on the criteria outlined in Table 3-5 below.

Table 3-5: Basic scoring system adopted for HA site sustainable accessibility appraisal

Indicators		Score System
<b>Bus access</b>	Walking distance to nearest bus stop (with at least peak hourly day service)	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points
<b>Rail access</b>	Distance to nearest rail/tube station	>4km = 0 points, 1-4km = 10 points, <1km = 20 points
	Bus service frequency to rail/tube station (av. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points
	Typical bus journey time to nearest rail/tube station	>30 mins = 0 points, 15-30 mins = 10 points, <15 mins = 20 points
<b>Town access</b>	Distance to nearest town centre	>4km = 0 points, 1-4km = 10 points, <1km = 20 points
	Bus service frequency to town centre (av. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points
	Typical bus journey time to town centre	>30 mins = 0 points, 15-30 mins = 10 points, <15 mins = 20 points
<b>Health access</b>	Distance to nearest GP surgery	>4km = 0 points, 1-4km = 10 points, <1km = 20 points
	Bus service frequency to nearest GP surgery (av. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points
	Typical bus journey time to nearest GP surgery	>30 mins = 0 points, 15-30 mins = 10 points, <15 mins = 20 points
<b>Education access</b>	Distance to nearest nursery/pre-school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points
	Distance to nearest infant/primary school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points
	Distance to nearest secondary school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points
	Bus service frequency to nearest secondary school	0 = 0 points, 1-2 = 10 points, 3+ = 20 points
	Proximity of bus route to nearest secondary school	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points
<b>Ped / Cycle access</b>	Current level of cycle access to/from HA site	none = 0 points, limited = 10 points, good = 20 points
	Current level of pedestrian facilities in vicinity of HA site	none = 0 points, limited = 10 points, good = 20 points
<b>Traffic Impact</b>	Proximity of HA site access to an identified key congested junction	<500m = 0 points, 500-1000m = 10 points, >1km = 20 points
	Scale of peak hour congestion expected in vicinity of site	moderate congestion = 0 points, low level congestion = 10 points, uncongested = 20 points
	Existing local residents' propensity to drive to work based on 2011 Census	>40% drive to work = 0 points, 30-40% = 10 points, <30% = 20 points
<b>Potential</b>	Distance to nearest bus route if no nearby bus stop (assuming potential for new stop to be added)	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points
	Potential to direct bus services to serve HA development (based on proximity of nearest bus route and size of site)	low = 0 points, medium = 10 points, high = 20 points
	Potential for better public transport serviced to/from site (based on size of development proposed)	low = 0 points, medium = 10 points, high = 20 points
	Potential for encouraging cycle use to/from HA site (based on proximity of local services)	car dependent = 0 points, limited = 10 points, good = 20 points
	Potential for encouraging walking to/from HA site (based on proximity of local services)	car dependent = 0 points, limited = 10 points, good = 20 points

Where applicable, the scoring system has incorporated Department for Transport (DfT) guidelines<sup>3</sup> for acceptable walking and cycling distances as follows:

- Acceptable Walking Distance - 1km (0.6 miles)
- Acceptable Cycling Distance - 4km (2.4 miles)

A review of similar sustainable accessibility studies determined an acceptable bus journey time for commuters to be typically around 30 minutes. This figure has therefore been used to define the scoring system for bus journey time indicators.

Indicators covering the existing level of cycling and pedestrian provision are more subjective, and have been largely scored on the location of established cycle routes and pedestrian crossing facilities in close proximity to the HA sites.

#### Traffic impact indicators

For the purposes of this study, the location of HA sites close to areas of network congestion has been deemed a negative indicator of sustainability due to the concentration of additional development traffic in areas that are more likely to be sensitive to noise and local air quality.

Whilst there is an argument that the presence of network congestion could encourage greater use of sustainable modes of travel, and could therefore be viewed as a positive indicator of sustainability, congestion in the vicinity of a development wouldn't necessarily discourage car use if the rest of the journey was uncongested and therefore congestion in the vicinity of development sites has been considered a negative in terms of this assessment. Sites that are located in Town Centres, which tend to be more congested, generally score more highly because of their proximity to services which might encourage travel by cycling and walking.

#### 2011 Census data

In order to better understand the propensity to drive amongst residents in the Basildon Borough, 2011 Census data was used to provide analysis of the proportion of journeys to work made by car or van, as well as to determine the level of car ownership in the borough. The journey-to-work analysis has been used as an indicator for site appraisal – on the assumption that, without intervention, it might be reasonable to expect future residents to adopt similar travel patterns to those of the current local population.

Although not used in the site appraisal scoring, Census car ownership data has been included in this study as a means of identifying areas within town centres where car ownership is proportionally lower than in surrounding areas. It is understood that HA site locations in these areas could encourage lower trip rates - assuming a similar development make-up to that existing.

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<sup>3</sup> DfT LTN 1/04 3.10.13 – acceptable walking limits

A mapping analysis tool provided on the Datashine website<sup>4</sup> has been used to illustrate the patterns of car use and ownership in the Basildon Borough. Screenshots of journey to work (by car/van) and car ownership data for Basildon, Billericay and Wickford are provided in the appendices of this technical note (Appendix B and C).

#### Connecting the indicators

There is an inherent difficulty in determining a combined score and then subsequently ranking HA sites based on a set of 25 indicators. This is because to do so requires all indicators to form a balanced appraisal that does not introduce bias towards one particular aspect of sustainability, or illogically penalise a site where certain indicators are not as applicable.

To best derive a fair scoring assessment, the following assumptions have been adopted:

#### *Existing Accessibility*

- 1) Sites that are located within a 1km walking distance of a town centre / rail station / GP surgery / secondary school have not been penalised for having a limited bus service, since the maximum acceptable walking distance to a bus stop has already been set at 1km. Therefore, irrespective of the quality of bus service, sites within walking distance have been allocated a maximum score for the associated bus service frequency indicator.
- 2) Sites that are not considered to be within walking distance of the nearest bus stop, are therefore considered inaccessible by bus. Consequently, such sites receive no score for those indicators related to bus frequency and journey time. This places additional emphasis on ensuring sufficient points can be 'recovered' for sites with the potential for developing better public transport links, and helps to justify the double weighting applied to such indicators.

#### *Potential Accessibility*

- 3) Sites that are within an acceptable walking distance (1km) of both a town centre and rail station are considered to have the demand potential to encourage walking trips, and therefore score maximum points for this indicator. This is regardless of the existing infrastructure in the area to accommodate pedestrians.
- 4) Sites that are within an acceptable cycling distance (4km) of both a town centre and rail station (but not within walking distance of both) are considered to have the demand potential to encourage cycle use, and therefore score maximum points for this indicator. Again, this is irrespective of the existing infrastructure in the area to support cycling uptake.
- 5) Sites located within walking distance of a town centre and rail station – where there is an available choice of sustainable travel mode - are assumed likely to have a bias

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<sup>4</sup> <http://datashine.org.uk/>

towards walking over cycling as a preference. Subsequently, if all (or nearly all) services are within walking distance, it is assumed that the potential for encouraging cycle use will be lower (but will still exist).

### 3.3 Methodology: Data Sources

#### Mapped Data

The following data was mapped to present an overview of the location of potential HA development sites in the borough and their proximity to public services and the sustainable transport network (walking, cycling, bus and rail):

- Draft Local Plan Housing Allocation site areas, including reasonable alternatives
- The bus network, bus stop locations and service frequencies (thematically mapped)
  - Weekday (Wednesday): 0700-0800, 0800-0900, 1700-1800, 1800-1900
  - Saturday: 1300-1400
- The National Rail network and station locations
- The National Cycle Network and local cycle network (Basildon, Wickford & Billericay)
- Location of nursery, infant/primary/secondary schools
- Location of GP surgeries.

Draft Local Plan Housing Allocation development data and location mapping layers were obtained from Basildon Borough Council. In total, 23 HA sites were included for assessment, plus 32 “reasonable alternatives”, subsequently the 9 further alternatives and 7 “new” sites were also added to the assessment. The alternative and new sites were assessed against the same criteria from 2014 as the original assessment, this was double checked against current data and no significant changes were identified. June 2014 service frequency data across the borough’s bus route network was obtained from Essex County Council’s Passenger Transport team. The data is link-based and covers two-way bus service frequencies per hour surveyed across 7 consecutive days.

The location of bus stops in Basildon Borough Council was determined using a 2014 National Public Transport Access Nodes (NaPTAN) dataset obtained from the data.gov.uk website: <http://data.gov.uk/dataset/naptan>

Where available, nursery/school/GP data used in the accessibility mapping was initially extracted from an Essex Highways 2008 database built for use with previous transport studies. The data was then cross-referenced and updated where necessary using up-to-date datasets from the following sources:

- Nursery schools and day care centres in Basildon Borough Council - Used 2014 directory taken from the daynurseries.co.uk website: <http://www.daynurseries.co.uk>

- Infant and Junior schools (non-private) in Basildon Borough Council - Existing 2008 data updated using October 2014 information provided on the Schools Web Directory website: <http://www.schoolswedirectory.co.uk>
- Secondary schools (non-private) in Basildon Borough Council – Existing 2008 data updated using October 2014 information provided on the Schools Web Directory website: <http://www.schoolswedirectory.co.uk>
- GP surgeries (non-private) in Basildon Borough Council – using August 2014 database taken from the Health & Social Care Information Centre website: <http://systems.hscic.gov.uk/data/ods/datadownloads/index>

Separate peak hour congestion plots were also referenced in order to identify the levels of peak hour congestion present in the vicinity of the HA sites. These congestion plots derive from 2014/15 TrafficMaster journey time data for a neutral month period and display the percentage of the free-flow speed achieved on the main roads in Essex in the peak hours.

#### Reference Web Sites:

In addition to the mapped data, web-based information was used to assist the sustainable accessibility scoring of each HA site, as follows:

- Google Maps “Get Directions” – Used to determine frequency of bus services and journey times specifically between HA sites and services/amenities.
- <http://datashine.org.uk/> - Used to determine the proportion of Census 2011 journey-to-work trips per output area made by car/van; and the level of car ownership per 2011 Census output area.
- [http://www.cartogold.co.uk/Essex\\_Public\\_Transport/](http://www.cartogold.co.uk/Essex_Public_Transport/) - Used to corroborate bus service stops, routes and frequencies.

## Appendix A: Draft Local Plan Housing Allocation and Alternatives

Housing Allocation	Settlement	Site Address	No. Dwellings	Employment	Reasonable Alternative 1	Reasonable Alternative 2	Reasonable Alternative 3	Nov 2016 Alternative Sites
H7	Basildon	Land West of Gardiners Lane South	660	12-16ha B-Class	1,100 dwellings and no employment	800 dwellings and 50% less employment	N/A	N/A
H8	Basildon	Land North of Dry Street	725	N/A	N/A	N/A	N/A	N/A
H9	Basildon	Land north and south of London Road, Vange	55	N/A	Limit development to land south of London Rd for 30 dwellings	N/A	N/A	575 dwellings (Alternative Site 6)
H10	Basildon	West Basildon Urban Extension	1,000 (Additional area H10b safeguarded for additional 1,350)	5.5ha B-Class	Increase density to 45dph for a total of 3,650 dwellings (10a = 2,400 & 10b = 1,250)	Dunton Garden Suburb (up to 6,000 homes across the border with Brentwood)	Increase allocation for 10a from 1,000 to 1,600 dwellings.	N/A
H11	Basildon	Land west of Steeple View	140	N/A	270 dwellings	N/A	N/A	250 dwellings (Alternative Site 7)
H12	Basildon	Land east of Noak Bridge	360	N/A	540 dwellings at higher density	Alternative allocation to the north of Wash Road	N/A	300 dwellings (Alternative Site 5)
H13	Basildon	East of Basildon	2,000	N/A	1,230 dwellings only	2,000 & 5.5ha employment: 5.5ha and 750 homes at land east of Burnt Mills, 550 to the south east of Pitsea and 610 to the west of Bowers Gifford	2,000 to the east of Bowers Gifford	3,616 dwellings (Alternative Sites 2 & 3)

Housing Allocation	Settlement	Site Address	No. Dwellings	Employment	Reasonable Alternative 1	Reasonable Alternative 2	Reasonable Alternative 3	Nov 2016 Alternative Sites
H14	Wickford	Land south of Cranfield Park Road	870	N/A	1,150 dwellings on more land also put forward around the Wick country park	N/A	N/A	N/A
H15	Wickford	Land north of Southend Road, Shotgate	400	N/A	150 dwellings more than 400m from water recycling centre	N/A	N/A	N/A
H16	Wickford	Land east and south of Barn Hall, Wickford	420	N/A	N/A	N/A	N/A	N/A
H17	Wickford	Land north of London Road	250	N/A	N/A	N/A	N/A	279 dwellings (Alternative Site 1)
H18	Wickford	Land south of London Road	160	N/A	Develop a larger area between Tudor Way and Ramsden View Road	N/A	N/A	207 dwellings (Alternative Site 8)
H20	Billericay	Land west of Tye Common Road	160	N/A	360 homes on larger area	Alternative allocation at Salmons and Richdan Farms	N/A	N/A
H21	Billericay	Land south of London Road	180	N/A	Develop a larger area with 360 homes	N/A	N/A	N/A
H22	Billericay	Land west of Mountnessing Road	280	N/A	Develop a larger area with 400 homes	N/A	N/A	N/A
H23	Billericay	Land east of Frithwood Lane	330	N/A	Develop a larger area with 800 – 1,000 homes	Alternate development location at Billericay Golf Course	N/A	525 dwellings (Alternative Site 9)

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Housing Allocation	Settlement	Site Address	No. Dwellings	Employment	Reasonable Alternative 1	Reasonable Alternative 2	Reasonable Alternative 3	Nov 2016 Alternative Sites
H24	Billericay	Land south of Windmill Heights, Great Burstead and South Green	70	N/A	Develop at 20 dph for around 45 homes	N/A	N/A	170 dwellings (Alternative Site 10)
H25	Billericay	Land west of Kennel Lane, Great Burstead and South Green	70	N/A	Develop at 20 dph for around 45 homes	N/A	N/A	N/A
H26 (a&b)	Billericay	Land east of Greens Farm Lane	280	N/A	Allocate land north of Outwood Farm Road	N/A	N/A	455 dwellings (Alternative Site 4)
H27	Billericay	Land east of Southend Road, Great Burstead and South Green	220	N/A	Develop at 20dph for around 145 homes	N/A	N/A	N/A
H28	Ramsden Bellhouse	Various sites	45	N/A	Higher growth to a total of 250 homes	N/A	N/A	N/A
H29	Crays Hill	Various sites	45	N/A	Higher growth to a total of 120 homes	N/A	N/A	N/A
New Site 1	Billericay	Land south of Outwood Common Road (Brooklands Farm)	300	N/A	N/A	N/A	N/A	N/A
New Site 2	Billericay	Land east of Southend Road (Foot Farm)	150	N/A	N/A	N/A	N/A	N/A
New Site 3	Billericay	Land west of Southend Road (Maitland Lodge)	44	N/A	N/A	N/A	N/A	N/A

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Housing Allocation	Settlement	Site Address	No. Dwellings	Employment	Reasonable Alternative 1	Reasonable Alternative 2	Reasonable Alternative 3	Nov 2016 Alternative Sites
New Site 4	Basildon	Dale Farm, Oak Lane, Crays Hill	500	N/A	N/A	N/A	N/A	N/A
New Site 5	Billericay	Land at Greenleas Farm, South of London Road	360	N/A	N/A	N/A	N/A	N/A
New Site 6	Basildon	Land between London Road and A13, Pitsea	80	N/A	N/A	N/A	N/A	N/A
New Site 7	Basildon	Hovefields and Honiley Neighbourhood Area	500	N/A	N/A	N/A	N/A	N/A

Figure A-1 Basildon draft local plan housing and alternatives locations

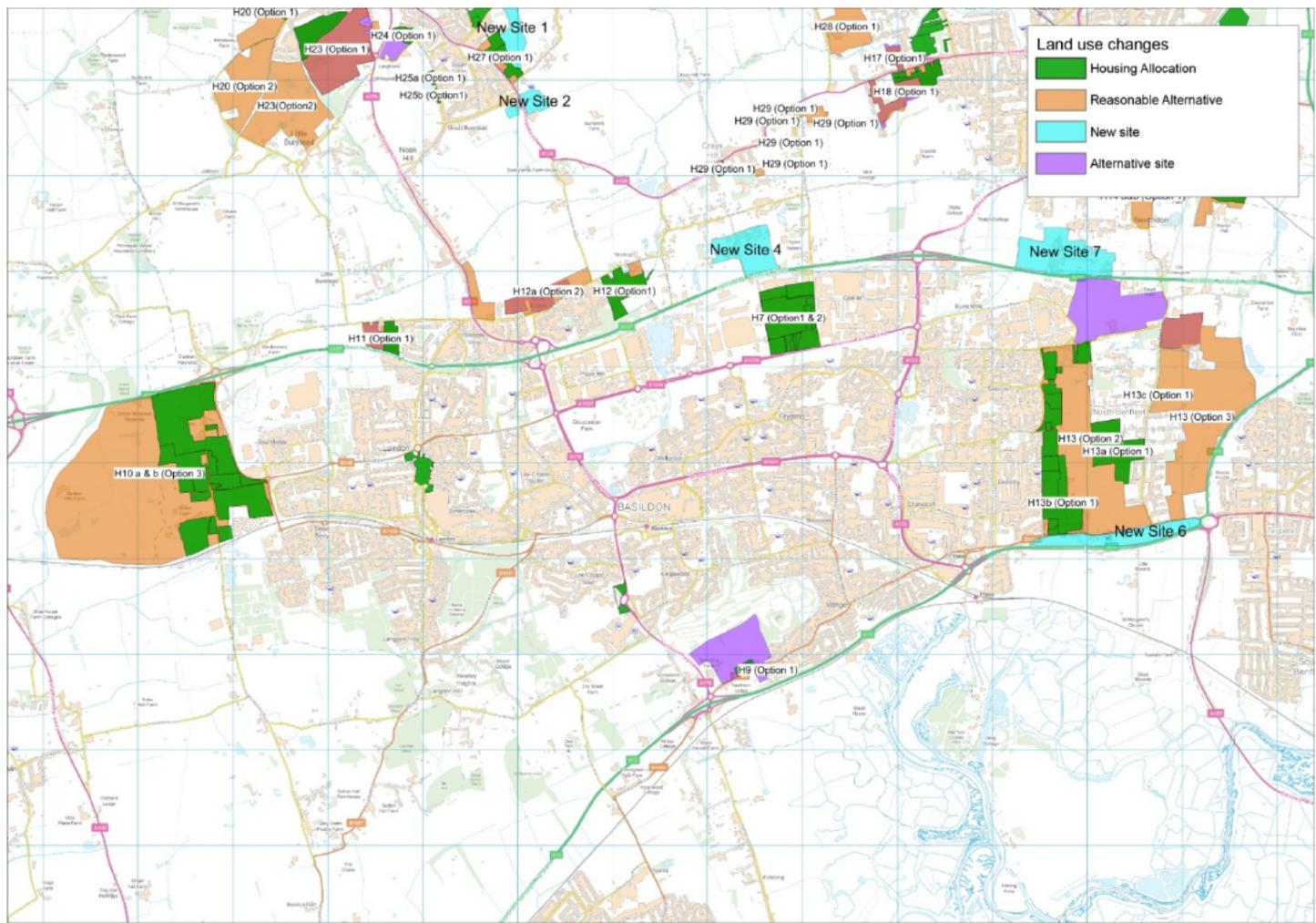


Figure A-2 Billericay draft local plan housing and alternatives locations

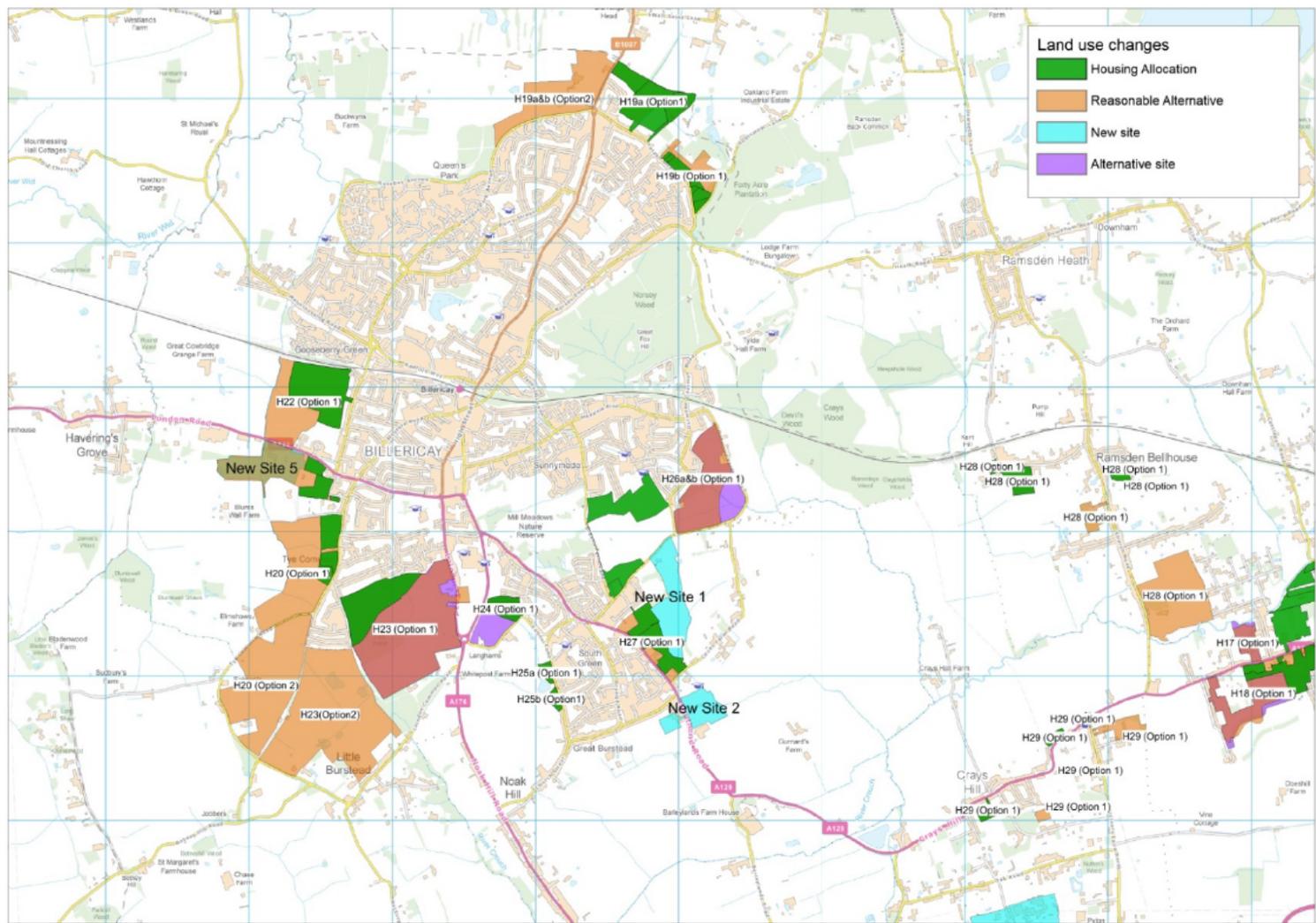


Figure A-3 Wickford draft local plan housing and alternatives locations

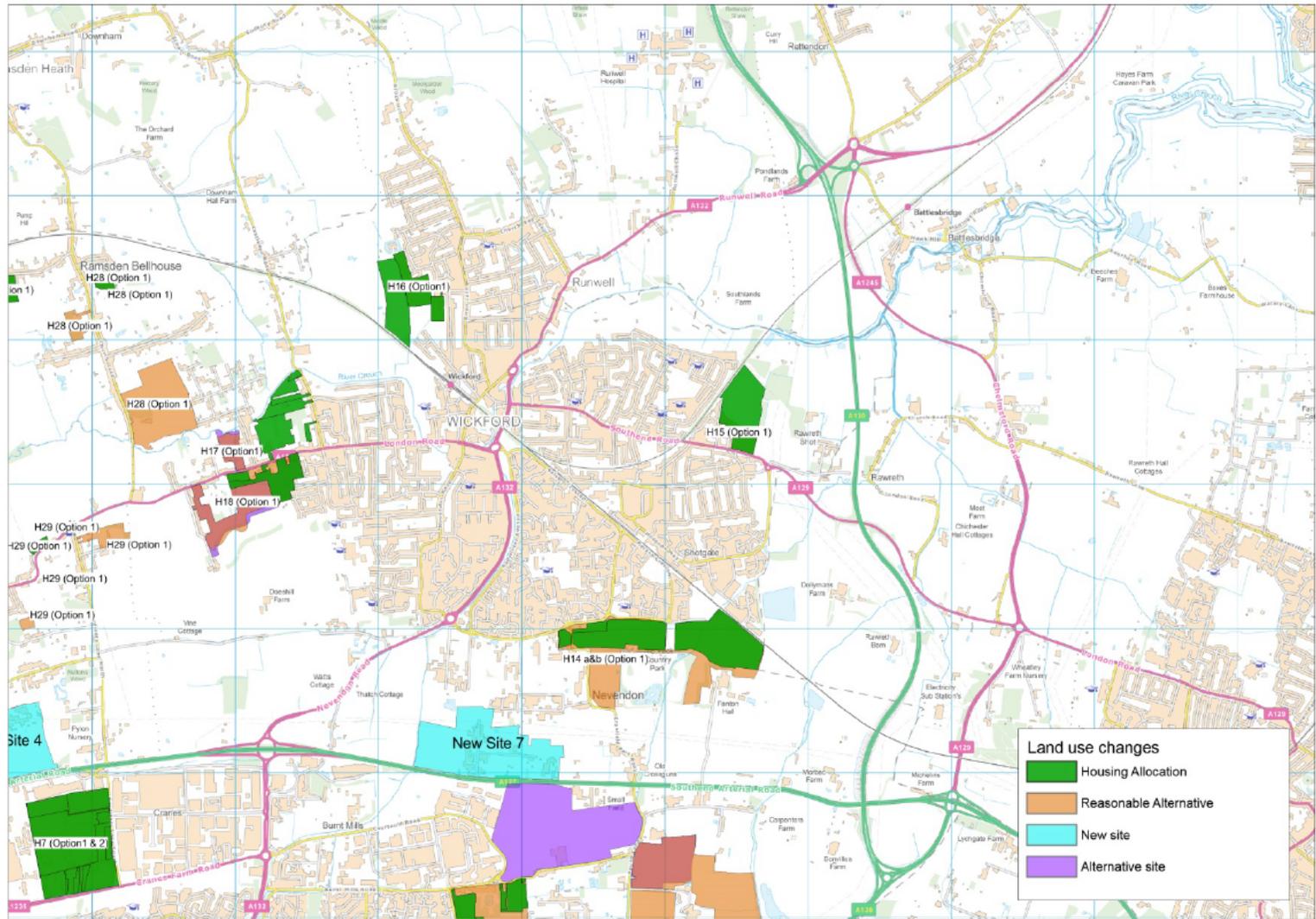


Table A-2 Housing Allocation Site Sustainability Appraisal – Existing & Potential Scores (Detailed H7 – H9)

Sustainable Accessibility Indicators		H7	H7	H7	H8	H9a	H9b	H9a&b	H9a&b	H9a&b	H9a&b							
Indicators	Score System	Housing Alloc.	Housing Alloc.	Option 1	Option 2	Housing Alloc.	Housing Alloc.	Option 1	Option 1	Alternative Site	Alternative Site							
		H7 - Housing Alloc.	H7 - Option 1	H7 - Option 2	H8 - Housing Alloc.	H9a - Housing Alloc.	H9b - Housing Alloc.	H9a&b - Option 1	H9a&b - Option 1	Alternative Site	Alternative Site							
Rail access	Walking distance to nearest bus stop (with at least peak hourly day service)	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points	20	23.68	20	23.68	20	23.68	10	11.84	20	23.68	20	23.68	20	23.68		
	Distance to nearest rail/tube station	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69		
	Bus service frequency to rail/tube station (sv. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	20	15.07	20	15.07	20	15.07	20	15.07	10	7.54	10	7.54	10	7.54	20	15.07
Town access	Distance to nearest town centre	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38
	Bus service frequency to town centre (sv. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	20	20.45	20	20.45	20	20.45	20	20.45	20	20.45	20	20.45	20	20.45	20	20.45
	Typical bus journey time to town centre	>30 mins = 0 points, 15-30 mins = 10 points, <15 mins = 20 points	10	9.15	10	9.15	10	9.15	20	18.30	20	18.30	20	18.30	20	18.30	10	9.15
Health access	Distance to nearest GP surgery	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38
	Bus service frequency to nearest GP surgery (sv. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	20	10.76	20	10.76	20	10.76	20	10.76	20	10.76	20	10.76	20	10.76	20	10.76
	Typical bus journey time to nearest GP surgery	>30 mins = 0 points, 15-30 mins = 10 points, <15 mins = 20 points	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61
Education access	Distance to nearest nursery/pre-school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38
	Distance to nearest infant/primary school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	20	19.38	20	19.38	20	19.38	10	9.69	20	19.38	20	19.38	20	19.38	20	19.38
	Distance to nearest secondary school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	10	9.69	10	9.69	10	9.69	20	19.38	10	9.69	10	9.69	10	9.69	10	9.69
	Bus service frequency to nearest secondary school	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	20	10.76	20	10.76	20	10.76	20	10.76	20	10.76	20	10.76	20	10.76	20	10.76
	Proximity of bus route to nearest secondary school	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points	20	13.99	20	13.99	20	13.99	20	13.99	20	13.99	20	13.99	20	13.99	10	7.00
Ped / Cycle access	Current level of cycle access to/from LP site	none = 0 points, limited = 10 points, good = 20 points	0	0.00	0	0.00	0	0.00	10	10.23	0	0.00	0	0.00	0	0.00	10	10.23
	Current level of pedestrian facilities in vicinity of LP site	none = 0 points, limited = 10 points, good = 20 points	20	20.45	20	20.45	20	20.45	20	20.45	20	20.45	20	20.45	20	20.45	20	20.45
	Scale of peak hour congestion expected in vicinity of site	moderate congestion = 0 points, low level congestion = 10 points, uncongested = 20 points	20	24.76	20	24.76	20	24.76	0	0.00	20	24.76	20	24.76	20	24.76	20	24.76
	Existing local residents' propensity to drive to work based on 2011 Census	>40% drive to work = 0 points, 30-40% = 10 points, <30% = 20 points	10	10.00	10	10.00	10	10.00	20	20.00	0	0.00	0	0.00	0	0.00	0	0.00
				281		281		281		283		272		272		272		274
				10		10		10		7		15		15		15		14
Potential	Distance to nearest bus route if no nearby bus stop (assuming potential for new stop to be added)	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Potential to direct bus services to serve LP development (based on proximity of nearest bus route)	low = 0 points, medium = 10 points, high = 20 points	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	20	54.55
	Potential for better public transport services to/from site (based on size of development proposed)	low = 0 points, medium = 10 points, high = 20 points	10	27.27	10	27.27	10	27.27	10	27.27	0	0.00	0	0.00	0	0.00	0	0.00
	Potential for encouraging cycle use to/from LP site (based on proximity of local services)	car dependent = 0 points, limited = 10 points, good = 20 points	20	28.79	20	28.79	20	28.79	10	14.39	10	14.39	10	14.39	10	14.39	10	14.39
	Potential for encouraging walking to/from LP site (based on proximity of local services)	car dependent = 0 points, limited = 10 points, good = 20 points	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
				337		337		337		324		287		287		287		343
				5		5		5		11		24		24		24		4

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Table A-3 Housing Allocation Site Sustainability Appraisal – Existing & Potential Scores (Detailed H10-11)

Sustainable Accessibility Indicators		H10a	H10a	H10b	H10b	H10 a&b	H10 a&b	H11	H11	H11	H11	H11	H11						
Indicators	Score System	Housin g Alloc.	H10a - Housin g Alloc.	Option 1	H10a - Option 1	Housin g Alloc.	H10b - Housin g Alloc.	Option 1	H10b - Option 1	Option 2	Option 2	Option 3	Option 3	Housin g Alloc.	H11 - Housin g Alloc.	Option 1	H11 - Option 1	Alterna tive Site	Alterna tive Site
		<p><b>Rail access</b></p> <p>Walking distance to nearest bus stop (with at least peakhourly day service) &gt;1km = 0 points, 400-1000m = 10 points, &lt;400m = 20 points</p> <p>Distance to nearest rail/tube station &gt;4km = 0 points, 1-4km = 10 points, &lt;1km = 20 points</p> <p>Bus service frequency to rail/tube station (av. per hr of AM &amp; PM peaks) 0 = 0 points, 1-2 = 10 points, 3+ = 20 points</p> <p>Typical bus journey time to nearest rail/tube station &gt;30 mins = 0 points, 15-30 mins = 10 points, &lt;15 mins = 20 points</p> <p><b>Town access</b></p> <p>Distance to nearest town centre &gt;4km = 0 points, 1-4km = 10 points, &lt;1km = 20 points</p> <p>Bus service frequency to town centre (av. per hr of AM &amp; PM peaks) 0 = 0 points, 1-2 = 10 points, 3+ = 20 points</p> <p>Typical bus journey time to town centre &gt;30 mins = 0 points, 15-30 mins = 10 points, &lt;15 mins = 20 points</p> <p><b>Health access</b></p> <p>Distance to nearest GP surgery &gt;4km = 0 points, 1-4km = 10 points, &lt;1km = 20 points</p> <p>Bus service frequency to nearest GP surgery (av. per hr of AM &amp; PM peaks) 0 = 0 points, 1-2 = 10 points, 3+ = 20 points</p> <p>Typical bus journey time to nearest GP surgery &gt;30 mins = 0 points, 15-30 mins = 10 points, &lt;15 mins = 20 points</p> <p><b>Education access</b></p> <p>Distance to nearest nursery/pre-school &gt;4km = 0 points, 1-4km = 10 points, &lt;1km = 20 points</p> <p>Distance to nearest infant/primary school &gt;4km = 0 points, 1-4km = 10 points, &lt;1km = 20 points</p> <p>Distance to nearest secondary school &gt;4km = 0 points, 1-4km = 10 points, &lt;1km = 20 points</p> <p>Bus service frequency to nearest secondary school 0 = 0 points, 1-2 = 10 points, 3+ = 20 points</p> <p>Proximity of bus route to nearest secondary school &gt;1km = 0 points, 400-1000m = 10 points, &lt;400m = 20 points</p> <p><b>Ped / Cycle access</b></p> <p>Current level of cycle access to/from LP site none = 0 points, limited = 10 points, good = 20 points</p> <p>Current level of pedestrian facilities in vicinity of LP site none = 0 points, limited = 10 points, good = 20 points</p> <p>Scale of peak hour congestion expected in vicinity of site moderate congestion - 0 points, low level congestion - 10 points, uncongested - 20 points</p> <p>Existing local residents' propensity to drive to work based on 2011 Census &gt;40% drive to work = 0 points, 30-40% = 10 points, &lt;30% = 20 points</p>																	
		10	11.84	10	11.84	10	11.84	10	11.84	0	0.00	10	11.84	20	23.68	20	23.68	20	23.68
		10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69
		20	15.07	20	15.07	0	0.00	0	0.00	20	15.07	20	15.07	0	0.00	0	0.00	0	0.00
		10	9.15	10	9.15	0	0.00	0	0.00	10	9.15	10	9.15	0	0.00	0	0.00	0	0.00
		10	19.38	10	19.38	0	0.00	0	0.00	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38
		20	20.45	20	20.45	0	0.00	0	0.00	20	20.45	20	20.45	0	0.00	0	0.00	0	0.00
		10	9.15	10	9.15	0	0.00	0	0.00	10	9.15	10	9.15	0	0.00	0	0.00	0	0.00
		10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69
		0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	20	19.38	20	19.38	20	19.38
		10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69
		10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69
		20	10.76	20	10.76	0	0.00	0	0.00	20	10.76	20	10.76	10	5.38	10	5.38	10	5.38
		10	7.00	10	7.00	0	0.00	0	0.00	0	0.00	0	0.00	20	13.99	20	13.99	20	13.99
		0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	10	10.23	10	10.23	10	10.23
		20	24.76	20	24.76	10	12.38	10	12.38	20	24.76	20	24.76	20	24.76	20	24.76	20	24.76
		20	20.00	20	20.00	10	10.00	10	10.00	10	10.00	10	12.38	20	20.00	20	20.00	20	20.00
			203		203		90		90		174		188		183		183		183
			47		47		70		70		61		57		58		58		58
		0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
		20	54.55	20	54.55	20	54.55	20	54.55	20	54.55	20	54.55	0	0.00	0	0.00	0	0.00
		10	14.39	10	14.39	0	0.00	0	0.00	10	14.39	10	14.39	10	14.39	10	14.39	10	14.39
		0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
			272		272		144		144		243		257		197		197		197
			34		34		63		63		49		43		60		60		60

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Table A-4 Housing Allocation Site Sustainability Appraisal – Existing & Potential Scores (Detailed H12-13)

Sustainable Accessibility Indicators			H12	H12	H12	H12 a&b	H12 a&b	H13	H13	H13 a,b&c	H13	H13	H13	H13					
Indicators	Score System	Housing Alloc.	H12 - Housing Alloc.	Option 1	H12 - Option 1	Option 2	a&b - Option 2	Alternative Site	a&b - Alternative	Housing Alloc.	H13 - Housing Alloc.	Option 1	a,b&c - Option 1	Option 2	H13 - Option 2	Option 3	H13 - Option 3	Alternative Site	Alternative Site
		Rail access	Walking distance to nearest bus stop (with at least peak hourly day service)	20	23.68	20	23.68	20	23.68	20	23.68	20	23.68	20	23.68	20	23.68	10	11.84
	Distance to nearest rail/tube station	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	0	0.00	0	0.00
	Bus service frequency to rail/tube station (sv. per hr of AM & PM peak)	20	15.07	20	15.07	20	15.07	20	15.07	10	7.54	10	7.54	10	7.54	10	7.54	0	0.00
	Typical bus journey time to nearest rail/tube station	20	18.30	20	18.30	20	18.30	20	18.30	10	9.15	10	9.15	10	9.15	10	9.15	0	0.00
Town access	Distance to nearest town centre	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38	0	0.00	10	19.38	0	0.00	0	0.00
	Bus service frequency to town centre (sv. per hr of AM & PM peak)	20	20.45	20	20.45	20	20.45	20	20.45	10	10.23	20	20.45	20	20.45	10	10.23	0	0.00
	Typical bus journey time to town centre	20	18.30	20	18.30	20	18.30	20	18.30	10	9.15	10	9.15	10	9.15	10	9.15	0	0.00
Health access	Distance to nearest GP surgery	20	19.38	20	19.38	20	19.38	20	19.38	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69
	Bus service frequency to nearest GP surgery (sv. per hr of AM & PM peak)	20	10.76	20	10.76	20	10.76	20	10.76	10	5.38	20	10.76	20	10.76	0	0.00	0	0.00
	Typical bus journey time to nearest GP surgery	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61	0	0.00	0	0.00
Education access	Distance to nearest nursery/pre-school	10	9.69	10	9.69	20	19.38	20	19.38	20	19.38	20	19.38	10	9.69	20	19.38	10	9.69
	Distance to nearest infant/primary school	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38	10	9.69	20	19.38	10	9.69	10	9.69
	Distance to nearest secondary school	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69
	Bus service frequency to nearest secondary school	20	10.76	20	10.76	20	10.76	20	10.76	10	5.38	0	0.00	20	10.76	0	0.00	10	5.38
	Proximity of bus route to nearest secondary school	10	7.00	10	7.00	10	7.00	10	7.00	20	13.99	0	0.00	20	13.99	0	0.00	10	7.00
Ped / Cycle access	Current level of cycle access to/from LP site	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Current level of pedestrian facilities in vicinity of LP site	10	10.23	10	10.23	20	20.45	20	20.45	10	10.23	10	10.23	10	10.23	0	0.00	10	10.23
	Scale of peak hour congestion expected in vicinity of site	20	24.76	20	24.76	20	24.76	20	24.76	20	24.76	20	24.76	20	24.76	20	24.76	20	24.76
	Existing local residents' propensity to drive to work based on 2011 Census	0	0.00	0	0.00	0	0.00	0	0.00	10	10.00	10	10.00	10	10.00	0	0.00	0	0.00
			262		262		262		262		232		190		253		111		119
			27		27		8		8		37		56		27		20		67
Potential	Distance to nearest bus route if no nearby bus stop (assuming potential for new stop to be added)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Potential to direct bus services to serve LP development (based on proximity of nearest bus route)	0	0.00	0	0.00	0	0.00	0	0.00	20	54.55	20	54.55	20	54.55	0	0.00	0	0.00
	Potential for better public transport services to/from site (based on size of development proposed)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	20	54.55	20	54.55
	Potential for encouraging cycle use to/from LP site (based on proximity of local services)	10	14.39	20	28.79	20	28.79	20	28.79	20	28.79	10	14.39	20	28.79	10	14.39	10	14.39
	Potential for encouraging walking to/from LP site (based on proximity of local services)	0	0.00	10	14.39	0	0.00	0	0.00	10	14.39	0	0.00	10	14.39	0	0.00	0	0.00
			277		305		311		311		330		259		351		180		188
			31		29		14		14		8		42		3		65		64

Table A-5 Housing Allocation Site Sustainability Appraisal – Existing & Potential Scores (Detailed New Site 4, New Site 6, and H19)

Sustainable Accessibility Indicators			New Site 4		New Site 6		H19a		H19a		H19b		H19b		H19a&b	
Indicators	Score System		4	New Site - 4	6	New Site - 6	Housing Alloc.	H19a - Housing Alloc.	Option 1	H19a - Option 1	Housing Alloc.	H19b - Housing Alloc.	Option 1	H19b - Option 1	Option 2	Option 2
			Walking distance to nearest bus stop (with at least peak hourly day service)			0	0.00	20	23.68	20	23.68	20	23.68	10	11.84	10
Rail access	Distance to nearest rail/tube station		0	0.00	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69
	Bus service frequency to rail/tube station (sv. per hr of AM & PM peaks)		0	0.00	20	15.07	20	15.07	20	15.07	20	15.07	20	15.07	20	15.07
	Typical bus journey time to nearest rail/tube station		0	0.00	10	9.15	20	18.30	20	18.30	20	18.30	20	18.30	20	18.30
Town access	Distance to nearest town centre		0	0.00	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38
	Bus service frequency to town centre (sv. per hr of AM & PM peaks)		0	0.00	20	20.45	20	20.45	20	20.45	20	20.45	20	20.45	20	20.45
	Typical bus journey time to town centre		0	0.00	20	18.30	20	18.30	20	18.30	20	18.30	20	18.30	20	18.30
Health access	Distance to nearest GP surgery		10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69
	Bus service frequency to nearest GP surgery (sv. per hr of AM & PM peaks)		0	0.00	20	10.76	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Typical bus journey time to nearest GP surgery		0	0.00	20	8.61	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Education access	Distance to nearest nursery/pre-school		10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69
	Distance to nearest infant/primary school		10	9.69	20	19.38	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69
	Distance to nearest secondary school		10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69
	Bus service frequency to nearest secondary school		0	0.00	20	10.76	20	10.76	20	10.76	20	10.76	20	10.76	20	10.76
	Proximity of bus route to nearest secondary school		0	0.00	20	13.99	20	13.99	20	13.99	20	13.99	20	13.99	20	13.99
Ped / Cycle access	Current level of cycle access to/from LP site		0	0.00	20	20.45	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Current level of pedestrian facilities in vicinity of LP site		0	0.00	20	20.45	10	10.23	10	10.23	10	10.23	10	10.23	10	10.23
Scale of peak hour congestion expected in vicinity of site	Scale of peak hour congestion expected in vicinity of site		10	12.38	0	0.00	10	12.38	10	12.38	20	24.76	20	24.76	20	24.76
	Existing local residents' propensity to drive to work based on 2011 Census		10	10.00	0	0.00	10	10.00	10	10.00	10	10.00	10	10.00	10	10.00
				<b>61</b>		<b>256</b>		<b>228</b>		<b>228</b>		<b>229</b>		<b>229</b>		<b>229</b>
				74		25		37		37		34		34		34
Potential	Distance to nearest bus route if no nearby bus stop (assuming potential for new stop to be added)		0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Potential to direct bus services to serve LP development (based on proximity of nearest bus route)		0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Potential for better public transport services to/from site (based on size of development proposed)		10	27.27	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Potential for encouraging cycle use to/from LP site (based on proximity of local services)		10	14.39	0	0.00	20	28.79	20	28.79	20	28.79	20	28.79	20	28.79
	Potential for encouraging walking to/from LP site (based on proximity of local services)		0	0.00	0	0.00	10	14.39	10	14.39	10	14.39	10	14.39	10	14.39
				<b>103</b>		<b>256</b>		<b>271</b>		<b>271</b>		<b>272</b>		<b>272</b>		<b>272</b>
				74		46		39		39		36		36		36

Table A-6 Housing Allocation Site Sustainability Appraisal – Existing & Potential Scores (Detailed H20 and H21)

Sustainable Accessibility Indicators			H20		H20		H20		H21		H21		H22		H22	
Indicators	Score System	Housing Alloc.	H20 - Housing Alloc.	H20 - Option 1	H20 - Option 2	H20 - Option 1	H20 - Option 2	H21 - Housing Alloc.	H21 - Option 1	H21 - Option 1	H21 - Option 1	H22 - Housing Alloc.	H22 - Option 1	H22 - Option 1	H22 - Option 1	
Rail access	Walking distance to nearest bus stop (with at least peak hourly day service)	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points	10	11.84	10	11.84	0	0.00	20	23.68	20	23.68	20	23.68	20	23.68
	Distance to nearest rail/tube station	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	20	33.37	20	33.37
	Bus service frequency to rail/tube station (sv. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	10	7.54	10	7.54	0	0.00	10	7.54	10	7.54	10	7.54	10	7.54
	Typical bus journey time to nearest rail/tube station	>30 mins = 0 points, 15-30 mins = 10 points, <15 mins = 20 points	20	18.30	20	18.30	0	0.00	20	18.30	20	18.30	20	18.30	20	18.30
Town access	Distance to nearest town centre	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38	20	38.75	20	38.75
	Bus service frequency to town centre (sv. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	10	10.23	10	10.23	0	0.00	10	10.23	0	0.00	10	10.23	10	10.23
	Typical bus journey time to town centre	>30 mins = 0 points, 15-30 mins = 10 points, <15 mins = 20 points	20	18.30	20	18.30	0	0.00	20	18.30	0	0.00	20	18.30	20	18.30
Health access	Distance to nearest GP surgery	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	20	19.38	20	19.38	10	9.69	20	19.38	20	19.38	10	9.69	10	9.69
	Bus service frequency to nearest GP surgery (sv. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	20	10.76	20	10.76	0	0.00	20	10.76	20	10.76	20	10.76	20	10.76
	Typical bus journey time to nearest GP surgery	>30 mins = 0 points, 15-30 mins = 10 points, <15 mins = 20 points	20	8.61	20	8.61	0	0.00	20	8.61	20	8.61	20	8.61	20	8.61
Education access	Distance to nearest nursery/pre-school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	20	19.38	20	19.38	10	9.69	20	19.38	20	19.38	10	9.69	10	9.69
	Distance to nearest infant/primary school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	20	19.38	20	19.38	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69
	Distance to nearest secondary school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69
	Bus service frequency to nearest secondary school	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	10	5.38	10	5.38	0	0.00	10	5.38	0	0.00	10	5.38	10	5.38
	Proximity of bus route to nearest secondary school	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points	10	7.00	10	7.00	0	0.00	20	13.99	0	0.00	20	13.99	20	13.99
Ped / Cycle access	Current level of cycle access to/from LP site	none = 0 points, limited = 10 points, good = 20 points	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Current level of pedestrian facilities in vicinity of LP site	none = 0 points, limited = 10 points, good = 20 points	10	10.23	10	10.23	0	0.00	10	10.23	10	10.23	10	10.23	10	10.23
	Scale of peak hour congestion expected in vicinity of site	moderate congestion - 0 points, low level congestion - 10 points, uncongested - 20 points	0	0.00	0	0.00	0	0.00	10	12.38	10	12.38	20	24.76	20	24.76
	Existing local residents' propensity to drive to work based on 2011 Census	>40% drive to work = 0 points, 30-40% = 10 points, <30% = 20 points	10	10.00	10	10.00	10	10.00	20	20.00	20	20.00	20	20.00	20	20.00
				222		222		85		254		206		283		283
				41		41		72		26		45		5		5
Potential	Distance to nearest bus route if no nearby bus stop (assuming potential for new stop to be added)	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Potential to direct bus services to serve LP development (based on proximity of nearest bus route)	low = 0 points, medium = 10 points, high = 20 points	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Potential for better public transport services to/from site (based on size of development proposed)	low = 0 points, medium = 10 points, high = 20 points	0	0.00	0	0.00	10	27.27	0	0.00	0	0.00	0	0.00	0	0.00
	Potential for encouraging cycle use to/from LP site (based on proximity of local services)	car dependent = 0 points, limited = 10 points, good = 20 points	10	14.39	10	14.39	10	14.39	20	28.79	20	28.79	20	28.79	20	28.79
	Potential for encouraging walking to/from LP site (based on proximity of local services)	car dependent = 0 points, limited = 10 points, good = 20 points	0	0.00	0	0.00	0	0.00	10	14.39	10	14.39	10	14.39	10	14.39
				236		236		126		297		249		326		326
				50		50		71		22		47		9		9

Table A-7 Housing Allocation Site Sustainability Appraisal – Existing & Potential Scores (Detailed H23 - H25)

Sustainable Accessibility Indicators		H23	H23	H23	H23	H24	H24	H24	H25a&b	H25a&b										
Indicators		Housin g Alloc.	H23 - Housin g Alloc.	Option 1	H23 - Option 1	Option 2	H23 - Option 2	Alterna tive Site	Alterna tive Site	Housin g Alloc.	H24 - Housin g Alloc.	Option 1	H24 - Option 1	Alterna tive Site	Alterna tive Site	Housin g Alloc.	H25a&b Housin g Alloc.	Option 1	H25a&b Housin g Alloc.	Option 1
Rail access	Walking distance to nearest bus stop (with at least peak hourly day service)	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points	0	0.00	10	11.84	0	0.00	10	11.84	20	23.68	20	23.68	10	11.84	10	11.84	10	11.84
	Distance to nearest rail/tube station	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69
	Bus service frequency to rail/tube station (sv. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	0	0.00	10	7.54	0	0.00	10	7.54	10	7.54	20	15.07	20	15.07	10	7.54	10	7.54
	Typical bus journey time to nearest rail/tube station	>30 mins = 0 points, 15-30 mins = 10 points, <15 mins = 20 points	0	0.00	10	9.15	0	0.00	10	9.15	10	9.15	10	9.15	10	9.15	10	9.15	10	9.15
Town access	Distance to nearest town centre	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38
	Bus service frequency to town centre (sv. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	0	0.00	10	10.23	0	0.00	10	10.23	10	10.23	20	20.45	20	20.45	10	10.23	10	10.23
	Typical bus journey time to town centre	>30 mins = 0 points, 15-30 mins = 10 points, <15 mins = 20 points	0	0.00	10	9.15	0	0.00	10	9.15	10	9.15	20	18.30	20	18.30	10	9.15	10	9.15
Health access	Distance to nearest GP surgery	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	10	9.69	20	19.38	10	9.69	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38
	Bus service frequency to nearest GP surgery (sv. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	0	0.00	20	10.76	0	0.00	20	10.76	20	10.76	20	10.76	20	10.76	20	10.76	20	10.76
	Typical bus journey time to nearest GP surgery	>30 mins = 0 points, 15-30 mins = 10 points, <15 mins = 20 points	0	0.00	20	8.61	0	0.00	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61
Education access	Distance to nearest nursery/pre-school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	10	9.69	20	19.38	10	9.69	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38
	Distance to nearest infant/primary school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	10	9.69	20	19.38	10	9.69	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38
	Distance to nearest secondary school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	10	9.69	20	19.38	10	9.69	20	19.38	20	19.38	20	19.38	20	19.38	10	9.69	10	9.69
	Bus service frequency to nearest secondary school	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	0	0.00	20	10.76	0	0.00	20	10.76	20	10.76	20	10.76	20	10.76	10	5.38	10	5.38
	Proximity of bus route to nearest secondary school	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points	0	0.00	20	13.99	0	0.00	20	13.99	20	13.99	20	13.99	20	13.99	20	13.99	20	13.99
Ped / Cycle access	Current level of cycle access to/from LP site	none = 0 points, limited = 10 points, good = 20 points	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Current level of pedestrian facilities in vicinity of LP site	none = 0 points, limited = 10 points, good = 20 points	10	10.23	10	10.23	0	0.00	10	10.23	10	10.23	10	10.23	10	10.23	10	10.23	10	10.23
Scale of peak hour congestion expected in vicinity of site	Scale of peak hour congestion expected in vicinity of site	moderate congestion = 1 point, low level congestion = 10 points, uncongested = 20 points	20	24.76	20	24.76	0	0.00	20	24.76	20	24.76	20	24.76	20	24.76	20	24.76	20	24.76
	Existing local residents' propensity to drive to work based on 2011 Census	>40% drive to work = 0 points, 30-40% = 10 points, <30% = 20 points	0	0.00	10	10.00	10	10.00	10	10.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
			<b>110</b>	<b>251</b>	<b>85</b>	<b>251</b>	<b>252</b>	<b>279</b>	<b>268</b>	<b>226</b>	<b>226</b>	<b>69</b>	<b>29</b>	<b>72</b>	<b>29</b>	<b>28</b>	<b>13</b>	<b>18</b>	<b>39</b>	<b>39</b>
Potential	Distance to nearest bus route if no nearby bus stop (assuming potential for new stop to be added)	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Potential to direct bus services to serve LP development (based on proximity of nearest bus route)	low = 0 points, medium = 10 points, high = 20 points	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	10	27.27	10	27.27
	Potential for better public transport services to/from site (based on size of development proposed)	low = 0 points, medium = 10 points, high = 20 points	0	0.00	10	27.27	10	27.27	10	27.27	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Potential for encouraging cycle use to/from LP site (based on proximity of local services)	car dependent = 0 points, limited = 10 points, good = 20 points	0	0.00	20	28.79	10	14.39	20	28.79	10	14.39	20	28.79	20	28.79	10	14.39	10	14.39
	Potential for encouraging walking to/from LP site (based on proximity of local services)	car dependent = 0 points, limited = 10 points, good = 20 points	0	0.00	10	14.39	0	0.00	10	14.39	10	14.39	0	0.00	0	0.00	10	14.39	10	14.39
			<b>110</b>	<b>321</b>	<b>126</b>	<b>321</b>	<b>281</b>	<b>308</b>	<b>296</b>	<b>282</b>	<b>282</b>	<b>73</b>	<b>12</b>	<b>71</b>	<b>12</b>	<b>30</b>	<b>18</b>	<b>23</b>	<b>28</b>	<b>28</b>

Table A-8 Housing Allocation Site Sustainability Appraisal – Existing & Potential Scores (Detailed H26 - H29)

Sustainable Accessibility Indicators		H26a&b	H26a&b	H26a&b	H27	H27	H28	H28	H29	H29							
Indicators	Score System	Housin g Alloc.	b - Housin g Alloc.	Option 1	b - Option 1	Alterna tire Site	b - Alterna tire	H27 - Housin g Alloc.	H27 - Option 1	H27 - Option 1	H28 - Housin g Alloc.	H28 - Option 1	H28 - Option 1	H29 - Housin g Alloc.	H29 - Option 1	H29 - Option 1	
Rail access	Walking distance to nearest bus stop (with at least peak hourly day service)	20	23.68	20	23.68	20	23.68	20	23.68	20	23.68	20	23.68	20	23.68	20	23.68
	Distance to nearest rail/tube station	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69
	Bus service frequency to rail/tube station (sv. per hr of AM & PM peaks)	10	7.54	10	7.54	10	7.54	20	15.07	20	15.07	10	7.54	10	7.54	10	7.54
	Typical bus journey time to nearest rail/tube station	20	18.30	10	9.15	10	9.15	20	18.30	20	18.30	0	0.00	0	0.00	10	9.15
Town access	Distance to nearest town centre	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38
	Bus service frequency to town centre (sv. per hr of AM & PM peaks)	10	10.23	10	10.23	10	10.23	20	20.45	20	20.45	10	10.23	10	10.23	10	10.23
	Typical bus journey time to town centre	20	18.30	10	9.15	10	9.15	20	18.30	20	18.30	0	0.00	0	0.00	10	9.15
Health access	Distance to nearest GP surgery	10	9.69	10	9.69	10	9.69	20	19.38	20	19.38	10	9.69	10	9.69	10	9.69
	Bus service frequency to nearest GP surgery (sv. per hr of AM & PM peaks)	10	5.38	10	5.38	10	5.38	20	10.76	20	10.76	10	5.38	10	5.38	10	5.38
	Typical bus journey time to nearest GP surgery	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61	0	0.00	0	0.00	20	8.61
Education access	Distance to nearest nursery/pre-school	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38	10	9.69	10	9.69	10	9.69
	Distance to nearest infant/primary school	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38	10	9.69	10	9.69	10	9.69
	Distance to nearest secondary school	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69
	Bus service frequency to nearest secondary school	10	5.38	10	5.38	10	5.38	20	10.76	20	10.76	0	0.00	0	0.00	0	0.00
	Proximity of bus route to nearest secondary school	20	13.99	10	7.00	10	7.00	20	13.99	20	13.99	0	0.00	0	0.00	0	0.00
Ped / Cycle access	Current level of cycle access to/from LP site	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Current level of pedestrian facilities in vicinity of LP site	10	10.23	10	10.23	10	10.23	10	10.23	10	10.23	10	10.23	10	10.23	10	10.23
Scale of peak hour congestion expected in vicinity of site		20	24.76	20	24.76	20	24.76	20	24.76	20	24.76	20	24.76	20	24.76	20	24.76
Existing local residents' propensity to drive to work based on 2011 Census		0	0.00	0	0.00	0	0.00	10	10.00	10	10.00	10	10.00	10	10.00	10	10.00
			241		215		215		289		289		167		167		167
			32		43		43		3		3		64		64		64
																	55
Potential	Distance to nearest bus route if no nearby bus stop (assuming potential for new stop to be added)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Potential to direct bus services to serve LP development (based on proximity of nearest bus route)	0	0.00	10	27.27	10	27.27	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Potential for better public transport services to/from site (based on size of development proposed)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Potential for encouraging cycle use to/from LP site (based on proximity of local services)	10	14.39	10	14.39	10	14.39	10	14.39	10	14.39	0	0.00	0	0.00	0	0.00
Potential for encouraging walking to/from LP site (based on proximity of local services)	10	14.39	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	
			269		257		257		303		303		167		167		167
			41		44		44		20		20		66		66		66
																	63

Table A-9 Housing Allocation Site Sustainability Appraisal – Existing & Potential Scores (Detailed New site 1, new site 2, new site 5, and H14-15)

Sustainable Accessibility Indicators		New Site 1		New Site 2		New Site 3		New Site 5		H14a&b		H14a&b		H15		H15	
Indicators	Score System	1	New Site - 1	2	New Site - 2	3	New Site - 3	5	New Site - 5	Housin g Alloc.	Housin g Alloc.	Option 1	Option 1	Housin g Alloc.	Housin g Alloc.	Option 1	Option 1
Walking distance to nearest bus stop (with at least peak hourly day service)	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points	20	23.68	20	23.68	20	23.68	20	23.68	10	11.84	10	11.84	20	23.68	20	23.68
Distance to nearest rail/tube station	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69
Bus service frequency to rail/tube station (av. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	20	15.07	20	15.07	20	15.07	10	7.54	0	0.00	0	0.00	20	15.07	20	15.07
Typical bus journey time to nearest rail/tube station	>30 mins = 0 points, 15-30 mins = 10 points, <15 mins = 20 points	20	18.30	20	18.30	20	18.30	20	18.30	0	0.00	0	0.00	20	18.30	20	18.30
Distance to nearest town centre	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38
Bus service frequency to town centre (av. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	20	20.45	20	20.45	20	20.45	0	0.00	0	0.00	0	0.00	20	20.45	20	20.45
Typical bus journey time to town centre	>30 mins = 0 points, 15-30 mins = 10 points, <15 mins = 20 points	10	9.15	20	18.30	20	18.30	0	0.00	0	0.00	0	0.00	20	18.30	20	18.30
Distance to nearest GP surgery	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38	20	19.38
Bus service frequency to nearest GP surgery (av. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	20	10.76	20	10.76	20	10.76	20	10.76	20	10.76	20	10.76	20	10.76	20	10.76
Typical bus journey time to nearest GP surgery	>30 mins = 0 points, 15-30 mins = 10 points, <15 mins = 20 points	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61
Distance to nearest nursery/pre-school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	20	19.38	10	9.69	10	9.69	20	19.38	20	19.38	20	19.38	10	9.69	10	9.69
Distance to nearest infant/primary school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	20	19.38	20	19.38	20	19.38	10	9.69	20	19.38	20	19.38	20	19.38	20	19.38
Distance to nearest secondary school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	20	19.38	20	19.38
Bus service frequency to nearest secondary school	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	20	10.76	20	10.76	20	10.76	0	0.00	0	0.00	0	0.00	20	10.76	20	10.76
Proximity of bus route to nearest secondary school	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points	0	0.00	10	7.00	10	7.00	0	0.00	0	0.00	0	0.00	20	13.99	20	13.99
Current level of cycle access to/from LP site	none = 0 points, limited = 10 points, good = 20 points	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Current level of pedestrian facilities in vicinity of LP site	none = 0 points, limited = 10 points, good = 20 points	0	0.00	10	10.23	10	10.23	10	10.23	10	10.23	10	10.23	10	10.23	10	10.23
Scale of peak hour congestion expected in vicinity of site	moderate congestion - 0 points, low level congestion - 10 points, uncongested - 20 points	10	12.38	10	12.38	10	12.38	10	12.38	20	24.76	20	24.76	10	12.38	10	12.38
Existing local residents' propensity to drive to work based on 2011 Census	>40% drive to work = 0 points, 30-40% = 10 points, <30% = 20 points	10	10.00	10	10.00	10	10.00	20	20.00	0	0.00	0	0.00	0	0.00	0	0.00
			243		260		260		206		170		170		266		266
			31		23		23		45		62		62		19		19
Distance to nearest bus route if no nearby bus stop (assuming potential for new stop to be added)	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Potential to direct bus services to serve LP development (based on proximity of nearest bus route)	low = 0 points, medium = 10 points, high = 20 points	10	27.27	0	0.00	0	0.00	0	0.00	20	54.55	20	54.55	0	0.00	0	0.00
Potential for better public transport services to/from site (based on size of development proposed)	low = 0 points, medium = 10 points, high = 20 points	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Potential for encouraging cycle use to/from LP site (based on proximity of local services)	car dependent = 0 points, limited = 10 points, good = 20 points	10	14.39	10	14.39	10	14.39	20	28.79	0	0.00	0	0.00	20	28.79	20	28.79
Potential for encouraging walking to/from LP site (based on proximity of local services)	car dependent = 0 points, limited = 10 points, good = 20 points	0	0.00	0	0.00	0	0.00	10	14.39	0	0.00	0	0.00	10	14.39	10	14.39
			285		274		274		249		225		225		310		310
			27		32		32		47		55		55		16		16

Table A-60 Housing Allocation Site Sustainability Appraisal – Existing & Potential Scores (Detailed H16-18)

Sustainable Accessibility Indicators		H16		H16		H17		H17		H17		H18		H18		H18	
Indicators		Housin g Alloc.	H16 - Housin g Alloc.	Option 1	H16 - Option 1	Housin g Alloc.	H17 - Housin g Alloc.	Option 1	H17 - Option 1	Alterna tive Site	Alterna tive Site	Housin g Alloc.	H18 - Housin g Alloc.	Option 1	H18 - Option 1	Alterna tive Site	H18 - Alterna tive Site
Rail access	Walking distance to nearest bus stop (with at least peak hourly day service)	20	23.68	20	23.68	20	23.68	20	23.68	20	23.68	20	23.68	20	23.68	20	23.68
	Distance to nearest rail/tube station	20	33.37	20	33.37	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69	10	16.69
	Bus service frequency to rail/tube station (av. per hr of AM & PM peaks)	20	15.07	20	15.07	10	7.54	10	7.54	10	7.54	10	7.54	10	7.54	10	7.54
	Typical bus journey time to nearest rail/tube station	20	18.30	20	18.30	20	18.30	20	18.30	20	18.30	20	18.30	20	18.30	20	18.30
Town access	Distance to nearest town centre	20	38.75	20	38.75	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38	10	19.38
	Bus service frequency to town centre (av. per hr of AM & PM peaks)	20	20.45	20	20.45	10	10.23	10	10.23	10	10.23	10	10.23	10	10.23	10	10.23
	Typical bus journey time to town centre	20	18.30	20	18.30	20	18.30	20	18.30	20	18.30	20	18.30	20	18.30	20	18.30
Health access	Distance to nearest GP surgery	20	19.38	20	19.38	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69
	Bus service frequency to nearest GP surgery (av. per hr of AM & PM peaks)	20	10.76	20	10.76	10	5.38	10	5.38	10	5.38	10	5.38	10	5.38	10	5.38
	Typical bus journey time to nearest GP surgery	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61	20	8.61
Education access	Distance to nearest nursery/pre-school	20	19.38	20	19.38	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69
	Distance to nearest infant/primary school	20	19.38	20	19.38	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69
	Distance to nearest secondary school	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69	10	9.69
	Bus service frequency to nearest secondary school	20	10.76	20	10.76	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Proximity of bus route to nearest secondary school	10	7.00	10	7.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Ped / Cycle access	Current level of cycle access to/from LP site	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Current level of pedestrian facilities in vicinity of LP site	10	10.23	10	10.23	10	10.23	10	10.23	10	10.23	10	10.23	10	10.23	10	10.23
	Scale of peak hour congestion expected in vicinity of site	20	24.76	20	24.76	20	24.76	20	24.76	20	24.76	20	24.76	20	24.76	20	24.76
	Existing local residents' propensity to drive to work based on 2011 Census	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
			<b>308</b>		<b>308</b>		<b>202</b>		<b>202</b>		<b>202</b>		<b>202</b>		<b>202</b>		<b>202</b>
			1		1		49		49		49		49		49		49
Potential	Distance to nearest bus route if no nearby bus stop (assuming potential for new stop to be added)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Potential to direct bus services to serve LP development (based on proximity of nearest bus route)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Potential for better public transport services to/from site (based on size of development proposed)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Potential for encouraging cycle use to/from LP site (based on proximity of local services)	20	28.79	20	28.79	20	28.79	20	28.79	20	28.79	10	14.39	10	14.39	10	14.39
Potential for encouraging walking to/from LP site (based on proximity of local services)	10	14.39	10	14.39	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	
			<b>351</b>		<b>351</b>		<b>231</b>		<b>231</b>		<b>231</b>		<b>216</b>		<b>216</b>		<b>216</b>
			1		1		52		52		52		57		57		57

Table A-71 Housing Allocation Site Sustainability Appraisal – Existing & Potential Scores (Detailed new site 7)

Sustainable Accessibility Indicators			New Site	
	Indicators	Score System	7	New Site - 7
Rail access	Walking distance to nearest bus stop (with at least peak hourly day service)	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points	0	0.00
	Distance to nearest rail/tube station	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	0	0.00
	Bus service frequency to rail/tube station (av. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	0	0.00
	Typical bus journey time to nearest rail/tube station	>30 mins = 0 points, 15-30 mins = 10 points, <15 mins = 20 points	0	0.00
Town access	Distance to nearest town centre	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	0	0.00
	Bus service frequency to town centre (av. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	0	0.00
	Typical bus journey time to town centre	>30 mins = 0 points, 15-30 mins = 10 points, <15 mins = 20 points	0	0.00
Health access	Distance to nearest GP surgery	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	10	9.69
	Bus service frequency to nearest GP surgery (av. per hr of AM & PM peaks)	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	0	0.00
	Typical bus journey time to nearest GP surgery	>30 mins = 0 points, 15-30 mins = 10 points, <15 mins = 20 points	0	0.00
Education access	Distance to nearest nursery/pre-school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	0	0.00
	Distance to nearest infant/primary school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	10	9.69
	Distance to nearest secondary school	>4km = 0 points, 1-4km = 10 points, <1km = 20 points	0	0.00
	Bus service frequency to nearest secondary school	0 = 0 points, 1-2 = 10 points, 3+ = 20 points	0	0.00
	Proximity of bus route to nearest secondary school	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points	0	0.00
Ped / Cycle access	Current level of cycle access to/from LP site	none = 0 points, limited = 10 points, good = 20 points	10	10.23
	Current level of pedestrian facilities in vicinity of LP site	none = 0 points, limited = 10 points, good = 20 points	10	10.23
Potential	Scale of peak hour congestion expected in vicinity of site	moderate congestion - 0 points, low level congestion - 10 points, uncongested - 20 points	0	0.00
	Existing local residents' propensity to drive to work based on 2011 Census	>40% drive to work = 0 points, 30-40% = 10 points, <30% = 20 points	0	0.00
				40
				75
Potential	Distance to nearest bus route if no nearby bus stop (assuming potential for new stop to be added)	>1km = 0 points, 400-1000m = 10 points, <400m = 20 points	0	0.00
	Potential to direct bus services to serve LP development (based on proximity of nearest bus route)	low = 0 points, medium = 10 points, high = 20 points	0	0.00
	Potential for better public transport services to/from site (based on size of development proposed)	low = 0 points, medium = 10 points, high = 20 points	20	54.55
	Potential for encouraging cycle use to/from LP site (based on proximity of local services)	car dependent = 0 points, limited = 10 points, good = 20 points	0	0.00
	Potential for encouraging walking to/from LP site (based on proximity of local services)	car dependent = 0 points, limited = 10 points, good = 20 points	0	0.00
				94
				75

## Appendix B: 2011 Census Journey-to-Work – travel to work by car/van

Figure A1 – Method of travel to work in Billericay - % driving a car or van

(As illustrated: Lowest = 28.7%)

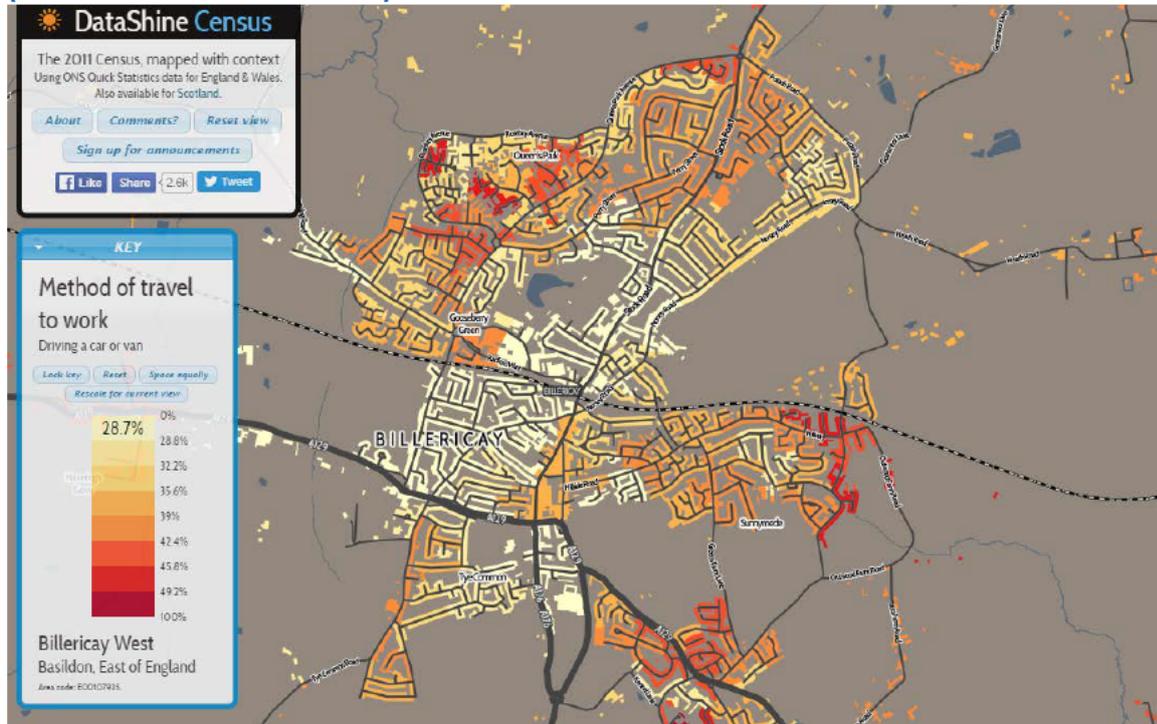


Figure A2 – Method of travel to work in Wickford - % driving a car or van

(As illustrated: Lowest = 31%)

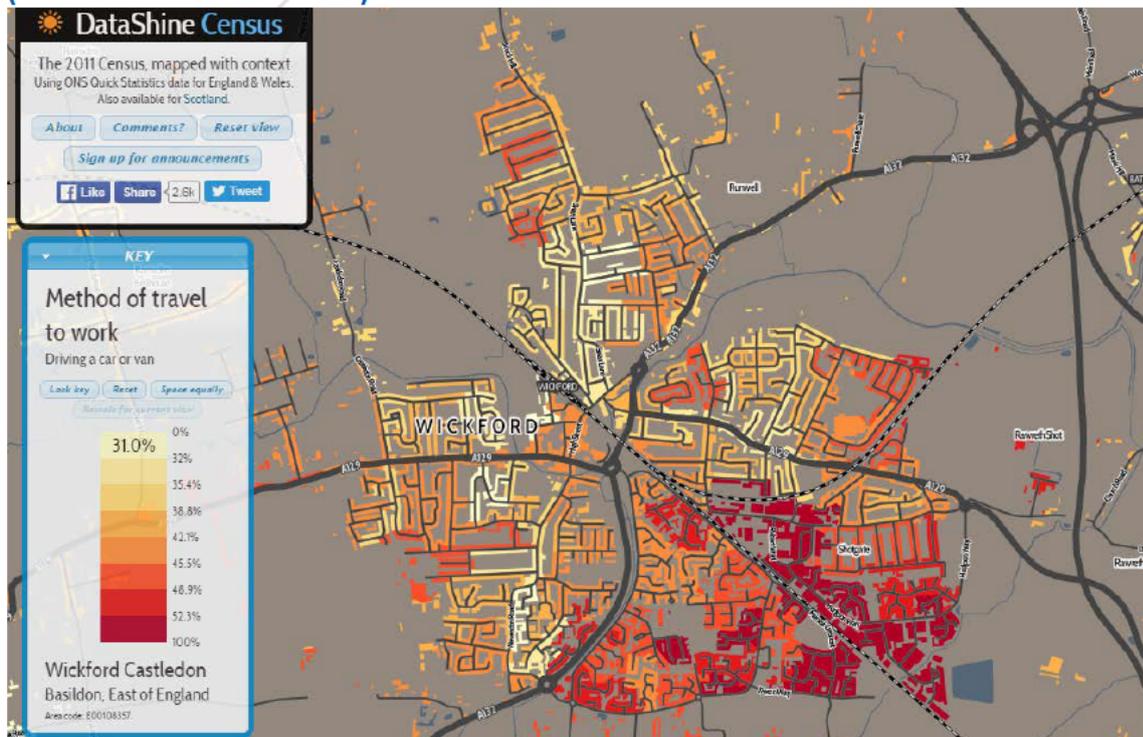


Figure A3 – Method of travel to work in West Basildon - % driving a car or van  
(As illustrated: Lowest = 21%)

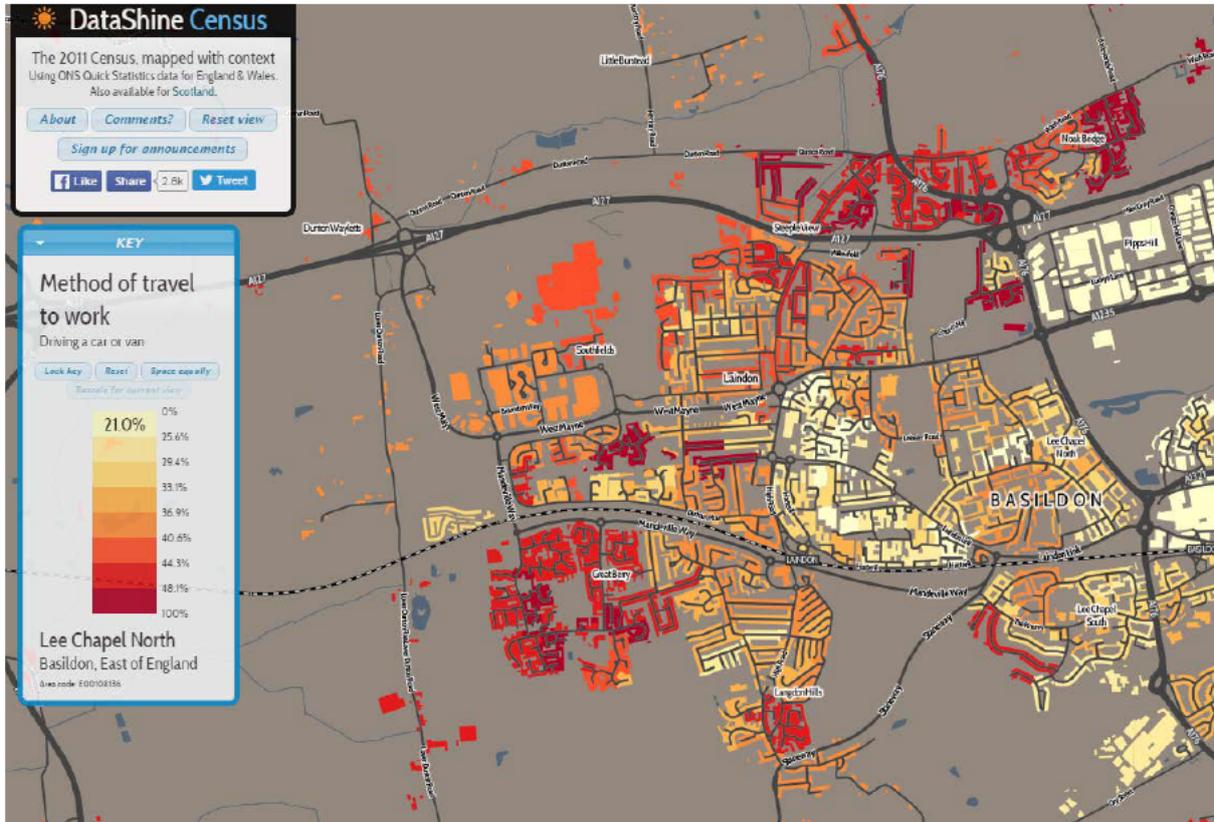
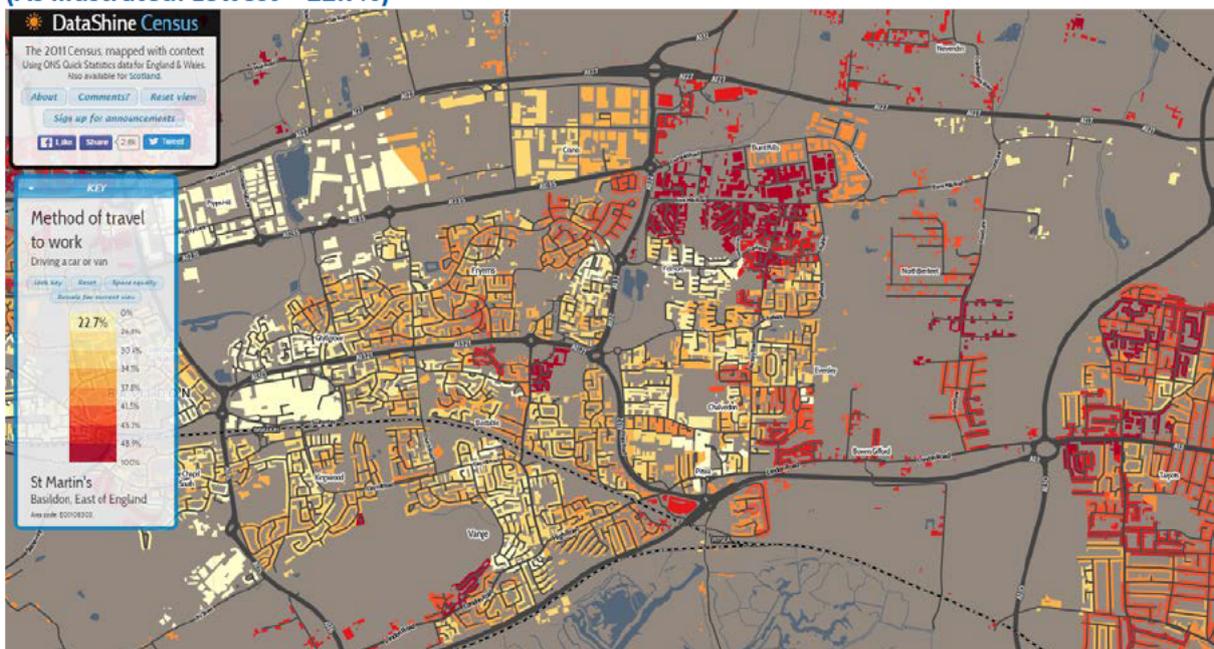


Figure A4 – Method of travel to work in East Basildon - % driving a car or van  
(As illustrated: Lowest = 22.7%)



Appendix C: 2011 Census Car ownership data

Figure A5 – Car or van availability in Billericay – 100% = 1 car per household on average  
(As illustrated: Lowest = 68.3%)

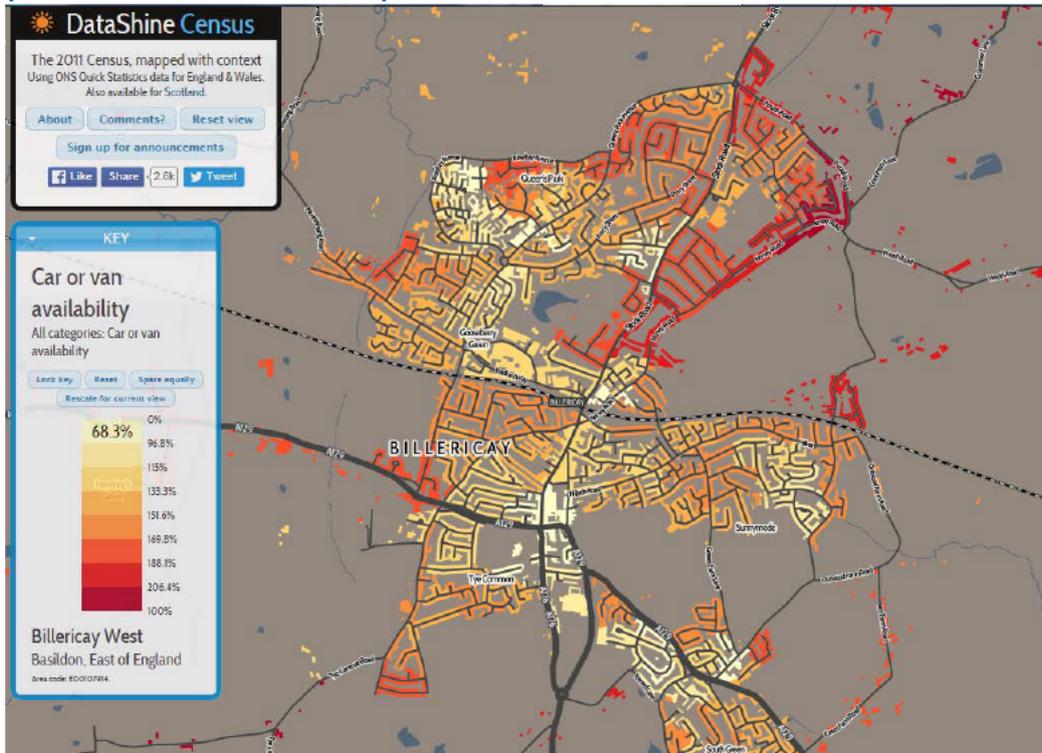


Figure A6 – Car or van availability in Wickford – 100% = 1 car per household on average  
(As illustrated: Lowest = 53.3%)

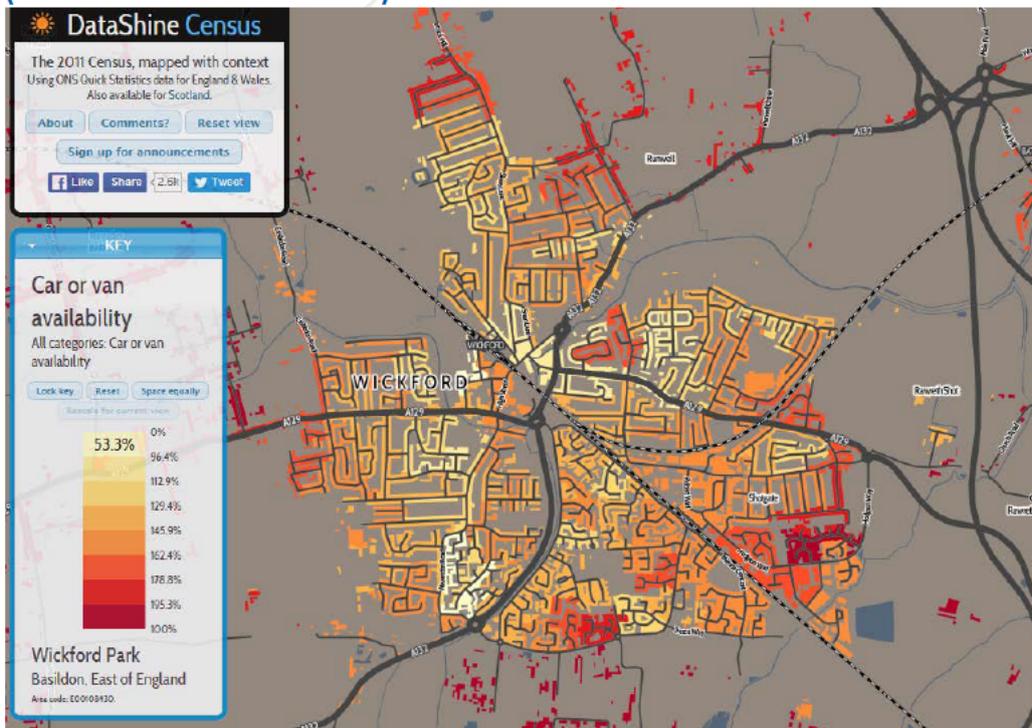


Figure A7 – Car or van availability in West Basildon – 100% = 1 car per household on average  
(As illustrated: Lowest = 53.9%)

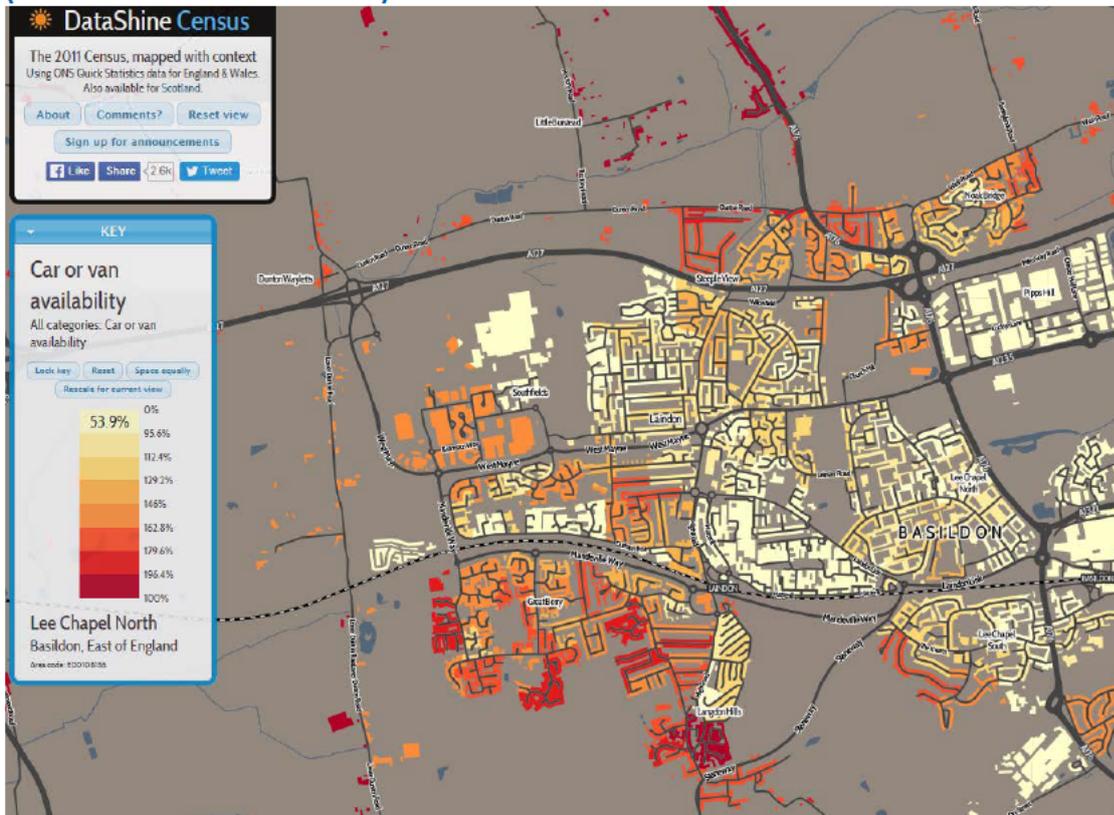


Figure A8 – Car or van availability in East Basildon – 100% = 1 car per household on average  
(As illustrated: Lowest = 43.9%)

