# *Technical Note*

**Job Number:** CO03022406

**Job Title:** Lewes Town Transport Study

**Date:** 23rd September 2011

**Subject:** Technical Note – Traffic Flow Forecasts

## 1.0 INTRODUCTION

### Overview

1.1 Lewes District Council (LDC), in partnership with the South Downs National Park Authority, is currently preparing a Local Development Framework (LDF) Core Strategy, which will guide housing and employment development in Lewes District to 2030. TPi (part of Amey group) was commissioned to undertake a Transport Study for Lewes town, in order to determine the impacts that a number of development scenarios, identified by LDC, would have on the surrounding transport network over the period of the Core Strategy.

1.2 The development scenarios assessed in this Transport Study are focussed solely on the settlements of Lewes and Ringmer. No detailed account has been taken of potential development options in Newhaven and Peacehaven, which have been considered in a separate, local transport study.

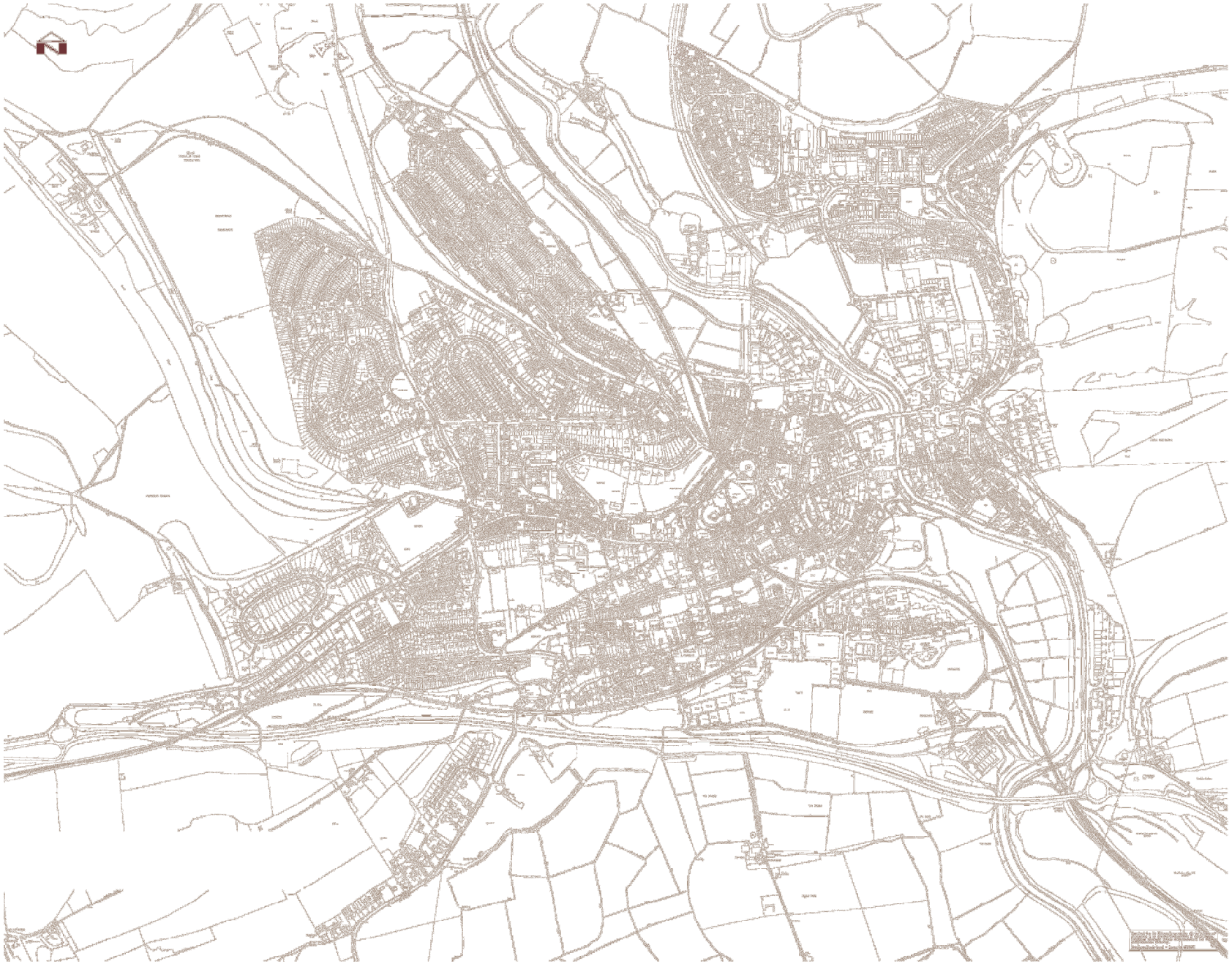
1.3 Overall, the aim of the Lewes Town Transport Study is to give an objective view of the relative strengths and weaknesses of each development scenario, in terms of their future transport impacts. This should help to inform the Council's evaluation of possible options for future housing and employment growth in the period to 2030. The project specifically focuses on impact assessment during a typical weekday AM peak and PM peak hours, for a number of LDC spatial options in combination.

1.4 East Sussex County Council transportation officers worked with LDC to set the brief for the study.

1.5 A location plan showing the core area of the study is provided in **Figure 1.1**.

### Background

1.6 A SATURN highway model has been used to undertake the Lewes Town Transport Study.. This is an updated version of the existing SATURN traffic model of Lewes. The model was originally developed for a 2005 base year. The highway model has since been updated and re-validated to a 2010 base year, for the Lewes Town Transport Study. The revisions are documented in the technical note 'SATURN Model Update', issued in May 2011 and mainly comprise the following:





Lewes Town Transport Model: Study Area

Figure 1.1

— *SATURN Network Changes:*

- Cliffe High St closed to vehicular traffic;
- Inclusion of Beddingham roundabout (A27/ A26);
- Inclusion of Ham Lane/A26 junction;
- Inclusion of Ham Lane/B2192 junction, Ringmer;
- Layout changes at Southerham Roundabout (A27/A26);
- New model detail at A27/ A275;
- New model detail at Brighton Rd/ Nevil Rd signalised junction;
- New model detail at Mayhew Way/ Church Lane (Malling St); and
- New model detail at Orchard Rd/ A26 junction.

— *Inclusion of Land Use Development Changes in SATURN Trip Matrices:*

- Southdown House;
- Scout Hut;
- High Street Developments;
- Prince Edwards Road;
- Baxters Printing Works;
- Roche Site;
- Telephone Exchange;
- Avery Nursery;
- Merlins; and
- Ringmer Business Centre.

— *Amendments to the trip matrices, to resolve:*

- Shortage of A27 strategic traffic between east and west of the study area;
- Shortage of traffic entering the study area from A27 (W);
- Excessive traffic entering the study area from A27 (E); and
- Shortage of traffic starting/ending its journey at the South Malling Employment Zone.

— *Inclusion of additional traffic counts from 2005, 2009 and 2010, in matrix estimation.*

1.7 A reasonable base 2010 traffic flow validation was achieved for the AM and PM peak models, with respect to criteria specified in the Department for Transport (DfT) Design Manual for Roads and Bridges (DMRB) Volume 12, Section 2, Part 1 – Traffic Appraisal in Urban Areas. However journey time validation was less than satisfactory owing to large variability in the sample of observed times. Assigned route choice, convergence and stability in the models were better than acceptable thresholds.

**Scope of the Appraisal**

1.8 This note summarises the results of the model forecasting appraisal of the LDF development scenarios specified by LDC. Seven scenarios have been assessed at 2030, for a weekday AM peak hour (8am-9am) and PM peak hour (5pm-6pm). The forecast model includes two vehicle classes, namely Light Vehicles (Cars plus light goods vehicles) and Heavy Vehicles (heavy goods vehicles plus buses).

1.9 Comparisons have been drawn between the options, by using summary statistics from the transport model as indicators of scheme performance against certain criteria. The performance indicators for each option have been compared using a framework appraisal.

1.10 The forecast appraisal has been undertaken in line with guidance issued by Department for Transport (DfT) through WebTAG.

1.11 In the remainder of the note, Section 2 contains a discussion of the forecasting method and assumptions used in the SATURN model and also the appraisal method used to compare the LDF development scenarios. Section 3 contains a summary of the appraisal results. Section 4 draws conclusions from the appraisal.

## 2.0 FORECASTING AND APPRAISAL METHODOLOGY

### Introduction

2.1 This section summarises the scope of the Lewes town traffic model forecasts and the method and assumptions used in the LDF impact appraisal.

### Local Development Framework Development Scenarios

2.2 A number of housing/employment development scenarios have been identified for testing by LDC. These scenarios are set out in **Table 2.1**.

**Table 2.1 LDF Development Scenarios**

| | | LDF Scenario | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | ***Scenario 1*** | ***Scenario 2*** | ***Scenario 3*** | ***Scenario 4*** | ***Scenario 5*** | ***Scenario 6*** | ***Scenario 7*** |
| **Lewes** | **Old Malling Farm** (Residential - 270 dwellings) | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| | **North Street** (Residential - 600 dwellings) | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| | **North Street** (Employment - 10000m2 B1a) | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| | | ***Scenario 1*** | ***Scenario 2*** | ***Scenario 3*** | ***Scenario 4*** | ***Scenario 5*** | ***Scenario 6*** | ***Scenario 7*** |
| **Ringmer** | **Lewes Road** (Residential - 154 dwellings) | ✓ | ✓ | | | | | ✓ |
| | **Bishops Lane** (Residential - 226 dwellings) | ✓ | | ✓ | | | | ✓ |
| | **B2124/B2192** (Employment - 6000m2 B1c/B2) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

*Source: Lewes District Council*

2.3 The development scenarios in **Table 2.1** represent all permutations of development, split between the following locations:

- Lewes North Street (residential and employment);
- Lewes Old Malling Farm (residential only); and
- Ringmer (residential);
- Note – Ringmer employment allocation is common to <u>all</u> scenarios.

2.4 In summary, the scenarios represent the following:

- Scenario 1 – Maximum residential and employment across all locations;
- Scenario 2 – Maximum residential and employment in Lewes, with low residential in Ringmer;
- Scenario 3 – Maximum residential and employment in Lewes, with medium residential in Ringmer;
- Scenario 4 – Maximum residential and employment in Lewes, with no residential in Ringmer;
- Scenario 5 – Residential in Lewes Old Malling Farm, with no development in North Street and no residential in Ringmer;
- Scenario 6 – Residential and employment in Lewes North Street, with no development in Old Malling Farm and no residential in Ringmer; and

- Scenario 7 – No residential or employment in Lewes, with maximum residential in Ringmer.

**Modelling Methodology**

2.5 Travel demand forecasts were required at 2030, for AM and PM peak hours, in order to assess the likely impact of the housing and employment options upon the existing transport infrastructure.

Future Year Trip Matrices

2.6 Future year trip matrices were assembled for a Reference case situation and for the seven LDF development scenarios. The matrices were produced by applying separate forecasting techniques to different parts of the 2010 base matrix and by then combining the constituent parts. The main forecasting components to be considered were as follows:

i) Growth of existing car trip origins and destinations, wholly within the model area of Lewes and Ringmer;
ii) Growth of existing car trip origins or destinations at zones external to the study area;
iii) Growth of existing car trip origins or destinations at Brighton and Hove zones;
iv) Growth of existing car trip origins or destinations at Uckfield zones;
v) Growth of existing light goods vehicle element of (Car + LGV) trips between any origin and destination;
vi) Growth of existing heavy goods vehicle element of (HGV + bus) trips between any origin and destination;
vii) Occurrence of new site-specific trips associated with committed developments in Lewes and Ringmer zones;
viii) Occurrence of new site-specific trips associated with LDF development scenarios in Lewes and Ringmer zones (only applicable to the LDF scenarios, not the reference case); and
ix) Impact of changes in household income and fuel cost in future years.

2.7 Forecast trip matrices were developed identically for the reference case and the LDF development scenarios, except for component (viii) which was excluded from the reference case and which was different for each LDF development scenario.

2.8 Components (i)-(iv) and (ix) apply to the car element only of the light vehicle matrix. All of these calculations have been weighted according to the proportion of cars in the (Car + LGV) matrix.

2.9 For component (i), it was agreed that LDF development scenario traffic within Lewes and Ringmer would constitute the entirety of new car trip generations and attractions arising in 2030. Consequently, there would be no growth of car trip-ends wholly within Lewes or Ringmer in line with the TEMPRO database (i.e. the National Trip End Model). However, for component (ii), TEMPRO trip end growth would apply to car trips starting or ending at external zones, where no specific LDF development options have been considered.

2.10 Initially, it was intended to handle component (iii) using LDF trip data specific to Brighton and Hove. However, it was agreed that no reliable trip end values were available, so TEMPRO growth factors were applied here instead. Conversely, site-specific LDF trip ends were derived for component (iv) at Uckfield, using outputs from the Wealden DC transport model. A proportion of these Uckfield trips were distributed to and from the Lewes town model area on the basis of Census 2001 journey to work data.

2.11 LDF trip departures (origins) leaving Uckfield in the AM peak were split between model area and non-model area, according to Census trip movements from Uckfield. LDF trip arrivals (destinations) entering Uckfield in the AM peak were split between model area and non-model area, according to Census trip movements to Uckfield. The proportion of 'excluded' trips in the PM peak was estimated by transposing the AM peak departure and arrival

proportions, on the assumption that AM peak trip patterns will broadly reverse in the PM peak. **Table 2.2** shows the proportions of LDF trips at Uckfield that were included in and excluded from the study area.

**Table 2.2 Proportion of Uckfield LDF Trips inside and outside the Study Area**

| | AM Peak | | PM Peak | |
|---|---|---|---|---|
| | **% Trips Included** | **% Trips Excluded** | **% Trips Included** | **% Trips Excluded** |
| Uckfield Departures (Trip Origins) | 13% | 87% | 11% | 89% |
| Uckfield Arrivals (Trip Destinations) | 11% | 89% | 13% | 87% |

*Source: TPi*

2.12 For components (ii) and (iii), TEMPRO factors were extracted from database version 5.4, using version 6.2 of the software, in line with current WebTAG advice from DfT. Factors were differentiated by local authority district corresponding with the relevant model zones. Where a trip passes between two different districts, an average TEMPRO origin/destination factor was derived.

2.13 It should be noted that WebTAG advice has recently been revised (19th July 2011), so that version 5.4 of the TEMPRO database has been superseded by version 6.2. This will have an impact upon the traffic volumes forecast in the Lewes town model at 2030 and is discussed later in the report.

2.14 Component (v) was accounted for by calculating the proportion of LGV trips within the base 2010 light vehicle matrix (Car + LGV) and then deriving a weighted LGV growth factor from the National Transport Model (NTM). Similarly, component (vi) was handled by extracting a weighted HGV factor from NTM to be applied to the heavy vehicle matrix (HGV + Bus).

2.15 Future committed developments in specified zones in Lewes and Ringmer were incorporated as component (vii). Trip generations and attractions, by time period and vehicle type, were calculated for each land use and site area, as discussed below and were distributed according similar zones in the existing model.

2.16 Site-specific trip generations and attractions were also calculated for the LDF development options in Lewes and Ringmer, for component (viii), in LDF scenarios 1-7. The derivation of trip rates by land use type and site area is discussed below. Distribution of the LDF trips was made on the basis of similar model zones. The proportion of Ringmer trips likely to travel on the SATURN network was predicted using Census 2001 journey to work data.

2.17 The final forecasting component (ix) was to account for changes in income and fuel cost. WebTAG advises that in a highway-only model, such as for Lewes town, where transfer of trips between travel modes is not allowed for, changes in the relative attractiveness of car travel should be allowed for using income and fuel cost adjustment factors to be applied to the matrix trip ends. Accordingly, income and fuel cost adjustment has been made to all car trips in the 2030 model.

2.18 Further details of the model forecasting parameters are given below.

TEMPRO Growth of Non-Internal Car Trips

2.19 Non-internal elements of the base year 2010 car matrices were projected to future year 2030 equivalents, by applying TEMPRO, average weekday, car-driver origin and destination trip end factors, by zone location. These factors were primarily calculated using the TEMPRO database version 5.4, as shown in **Table 2.3**.

**Table 2.3 TEMPRO Growth factors (Model Version 6.2 with Database Version 5.4)**

| Model Zone | Area Description | Name | AM | | PM | |
|---|---|---|---|---|---|---|
| | | | Origin | Destination | Origin | Destination |
| 416 | Region | SE | 1.191 | 1.207 | 1.204 | 1.194 |
| 420 | County | East Sussex | 1.236 | 1.249 | 1.249 | 1.240 |
| 400/401 | Authority | Brighton and Hove | 1.302 | 1.265 | 1.266 | 1.285 |
| 403 | Authority | Eastbourne | 1.241 | 1.254 | 1.255 | 1.247 |
| 405 | Authority | Hastings | 1.250 | 1.253 | 1.255 | 1.253 |
| 410 | 21UF0 | rural (Lewes) | 1.148 | 1.222 | 1.212 | 1.163 |
| 411 | 21UF2 | Burgess Hill(part of) | 1.088 | 1.194 | 1.164 | 1.099 |
| 310-349 | 21UF5 | Lewes | 1.194 | 1.245 | 1.243 | 1.209 |
| 402 | 21UF6 | Newhaven | 1.166 | 1.226 | 1.218 | 1.176 |
| 407 | 21UG0 | rural (Rother) | 1.152 | 1.217 | 1.210 | 1.172 |
| 404 | 21UG1 | Bexhill | 1.245 | 1.251 | 1.260 | 1.261 |
| 405 | 21UG3 | Hastings(part of) | 1.165 | 1.226 | 1.225 | 1.189 |
| 408 | 21UG4 | Battle | 1.224 | 1.248 | 1.255 | 1.244 |
| 406 | 21UG5 | Rye | 1.245 | 1.252 | 1.260 | 1.260 |
| 409 | 21UH1 | Eastbourne(part of) | 1.254 | 1.259 | 1.267 | 1.267 |
| 414 | 21UH2 | Crowborough | 1.134 | 1.228 | 1.219 | 1.159 |
| 409 | 21UH3 | Hailsham | 1.220 | 1.252 | 1.255 | 1.238 |
| 412 | 21UH4 | Uckfield | 1.154 | 1.238 | 1.233 | 1.180 |
| 413 | 21UH5 | Heathfield | 1.174 | 1.245 | 1.243 | 1.200 |
| 415 | 21UH6 | Wadhurst | 1.149 | 1.234 | 1.225 | 1.173 |
| 419 | 29UB2 | Tenterden | 1.590 | 1.369 | 1.411 | 1.564 |
| 418 | Authority | Tunbridge Wells | 1.155 | 1.222 | 1.204 | 1.161 |
| 411 | 45UG1 | Burgess Hill(main) | 1.252 | 1.199 | 1.206 | 1.240 |
| 411 | 45UG2 | Haywards Heath | 1.234 | 1.203 | 1.205 | 1.225 |
| 417 | 45UG3 | East Grinstead(main) | 1.195 | 1.190 | 1.188 | 1.192 |

*Source: TEMPRO V6.2 with V5.4 Database*

2.20 As a later sensitivity test, the TEMPRO factors were revised using the TEMPRO database version 6.2 (released by DfT on 19.07.11), as shown in **Table 2.4**.

**Table 2.4 TEMPRO Growth factors (Model Version 6.2 with Database Version 6.2)**

| | | | Version 6.2 | | | | % Growth Change from V5.4 | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | AM | | PM | | AM | | PM | |
| Model Zone | Area Description | Name | Origin | Destination | Origin | Destination | Origin | Destination | Origin | Destination |
| 416 | Region | SE | 1.1356 | 1.1426 | 1.1499 | 1.1463 | -5% | -5% | -4% | -4% |
| 420 | County | East Sussex | 1.1416 | 1.1456 | 1.1523 | 1.1483 | -8% | -8% | -8% | -7% |
| 400/401 | Authority | Brighton and Hove | 1.0656 | 1.0939 | 1.0990 | 1.0828 | -18% | -14% | -13% | -16% |
| 403 | Authority | Eastbourne | 1.1517 | 1.1290 | 1.1440 | 1.1555 | -7% | -10% | -9% | -7% |
| 405 | Authority | Hastings | 1.1567 | 1.1158 | 1.1317 | 1.1563 | -7% | -11% | -10% | -8% |
| 410 | 21UF0 | rural (Lewes) | 1.1865 | 1.1458 | 1.1477 | 1.1684 | 3% | -6% | -5% | 0% |
| 411 | 21UF2 | Burgess Hill(part of) | 1.0734 | 1.1253 | 1.1263 | 1.0916 | -1% | -6% | -3% | -1% |
| 310-349 | 21UF5 | Lewes | 1.0987 | 1.1348 | 1.1380 | 1.1142 | -8% | -9% | -8% | -8% |
| 402 | 21UF6 | Newhaven | 1.1003 | 1.1306 | 1.1351 | 1.1150 | -6% | -8% | -7% | -5% |
| 407 | 21UG0 | Rural (Rother) | 1.5194 | 1.3163 | 1.3698 | 1.5118 | 32% | 8% | 13% | 29% |
| 404 | 21UG1 | Bexhill | 1.0740 | 1.1654 | 1.1644 | 1.1067 | -14% | -7% | -8% | -12% |
| 405 | 21UG3 | Hastings(part of) | 1.0920 | 1.1753 | 1.1791 | 1.1274 | -6% | -4% | -4% | -5% |

| | | | Version 6.2 | | | | % Growth Change from V5.4 | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | AM | | PM | | AM | | PM | |
| Model Zone | Area Description | Name | Origin | Destination | Origin | Destination | Origin | Destination | Origin | Destination |
| 408 | 21UG4 | Battle | 1.0765 | 1.1696 | 1.1707 | 1.1116 | -12% | -6% | -7% | -11% |
| 406 | 21UG5 | Rye | 1.1319 | 1.1822 | 1.1910 | 1.1620 | -9% | -6% | -5% | -8% |
| 409 | 21UH1 | Eastbourne(part of) | 1.0599 | 1.1621 | 1.1605 | 1.0953 | -15% | -8% | -8% | -14% |
| 414 | 21UH2 | Crowborough | 1.1582 | 1.1936 | 1.2064 | 1.1862 | 2% | -3% | -1% | 2% |
| 409 | 21UH3 | Hailsham | 1.1382 | 1.1730 | 1.1811 | 1.1616 | -7% | -6% | -6% | -6% |
| 412 | 21UH4 | Uckfield | 1.1204 | 1.1686 | 1.1745 | 1.1469 | -3% | -6% | -5% | -3% |
| 413 | 21UH5 | Heathfield | 1.0931 | 1.1473 | 1.1544 | 1.1251 | -7% | -8% | -7% | -6% |
| 415 | 21UH6 | Wadhurst | 1.1436 | 1.1744 | 1.1834 | 1.1676 | 0% | -5% | -3% | 0% |
| 419 | 29UB2 | Tenterden | 1.0715 | 1.1454 | 1.1457 | 1.0999 | -33% | -16% | -19% | -30% |
| 418 | Authority | Tunbridge Wells | 1.0947 | 1.1304 | 1.1361 | 1.1136 | -5% | -8% | -6% | -4% |
| 411 | 45UG1 | Burgess Hill(main) | 1.1125 | 1.1395 | 1.1471 | 1.1317 | -11% | -5% | -5% | -9% |
| 411 | 45UG2 | Haywards Heath | 1.0282 | 1.1102 | 1.0952 | 1.0413 | -17% | -8% | -9% | -15% |
| 417 | 45UG3 | East Grinstead(main) | 1.0812 | 1.1291 | 1.1334 | 1.1029 | -10% | -5% | -5% | -7% |

*Source: TEMPRO V6.2 with V6.2 Database*

2.21 It can be seen from Table 2.4 that, on average across East Sussex and in Lewes, projected TEMPRO growth from 2010 to 2030 is about 8% less with the version 6.2 database than with version 5.4.

National Transport Model (NTM) Growth of Light and Heavy Goods Vehicle Trips

2.22 The light and heavy goods vehicle component of the base year matrix was projected to future years in line with NTM growth rates. A summary of the growth factors, calculated from NTM Revision 1.1 (May 2010), is shown in **Table 2.5**.

**Table 2.5 NTM Growth factors**

| Forecast Period | LGV | | HGV | |
|---|---|---|---|---|
| | AM | PM | AM | PM |
| 2010 – 2030 | 1.673 | 1.230 | 1.673 | 1.236 |

*Source: NTM Rev 1.1, May2010*

Committed Development Trips

2.23 Trip predictions were produced for a number of land use sites within the traffic model area, where developments are committed, as identified by LDC officers. The committed development trips were added into the 2010 matrices after the application of TEMPRO income and fuel cost factors.

2.24 The sites at which committed development is expected, their corresponding planning status and their model zone allocations, are shown in **Table 2.6**.

**Table 2.6 Committed Land Use Developments**

| Site Location | Development Size | | Zone | Land Use Type |
|---|---|---|---|---|
| | Completions (net) since 1 April 2005 | Committed (net) | | |
| Southdown House, 44 St Annes Crescent, BN7 1SD | 12 dwellings | 0 | **329** | Residential |
| Scout Hut, St John Street, BN7 2QD | 6 dwellings | 0 | **323** | Residential |
| 34 - 35 High Street, BN7 2LU | 8 dwellings | 0 | **319** | Residential |
| 82 Prince Edwards Road, BN7 1BH | 14 dwellings | 0 | **345** | Residential |
| Baxters Printing Works | 54 dwellings | 0 | **319** | Residential |
| 24 High Street, BN7 2LU | 8 dwellings | 0 | **319** | Residential |
| Former Roche site, Bell Lane BN7 1JU | 14 dwellings | 0 | **325** | Residential |
| Land to the South and West of Former Clayhill Nurseries | 24 dwellings | 0 | **321** | Residential |
| 78 - 79 High Street, BN7 1XF | 7 dwellings | 0 | **316** | Residential |
| Land adjacent to the telephone exchange | 85 dwellings | 0 | **347** | Residential |
| Avery Nursery, Uckfield Road BN8 5RU | 1200 sqm GFA | 0 | **347** | B2 |
| Merlins, Uckfield Road, BN8 5RU | 6221 sqm GFA | 0 | **347** | B2 |
| Ringmer Business Centre, Chamberlaines Lane, Ringmer, East Sussex BN8 5NF | 1828 sqm GFA | 0 | **347** | B1c, B1a, B2, B8 |
| Upper Stoneham Farm, Upper Stoneham | -2363 sqm GFA | 0 | **347** | Sui generis |
| Land to the South and West of Former Clayhill Nurseries | 0 | 41 dwellings | **321** | Residential |
| At Lewes House Site | 0 | 59 dwellings | **319** | Residential |
| 53 Cliffe High Street, BN7 2AN | 0 | 7 dwellings | **313** | Residential |
| Lewes Police Station, West Street, BN7 2NY | 0 | 14 dwellings | **323** | Residential |
| Caburn Field, BN8 5QW (nearest postcode) | 0 | 40 dwellings | **347** | Residential |
| Land to the South and West of Former Clayhill Nurseries, Malling Street BN7 2BQ (Phase 1) | 0 | 2480 sqm GFA | **321** | B1 |
| Aldi, Brooks Road, BN7 2BY | 0 | 1475 sqm GFA | **321** | A1 |
| Land east of Malling Industrial Estate, Brooks Road, BN7 2BY | 0 | 7040 sqm GFA | **321** | B1a, B1c,B2, B8 |
| Tesco, Brooks Road, BN7 2BY | 0 | 1135 sqm GFA | **321** | A1 |

*Source: Lewes District Council*

LDF Development Trips

2.25 Trip movements were also predicted for the LDF development options in scenarios 1-7. Land uses and development sizes, specified by LDC, were as shown in **Table 2.7**. The LDF development trips were added into the 2010 matrices after the application of TEMPRO income and fuel cost factors.

**Table 2.7 LDF Land Use Development Options**

| Site Location | | Development Size | Zone | Land Use Type |
|---|---|---|---|---|
| **Lewes** | Old Malling Farm | 270 dwellings | **334** | Residential |
| | North Street | 600 dwellings | **322** | Residential |
| | North Street | 10,000 sqm GFA | **322** | B1a |
| **Ringmer** | Lewes Road | 8 dwellings | **347** | Residential |
| | Bishops Lane | 14 dwellings | **347** | Residential |
| | B2124/B2192 Junction | 6,000 sqm GFA | **347** | B1c/B2 |

*Source: Lewes District Council*

Land Use Development Trip Rates

2.26 Lewes town has a population of approximately 16,000 and has limited public transport provision. Trip rates for Lewes and Ringmer were initially derived from the TRICS database, according to site characteristics. However, it was subsequently agreed that the trip rates should be made consistent with those used in the adjacent Newhaven Transport Study. Consequently, trip rates for both committed developments and LDF development

options in the Lewes model were allocated, by time period and vehicle type, as shown in **Table 2.8**.

**Table 2.8 Land Use Trip Rates for Lewes and Ringmer Committed and LDF Sites**

| Trip Rate Units | Development Type | | Peak | Ave. Trip Rate Cars/LGV | | Ave. Trip Rate OGV | |
|---|---|---|---|---|---|---|---|
| | | | | Arrive | Depart | Arrive | Depart |
| Trips Per Dwelling | Residential | C3 | AM<br>PM | 0.157<br>0.403 | 0.403<br>0.241 | 0.000<br>0.000 | 0.000<br>0.000 |
| Trips per 100sqm GFA | Employment | A1 | AM<br>PM | 4.370<br>6.668 | 3.195<br>6.881 | 0.040<br>0.016 | 0.052<br>0.023 |
| | | B1 | AM<br>PM | 2.063<br>0.282 | 0.271<br>1.739 | 0.025<br>0.005 | 0.016<br>0.010 |
| | | B1, B2 & B8 | AM<br>PM | 1.036<br>0.174 | 0.207<br>0.897 | 0.029<br>0.041 | 0.032<br>0.005 |
| | | B2 | AM<br>PM | 0.952<br>0.176 | 0.314<br>0.814 | 0.040<br>0.006 | 0.048<br>0.027 |

*Source: East Sussex CC / Mott MacDonald*

2.27 Distribution of development trips amongst origin and destination zones in the model matrices has been determined according to the existing distribution in similar land use zones in the transport model.

2.28 LDF trip departures (origins) leaving Ringmer in the AM peak were split between model area and non-model area, according to Census trip movements from Ringmer. LDF trip arrivals (destinations) entering Ringmer in the AM peak were split between model area and non-model area, according to Census trip movements to Ringmer. The proportion of 'excluded' trips in the PM peak was estimated by transposing the AM peak departure and arrival proportions, on the assumption that AM peak trip patterns will broadly reverse in the PM peak. **Table 2.9** shows the proportions of LDF trips at Ringmer that were included in and excluded from the study area.

**Table 2.9 Proportion of Ringmer LDF Trips inside and outside the Study Area**

| | AM Peak | | PM Peak | |
|---|---|---|---|---|
| | % Trips Included | % Trips Excluded | % Trips Included | % Trips Excluded |
| Ringmer Departures (Trip Origins) | 60% | 40% | 40% | 60% |
| Ringmer Arrivals (Trip Destinations) | 40% | 60% | 60% | 40% |

*Source: TPi*

2.29 A separate development-only trip matrix was created for each site, time period and vehicle type at 2030, for the committed and the LDF development options.

2.30 **Table 2.10** shows a breakdown of site-specific trip volumes predicted for each LDF development option, for AM and PM peak periods.

**Table 2.10 Land Use Trip Totals for LDF Sites**

| | | AM Peak Trips (PCU) – Rounded | | | PM Peak Trips (PCU) – Rounded | | |
|---|---|---|---|---|---|---|---|
| **Matrix Trip Component** | **Incl. / Excl. in Model?** | **Car & LGV** | **HGV** | **All Vehicles** | **Car & LGV** | **HGV** | **All Vehicles** |
| Lewes – Old Malling Farm (Res.) | Included | 152 | 0 | 152 | 166 | 0 | 166 |
| Lewes North Street (Res. & Empl.) | Included | 570 | 7 | 570 | 580 | 2 | 580 |
| Ringmer (Empl.) | Included | 32 | 3 | 35 | 28 | 1 | 29 |
| | Excluded | 42 | 3 | 45 | 37 | 1 | 38 |
| Ringmer (Max. Res.) | Included | 116 | 0 | 116 | 128 | 0 | 128 |
| | Excluded | 97 | 0 | 97 | 116 | 0 | 116 |
| Ringmer (Med. Res.) | Included | 69 | 0 | 69 | 77 | 0 | 77 |
| | Excluded | 58 | 0 | 58 | 69 | 0 | 69 |
| Ringmer (Min. Res.) | Included | 47 | 0 | 47 | 52 | 0 | 52 |
| | Excluded | 39 | 0 | 39 | 47 | 0 | 47 |

*Source: TPi*

2.31 In both AM and PM peaks, the greatest vehicle trip volumes would be produced by the North Street (Lewes) development and would constitute about two thirds of the LDF sites in the largest scenario (1). The remaining one third of trips would be contributed in equal parts by Old Malling Farm (Lewes) and Ringmer.

2.32 **Table 2.11** indicates the total site-specific land use trips in each forecast scenario, for reference case and LDF.

**Table 2.11 Land Use Trip Totals for Reference Case and LDF Scenarios**

| | AM Peak Trips (PCU) – Rounded | | | AM Peak Trips (PCU) – Rounded | | |
|---|---|---|---|---|---|---|
| **Matrix Trip Component** | **Car & LGV** | **HGV** | **All Vehicles** | **Car & LGV** | **HGV** | **All Vehicles** |
| Committed Sites (Ref Case) | 638 | 17 | 655 | 619 | 10 | 629 |
| LDF Scenario 1 Sites | 869 | 10 | 879 | 903 | 3 | 906 |
| LDF Scenario 2 Sites | 801 | 10 | 811 | 826 | 3 | 830 |
| LDF Scenario 3 Sites | 823 | 10 | 832 | 851 | 3 | 854 |
| LDF Scenario 4 Sites | 754 | 10 | 764 | 774 | 3 | 778 |
| LDF Scenario 5 Sites | 184 | 10 | 194 | 194 | 3 | 197 |
| LDF Scenario 6 Sites | 602 | 10 | 612 | 608 | 3 | 611 |
| LDF Scenario 7 Sites | 148 | 10 | 158 | 156 | 3 | 159 |

*Source: TPi*

2.33 It can be seen from Table 2.11 that Scenario 1 has the largest vehicle trip volume arising from site-specific developments, in both AM and PM peaks.

Income and Fuel Cost Adjustment to Growth in Car Trips

2.34 All parts of the base year 2010 car trip matrices have also been adjusted to represent the impact of income growth and fuel cost change, because the Lewes model is a highway-only model with a fixed trip matrix (i.e. no variable demand forecasting). Appropriate factors representing fuel cost and Income effects were applied in line with WebTAG unit 3.15.2 (Section 5.4). These factors are shown in **Table 2.12** below.

**Table 2.12 Income and Fuel Cost Forecast adjustment Factors**

| *Year* | Income Adjustment Factor | Fuel Adjustment Factor | *Year* | Income Adjustment Factor | Fuel Adjustment Factor |
|---|---|---|---|---|---|
| ***1991*** | 1.000 | 1.000 | ***2017*** | 1.077 | 1.024 |
| ***1992*** | 0.999 | 1.001 | ***2018*** | 1.080 | 1.026 |
| ***1993*** | 1.002 | 0.992 | ***2019*** | 1.083 | 1.028 |
| ***1994*** | 1.008 | 0.982 | ***2020*** | 1.087 | 1.029 |
| ***1995*** | 1.012 | 0.970 | ***2021*** | 1.090 | 1.031 |
| ***1996*** | 1.015 | 0.957 | ***2022*** | 1.093 | 1.031 |
| ***1997*** | 1.019 | 0.948 | ***2023*** | 1.097 | 1.032 |
| ***1998*** | 1.023 | 0.942 | ***2024*** | 1.100 | 1.032 |
| ***1999*** | 1.025 | 0.940 | ***2025*** | 1.104 | 1.032 |
| ***2000*** | 1.029 | 0.928 | ***2026*** | 1.107 | 1.032 |
| ***2001*** | 1.032 | 0.924 | ***2027*** | 1.111 | 1.032 |
| ***2002*** | 1.034 | 0.930 | ***2028*** | 1.115 | 1.032 |
| ***2003*** | 1.037 | 0.945 | ***2029*** | 1.118 | 1.032 |
| ***2004*** | 1.040 | 0.954 | ***Forecast Year 2030*** | **1.122** | **1.032** |
| ***2005*** | 1.042 | 0.953 | ***2031*** | 1.126 | 1.032 |
| ***2006*** | 1.045 | 0.946 | ***2032*** | 1.130 | 1.032 |
| ***2007*** | 1.048 | 0.943 | ***2033*** | 1.134 | 1.032 |
| ***2008*** | 1.051 | 0.950 | ***2034*** | 1.138 | 1.032 |
| ***2009*** | 1.054 | 0.971 | ***2035*** | 1.142 | 1.032 |
| ***Base Year 2010*** | **1.056** | **0.993** | ***2036*** | 1.146 | 1.032 |
| ***2011*** | 1.059 | 1.009 | ***2037*** | 1.150 | 1.032 |
| ***2012*** | 1.062 | 1.017 | ***2038*** | 1.155 | 1.032 |
| ***2013*** | 1.065 | 1.018 | ***2039*** | 1.159 | 1.032 |
| ***2014*** | 1.068 | 1.020 | ***2040*** | 1.164 | 1.032 |
| ***2015*** | 1.071 | 1.021 | ***2041*** | 1.168 | 1.032 |
| ***2016*** | 1.074 | 1.023 | | | |

*Source: WebTAG - Unit 3.15.2*

2.35 Using the adjustment factors in Table 2.12 gives an overall trip end growth, for income change of (x1.0625) and, for fuel cost change, of (x1.0393). The combined income and fuel factor is (x1.1043).

Forecast Matrix Trip Totals and Sensitivity Tests

2.36 Individual components of the forecast trip matrices have been combined for the reference case and LDF scenarios, respectively, as Test 1. Various sensitivity test adjustments to the resulting matrices (Tests 2-5) were subsequently requested by East Sussex County Council (ESCC), namely:

- Test 2 – Replace Uckfield zone LDF site-specific trips with TEMPRO (database 5.4) factored trips;
- Test 3 – Reduce Lewes DC LDF development options in scenarios 1-7, by 10% to reflect 'smarter choices' initiatives;
- Test 4 – Combine Uckfield TEMPRO-factored trips and Lewes DC 10%-reduced LDF trips; and

- Test 5 – Adjust all TEMPRO-factored zones (including Uckfield) to match new TEMPRO (database 6.2) as approved by DfT on 19.07.11.

2.37 Matrix trip totals from the demand Tests 1-5 are shown in **Table 2.13**.

**Table 2.13 Lewes Model Matrix Trip Totals**

| | | | | 2030 Matrix Trip Totals (Light + Heavy Vehicle PCU), with SATURN Network Configuration & Demand Adjustment | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Test 1 | Test 2 | Test 3 | Test 4 | Test 5 |
| Trip Matrix Scenario | Demand Scenario Description | Weekday Peak Time Period | Base Year 2010 Trip Matrix | No matrix Adjustment | Uckfield LDF Replaced by TEMPRO | Lewes DC LDF Reduced by 10% (Smarter Choices) | Uckfield LDF Replaced by TEMPRO & Lewes DC LDF Reduced by 10% (Smarter Choices) | TEMPRO Growth Changed from Database 5.4 to 6.2; including Uckfield LDF replaced by TEMPRO |
| Reference Case | Background growth & committed development | AM | 11465 | 15635 | 15468 | 15635 | 15468 | 14783 |
| | | PM | 9805 | 13191 | 13021 | 13191 | 13021 | 12433 |
| Scenario 1 | North St empl & res. Old Malling Fm res. Ringmer empl. & max. res. | AM | 11465 | 16514 | 16348 | 16426 | 16260 | 15662 |
| | | PM | 9805 | 14097 | 13928 | 14007 | 13837 | 13340 |
| Scenario 2 | North St empl & res. Old Malling Fm res. Ringmer empl. & med. res. | AM | 11465 | 16445 | 16279 | 16364 | 16198 | 15594 |
| | | PM | 9805 | 14021 | 13851 | 13938 | 13768 | 13263 |
| Scenario 3 | North St empl & res. Old Malling Fm res. Ringmer empl. & min. res. | AM | 11465 | 16467 | 16301 | 16384 | 16218 | 15615 |
| | | PM | 9805 | 14045 | 13875 | 13960 | 13790 | 13288 |
| Scenario 4 | North St empl & res. Old Malling Fm res. Ringmer empl. | AM | 11465 | 16398 | 16232 | 16322 | 16156 | 15547 |
| | | PM | 9805 | 13969 | 13799 | 13891 | 13721 | 13211 |
| Scenario 5 | Old Malling Fm res. Ringmer empl. | AM | 11465 | 15819 | 15652 | 15800 | 15634 | 14967 |
| | | PM | 9805 | 13385 | 13215 | 13365 | 13196 | 12627 |
| Scenario 6 | North St empl & res. Ringmer empl. | AM | 11465 | 16237 | 16071 | 16177 | 16010 | 15385 |
| | | PM | 9805 | 13799 | 13630 | 13738 | 13569 | 13042 |
| Scenario 7 | Ringmer empl. & max. res. | AM | 11465 | 15783 | 15616 | 15768 | 15601 | 14931 |
| | | PM | 9805 | 13347 | 13178 | 13332 | 13162 | 12590 |

*Source: TPi*

2.38 Considering the reference case situation in Table 2.13, (i.e. without any Lewes DC LDF development options), the overall matrix trip totals were found to change by the amounts shown in **Table 2.14**, for the respective tests.

**Table 2.14 Lewes Reference Case Trip Matrix Growth from 2010 to 2030**

| | Time Period | |
|---|---|---|
| **Reference Case Trip Matrix Test** | **AM Peak** | **PM Peak** |
| Tests 1 & 3 (TEMPRO 5.4 with Uckfield LDF) | +36% | +35% |
| Tests 2 & 4 (TEMPRO 5.4 without Uckfield LDF) | +35% | +33% |
| Test 5 (TEMPRO 6.2 without Uckfield LDF) | +29% | +27% |

*Source: TPi*

2.39 Table 2.14 shows that removal of Uckfield LDF trips and their replacement with TEMPRO (V5.4) growth would result in a small, 1%-2%, reduction in overall growth compared with the baseline reference case, from 2010 to 2030. Substitution of TEMPRO (V5.4) growth rates by (V6.2) growth rates (again with no LDF development in Uckfield) would cause a larger 7%-8% reduction in overall growth compared with the baseline reference case to 2030.

2.40 Comparing the Test 5 matrix trip totals (TEMPRO V6.2) with those from Test 1 (TEMPRO V5.4), in Table 2.13, shows that, across all scenarios and time periods, traffic volumes would fall by about 5.5% with the revised database.

## 3.0 APPRAISAL RESULTS

### Introduction

3.1 The core of the study brief was to assess the relative impacts upon the highway network of the seven LDF development scenarios, as specified by LDC, in Test 1. This test assumed the following:

i) No TEMPRO growth of internal trips;
ii) TEMPRO V5.4 growth of trips to and from external zones;
iii) TEMPRO V5.4 growth of trips at Brighton and Hove zones;
iv) Site-specific LDF trips at Uckfield zones;
v) NTM growth of LGV and HGV trips at all zones;
vi) Site-specific trips at committed developments in Lewes and Ringmer;
vii) Site-specific trips at LDF development options in Lewes and Ringmer zones (not in the reference case); and
viii) Car trip growth from income and fuel cost change.

3.2 Results from all of the Test 1 assignments are provided in this section. In addition, outputs from selected further tests, as agreed with ESCC, have been included. However, these are not comprehensive, owing to the limitations of study timeframe and budget.

### Model Convergence and Stability

3.3 Checks were made to ensure that each forecast SATURN model assignment reached satisfactory levels of convergence and stability.

3.4 Flow stability was assessed by monitoring the SATURN 'P' parameter, or the proportion of assigned link flows that were within 5% of the volume recorded during the preceding model iteration. In each of the AM peak, Inter peak and PM peak forecast models a high 'P' value was achieved on the final SATURN iteration.

3.5 Cost minimisation and optimum trip routing were checked by monitoring 'Delta', the percentage difference between the travel costs on the assigned routes and on the minimum cost routes.

3.6 The convergence and stability tests showed that, in all of the forecast assignments, the Lewes model is reliable to the standards required by DMRB criteria in both time periods.

### Performance of Key Junctions

3.7 There are a number of key junctions where effective operation is critical to the movement of traffic between the main land uses within the study area These junctions are as follows:

- A27/ A277 Ashcombe Roundabout;
- A275/ A277 Prison Crossroads;
- A275/ Prince Edwards Rd;
- A275/ A2029 Offham Rd;
- A2029/ Prince Edwards Rd;
- A2029/ The Avenue;
- A277/ Irelands Lane;
- B2193/ Bell Lane;
- A277/ New Rd;
- Priory St/ Southover High St;
- Station Rd/ Priory St;
- A277 High St/ Fisher St;
- A277/ Market St;

- Station Rd/ Landsdown Place;
- Eastgate St/ High St;
- Little East St/ Phoenix Causeway/ Eastgate St;
- Phoenix Causeway/ A26 Malling St/ Cuilfail Tunnel;
- Phoenix Causeway/ Brooks Lane;
- A26 Malling Down/ Church Lane;
- A26 Malling Down/ B2192 Ringmer Rd;
- A27/ A26 Southerham Roundabout; and
- Earwig Corner scheme improvement.

3.8 The locations of these junctions and their positions on the network are shown in **Figure 3.1**.

3.9 Modelled ratios of flow to capacity (RFC) have been extracted from SATURN for all key junctions in the Test 1 assignments. These are summarised by model scenario and time period (AM/PM) in the spreadsheets contained in **Appendix A**. The RFC are given by turning movement and are colour-coded by severity, as follows:

- Red – RFC in excess of 100%;
- Amber – RFC between 85% and 100%; and
- Green – RFC below 85%.

3.10 **Figures 3.2 and 3.3** show the maximum turn RFC at the key junction locations on the existing network, at base year 2010, in the AM and PM peaks respectively. **Figures 3.4 and 3.5** show the equivalent AM and PM peak junction RFC, in the reference case at 2030. Comparable RFC values for LDF scenarios 1-7, in the AM and PM peaks, are shown in **Figures 3.6 – 3.19**.

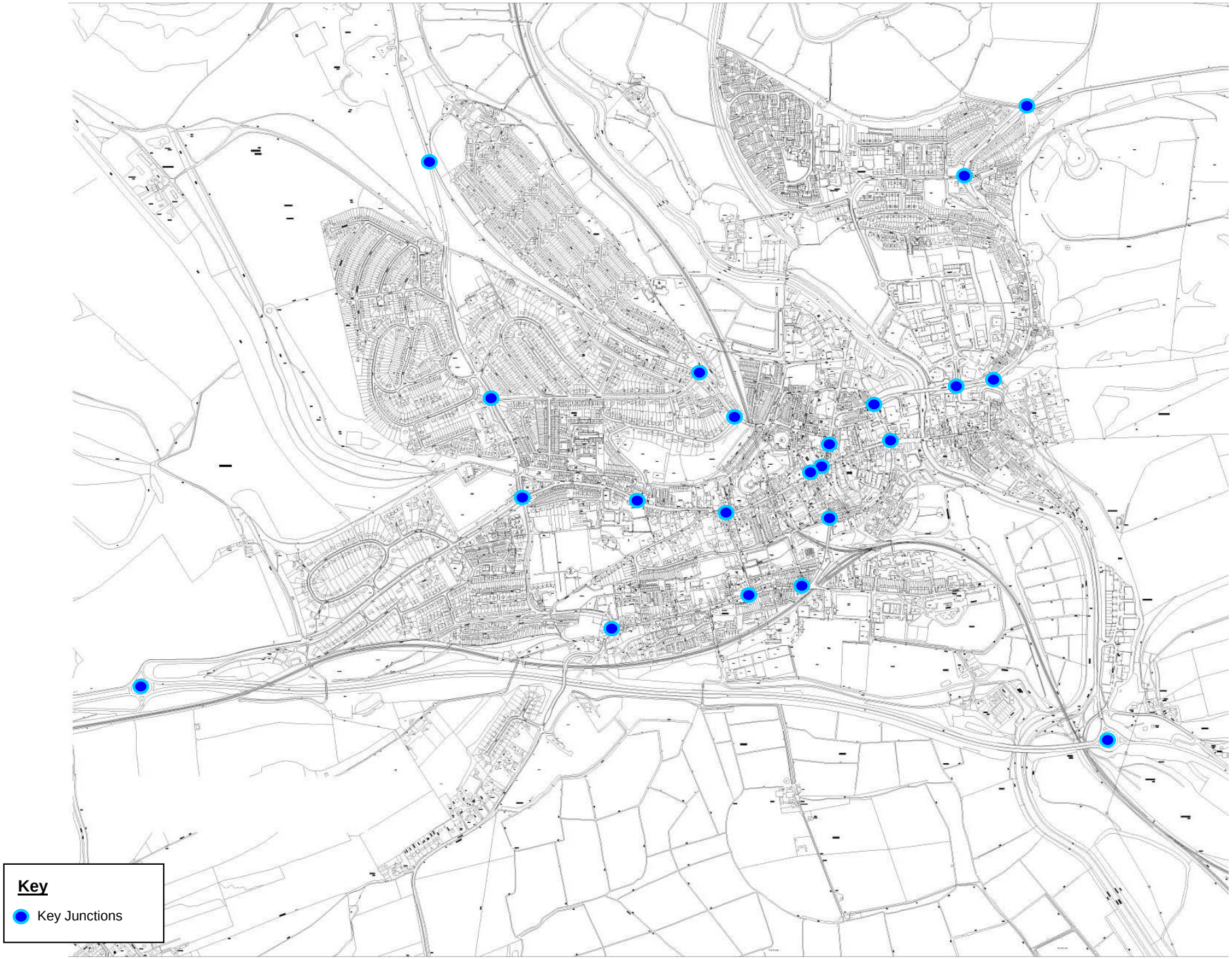
3.11 There are three critical junctions at which the highest turn RFC will exceed 100% and at which there will be significant traffic delays at 2030, in the AM and PM peaks, in all LDF scenarios and in the reference case (without any LDF development options). These junctions are as follows:

- A26 / B2192 Earwig Corner major/minor junction;
- A26 / Church Street major/minor junction; and
- A26 / Phoenix Causeway roundabout.

3.12 It is evident that each of these junctions will require capacity improvement by 2030 in the reference case, even if no development proceeds. Improvement will certainly be needed to enable any of the Lewes / Ringmer LDF development options to be implemented successfully.

3.13 There is also likely to be congestion at A27/A26 Southerham and A27/A277 Ashcombe roundabouts, in some forecast scenarios. However, the model outputs for these junctions are not entirely reliable and tend to misrepresent traffic delays, for the following reasons:

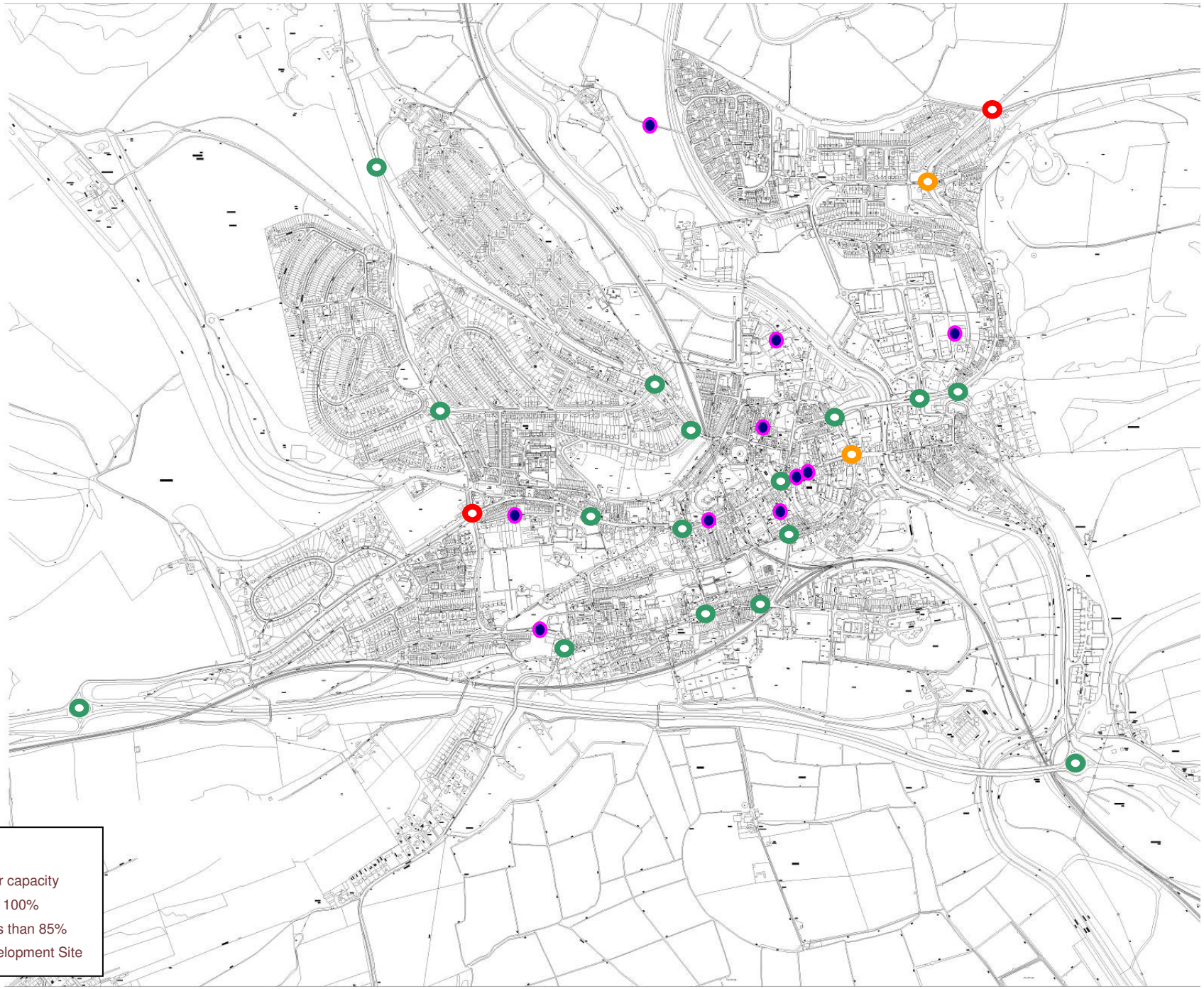
- The ESCC trip origin to destination (O-D) data that were used to build the SATURN model did not include movements on the A27 east and west of Lewes, so although these trips have been carefully synthesised, they are not entirely accurate;
- External zones to the east of Lewes are connected to several outer links in the model, so as delays on the A27 eastbound from Southerham increase, then modelled traffic will tend to switch routes to avoid congestion, thereby preventing heavy delays at Southerham, even when the bottleneck is correctly modelled; and
- As the SATURN model represents average conditions during an AM and PM hour, it cannot accurately show the peak queue interaction between the Southerham and ‘Snail’ (A26/Cuilfail Tunnel) roundabouts.






Lewes Key Junction Capacity Locations

Figure 3.1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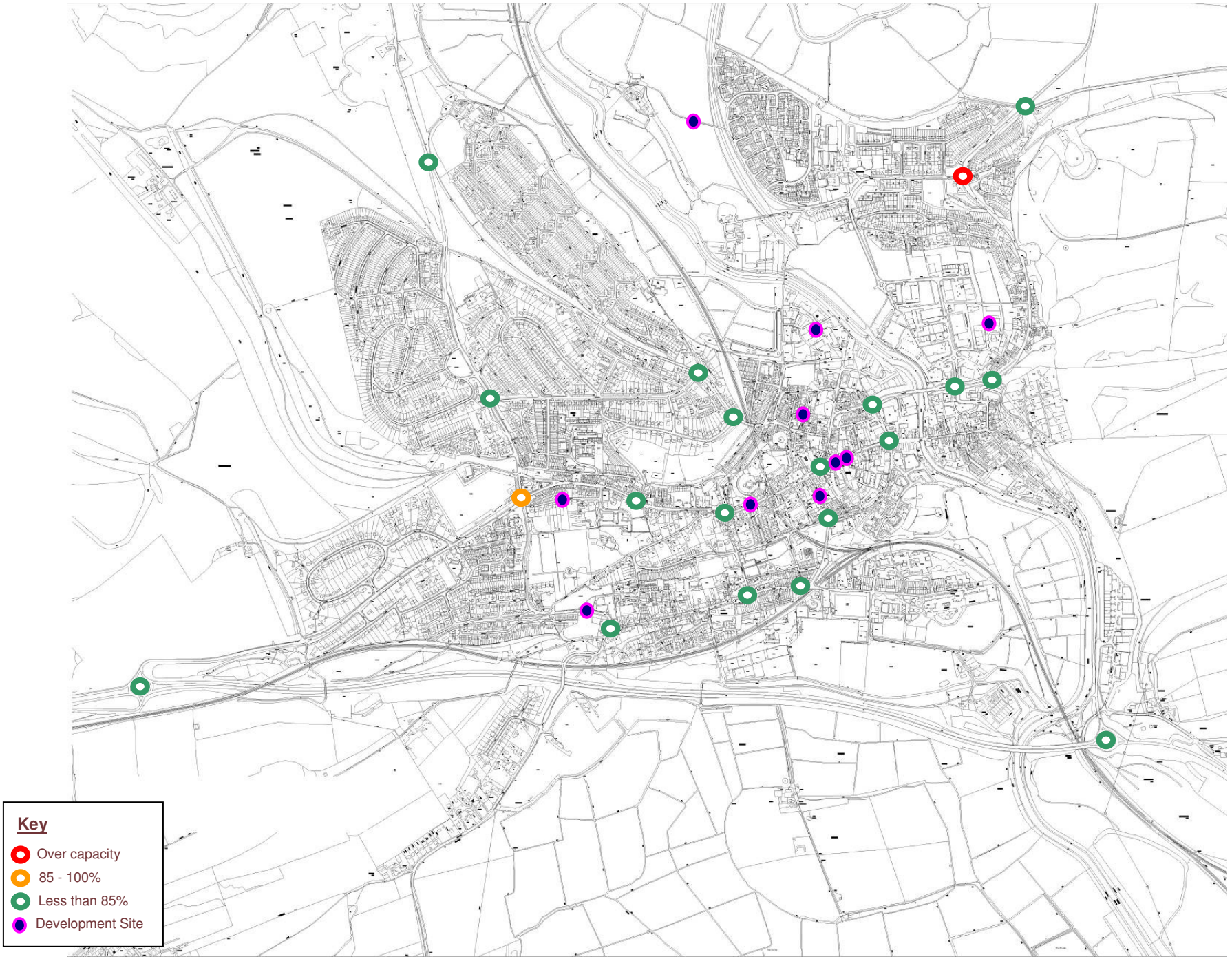
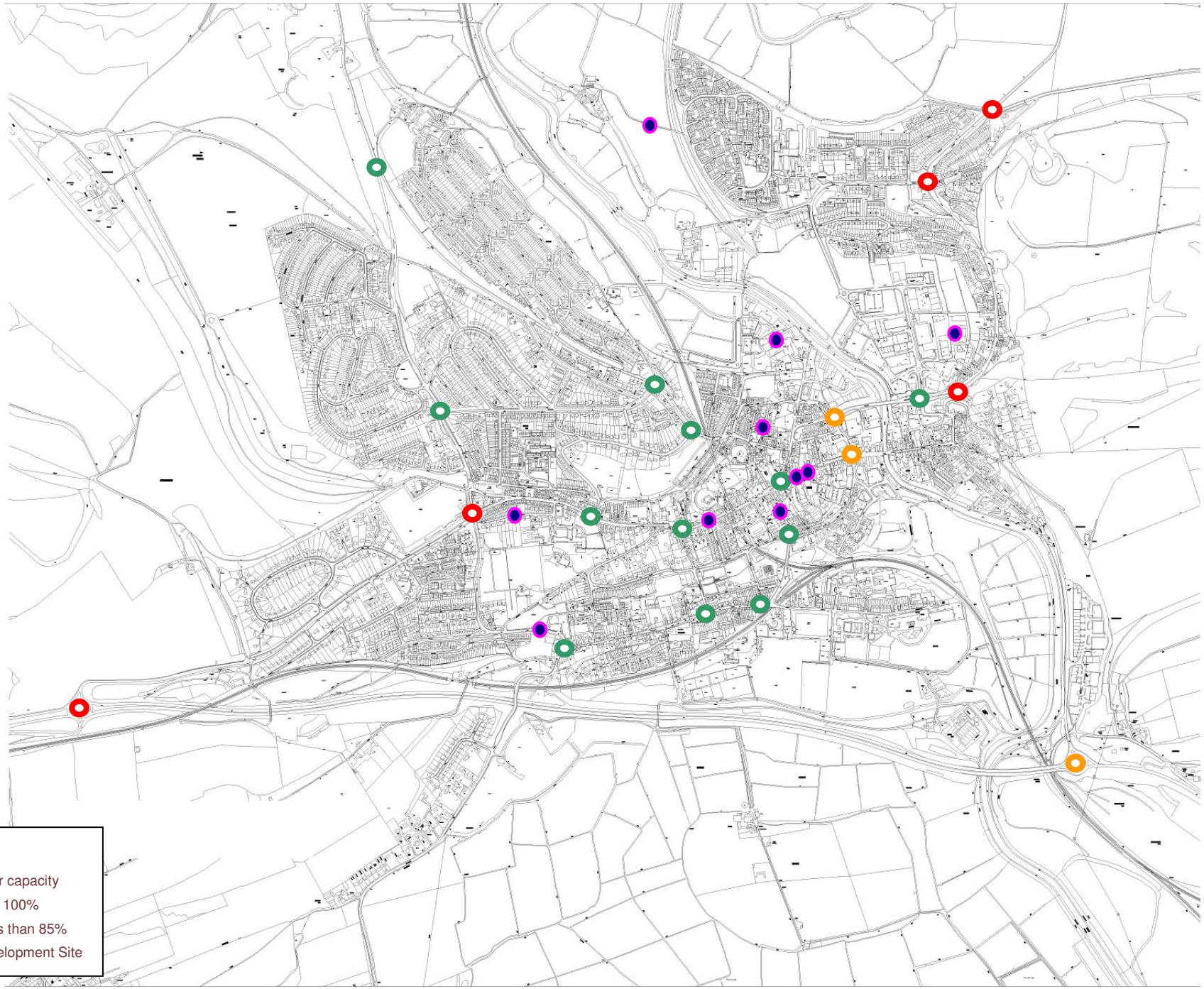
Less than 85%
Development Site






Lewes RFC's 2010 PM Base Situation

Figure 3.3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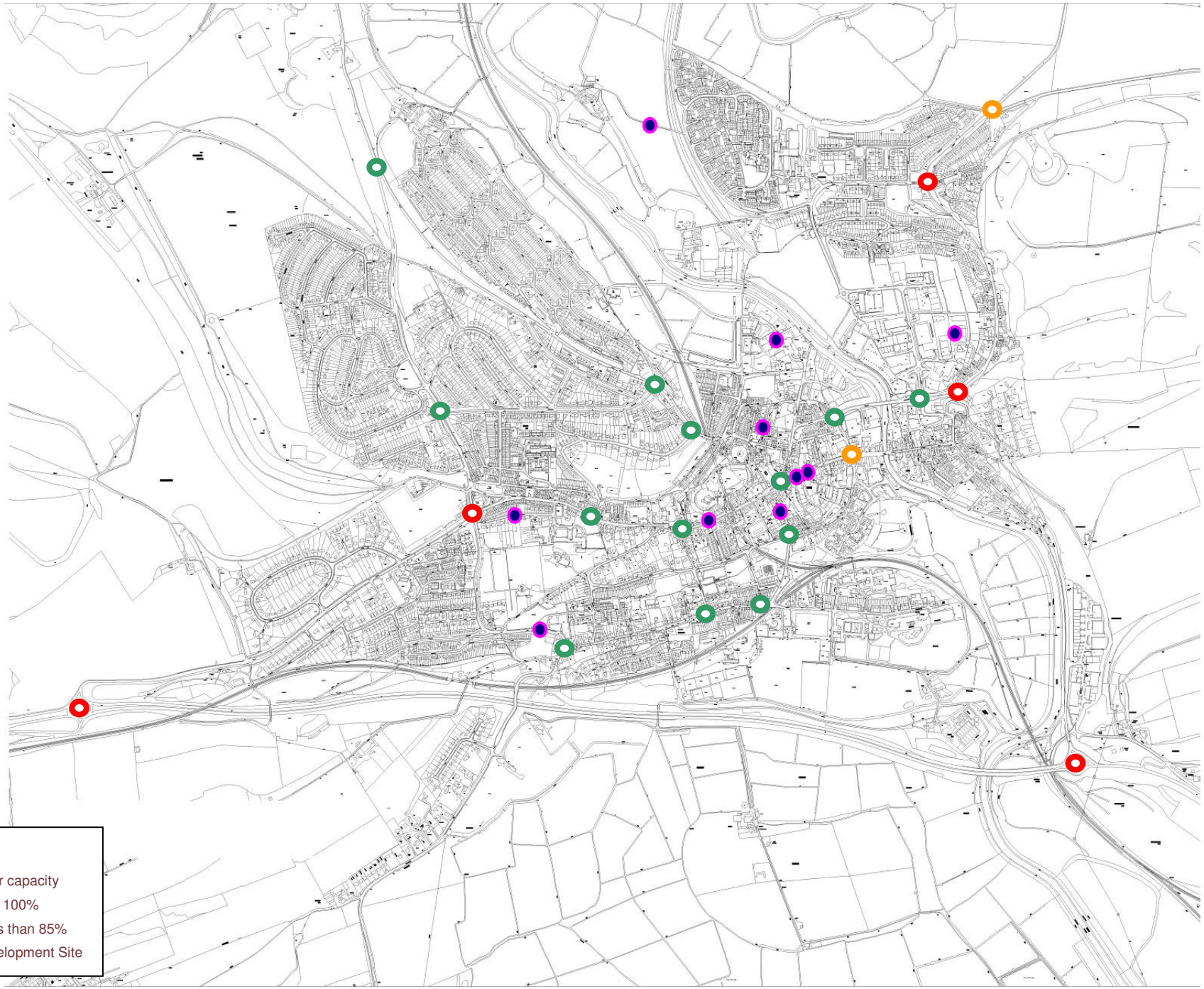
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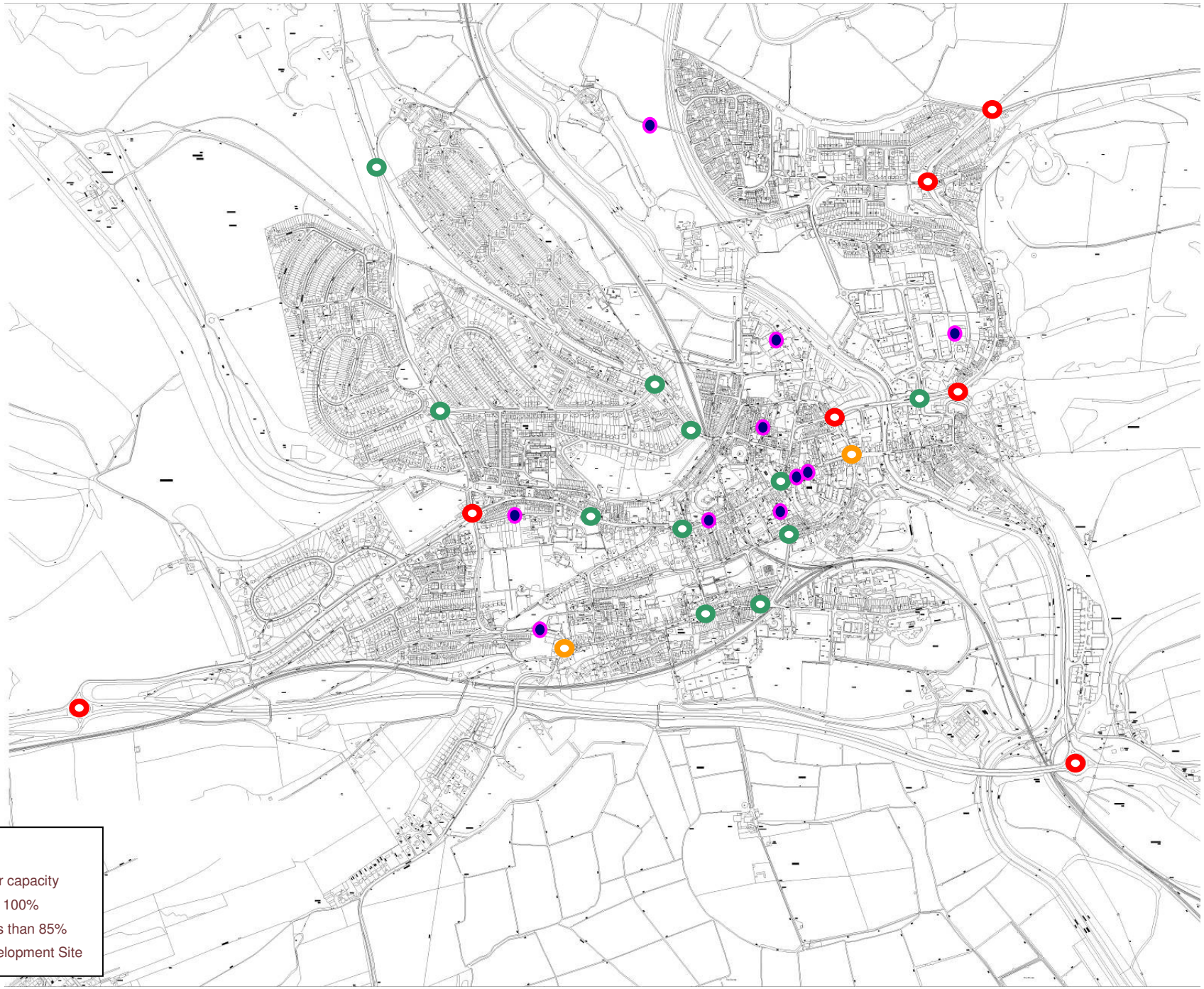
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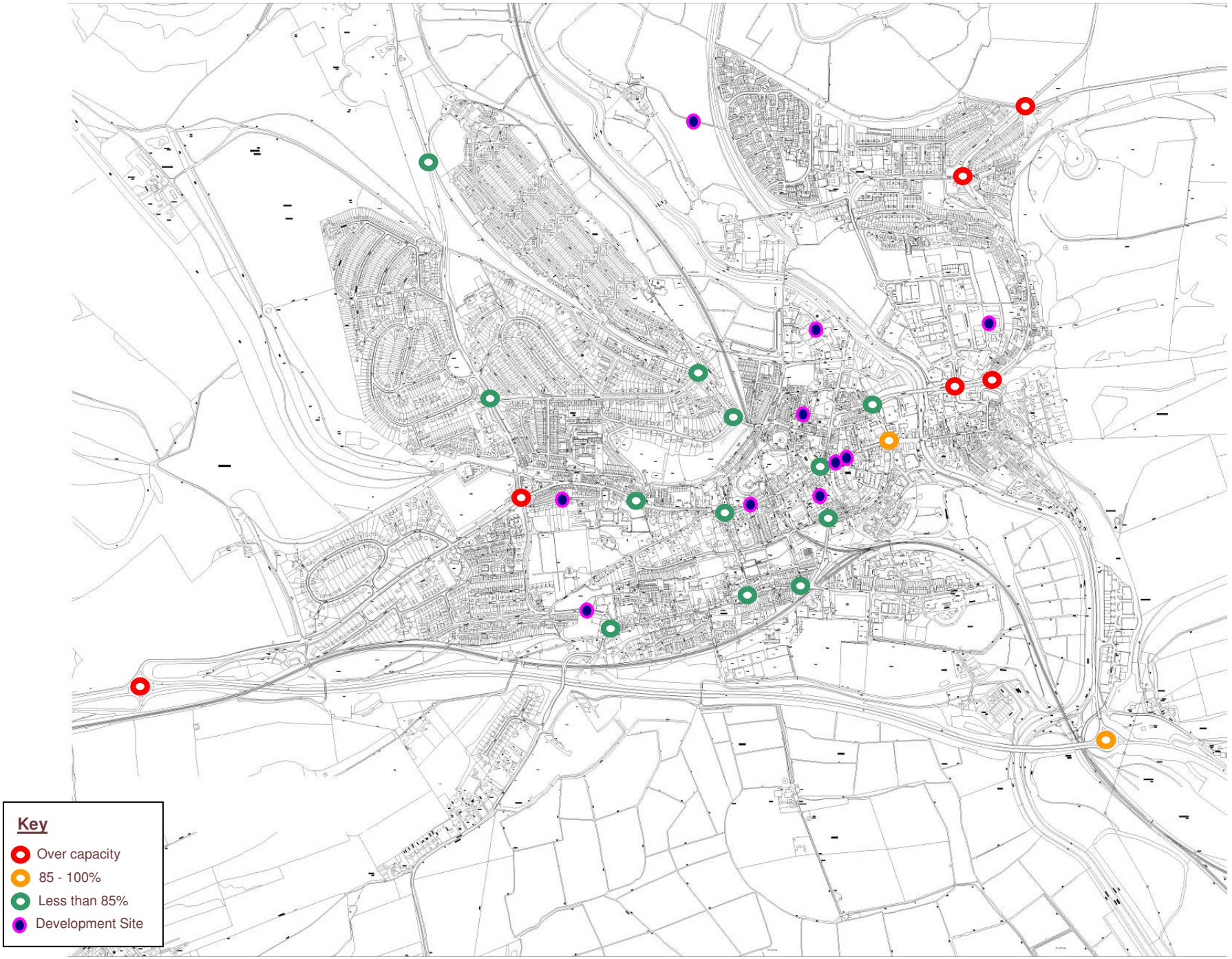
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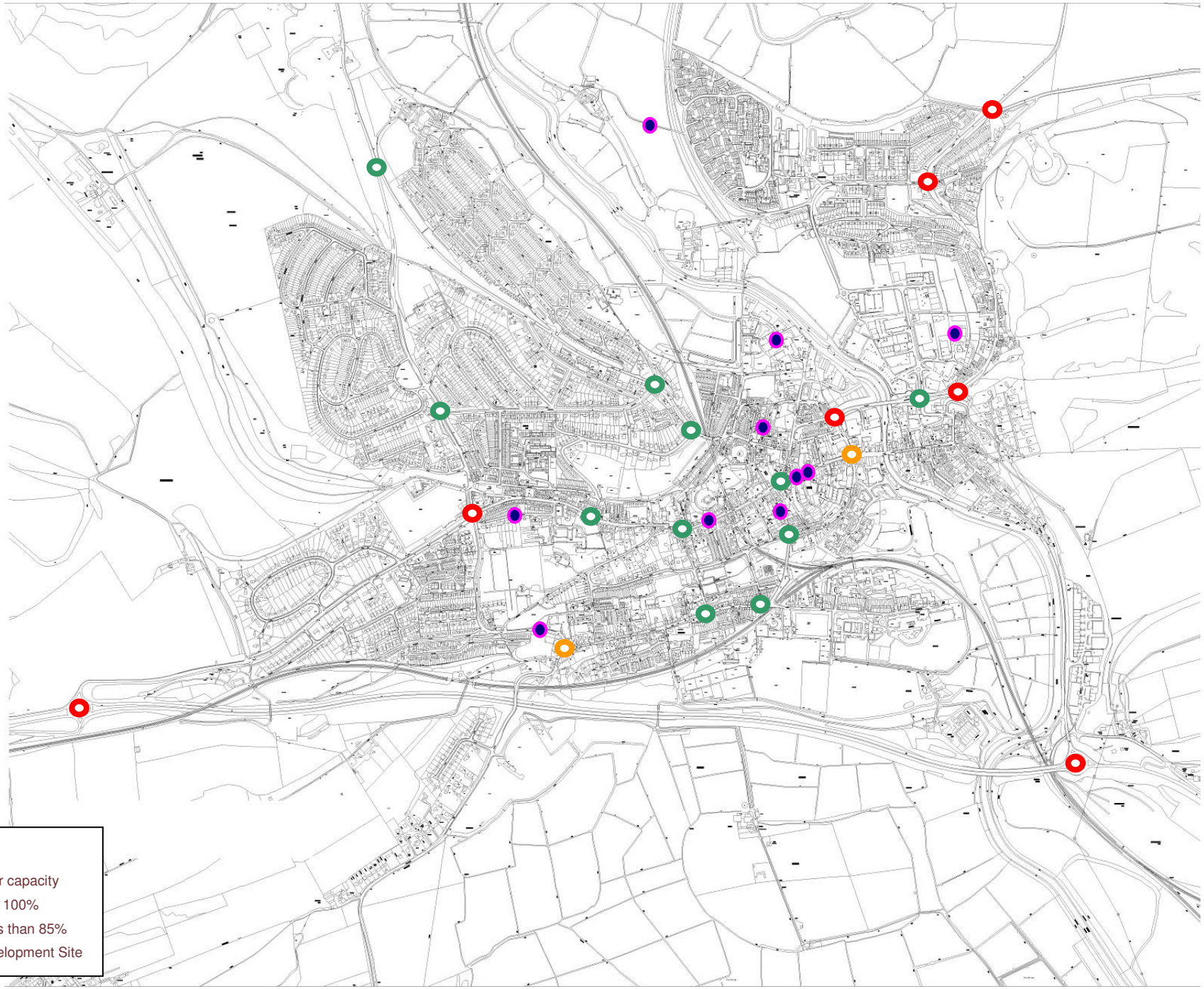
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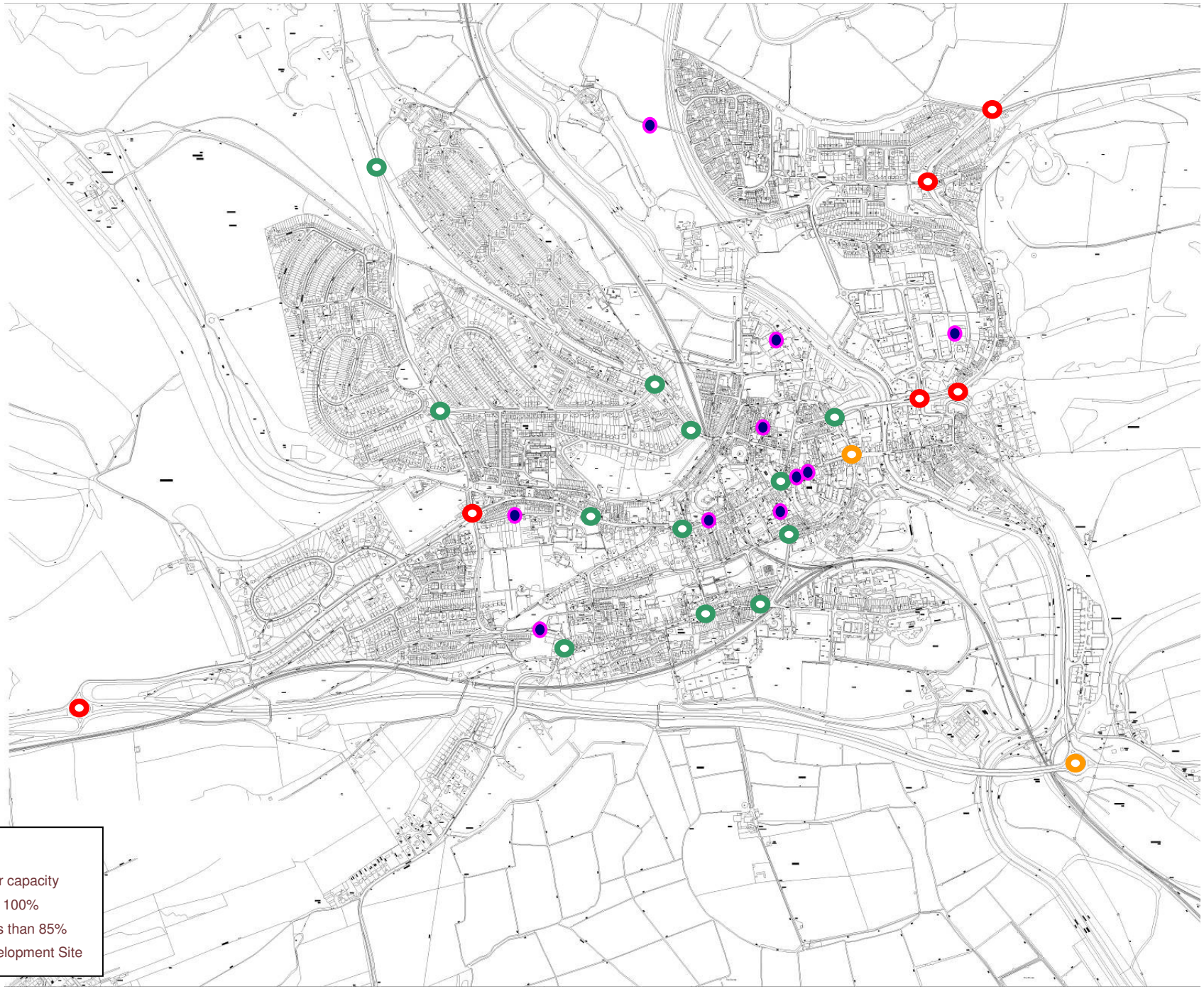
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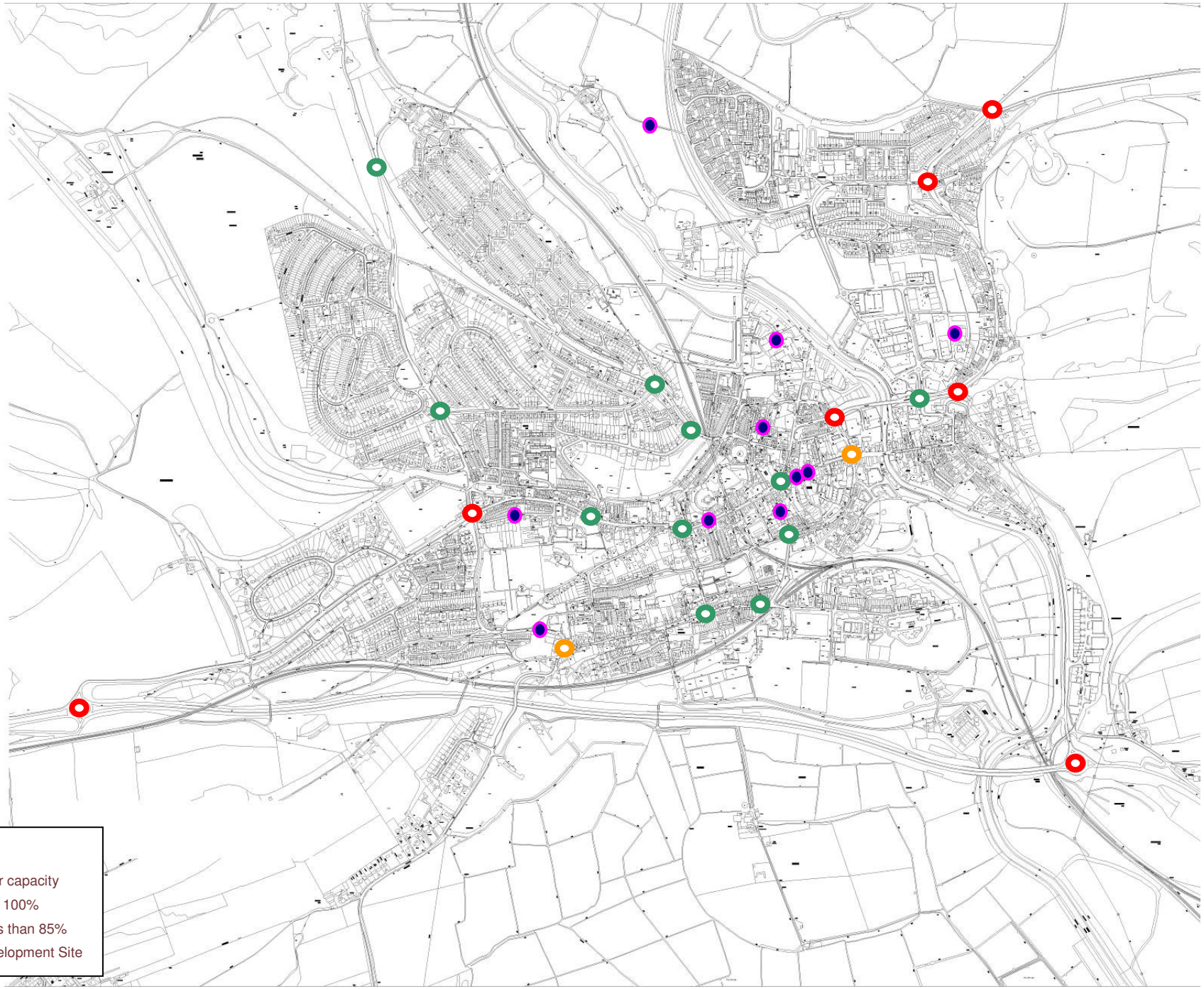
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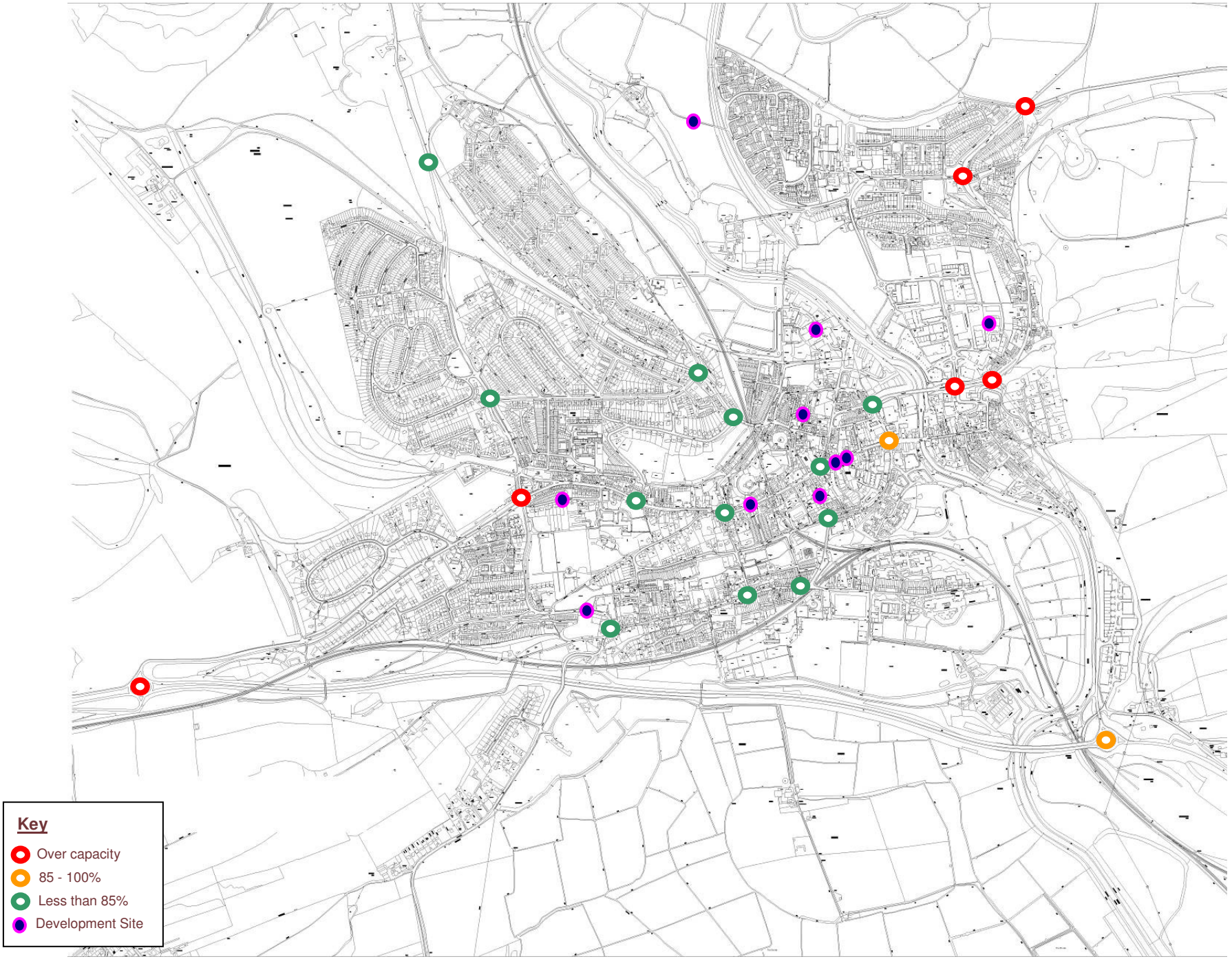
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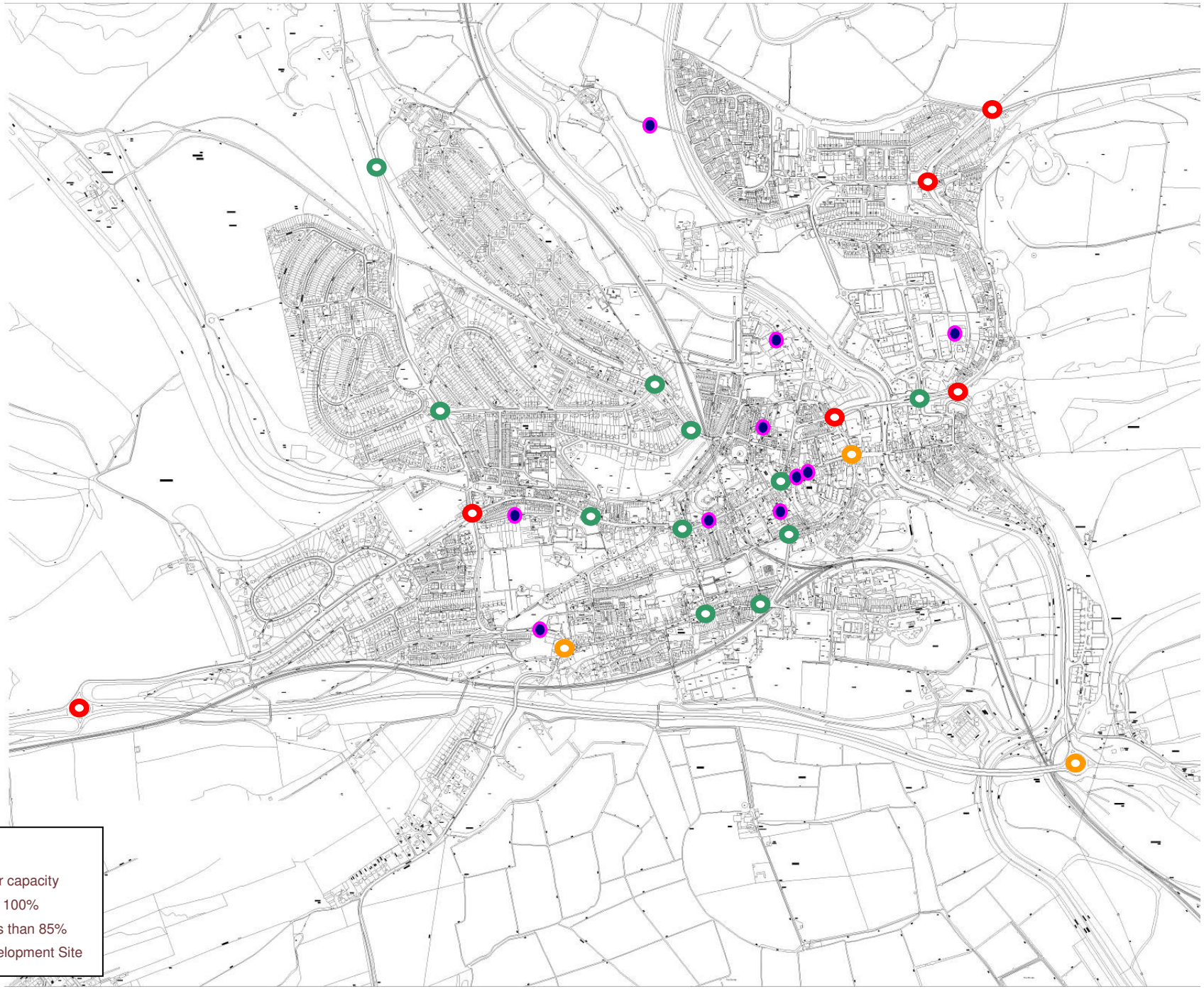
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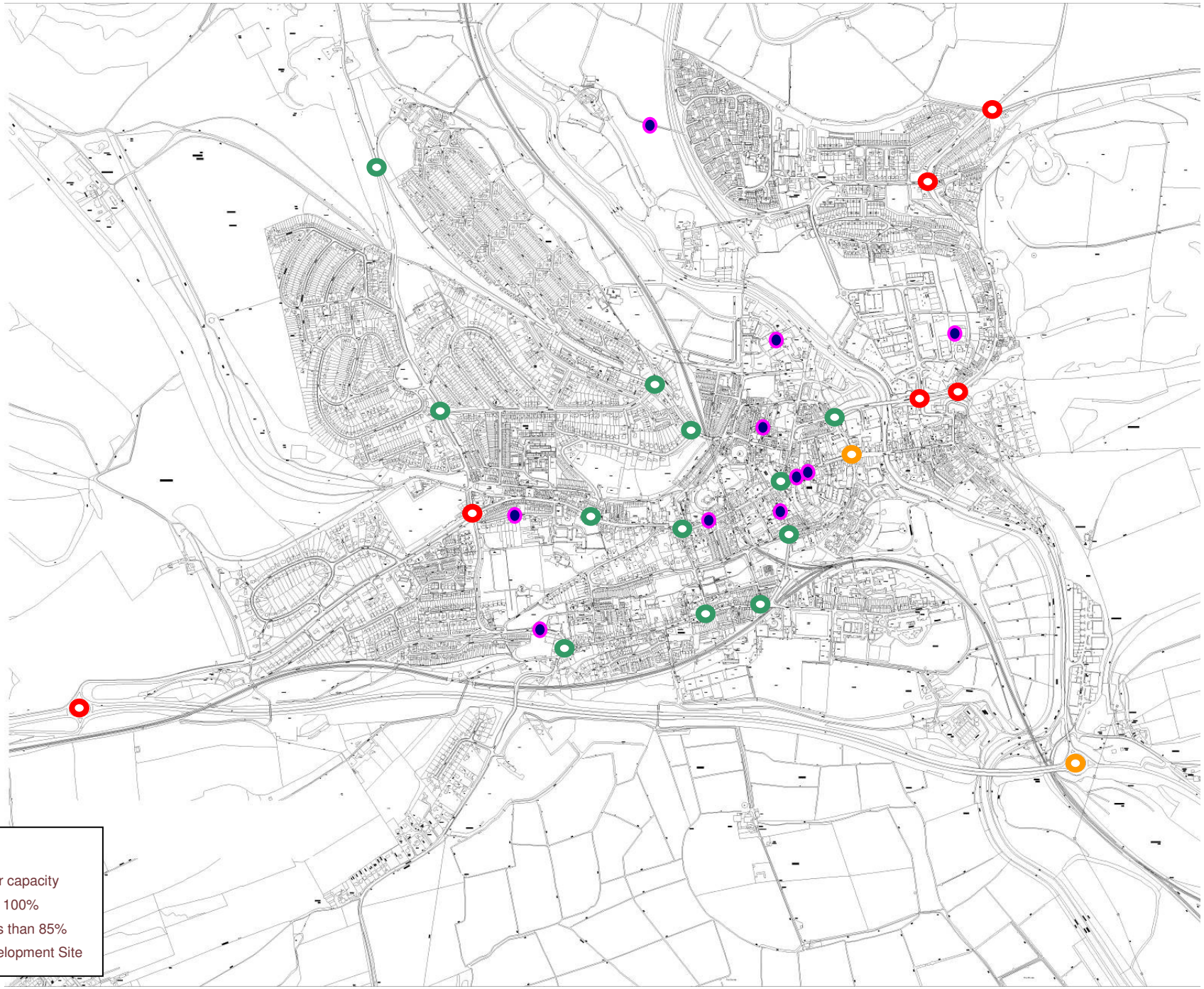
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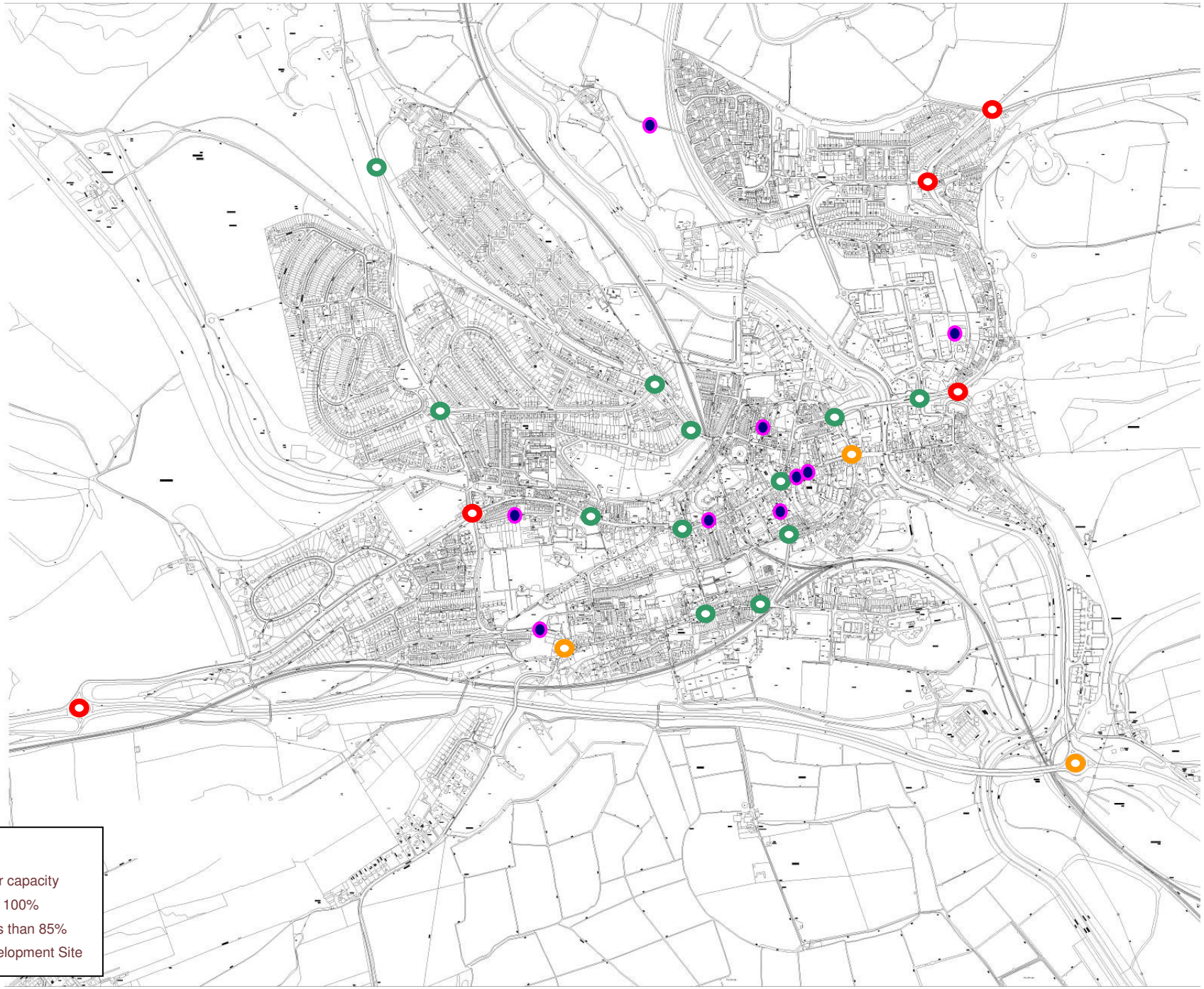
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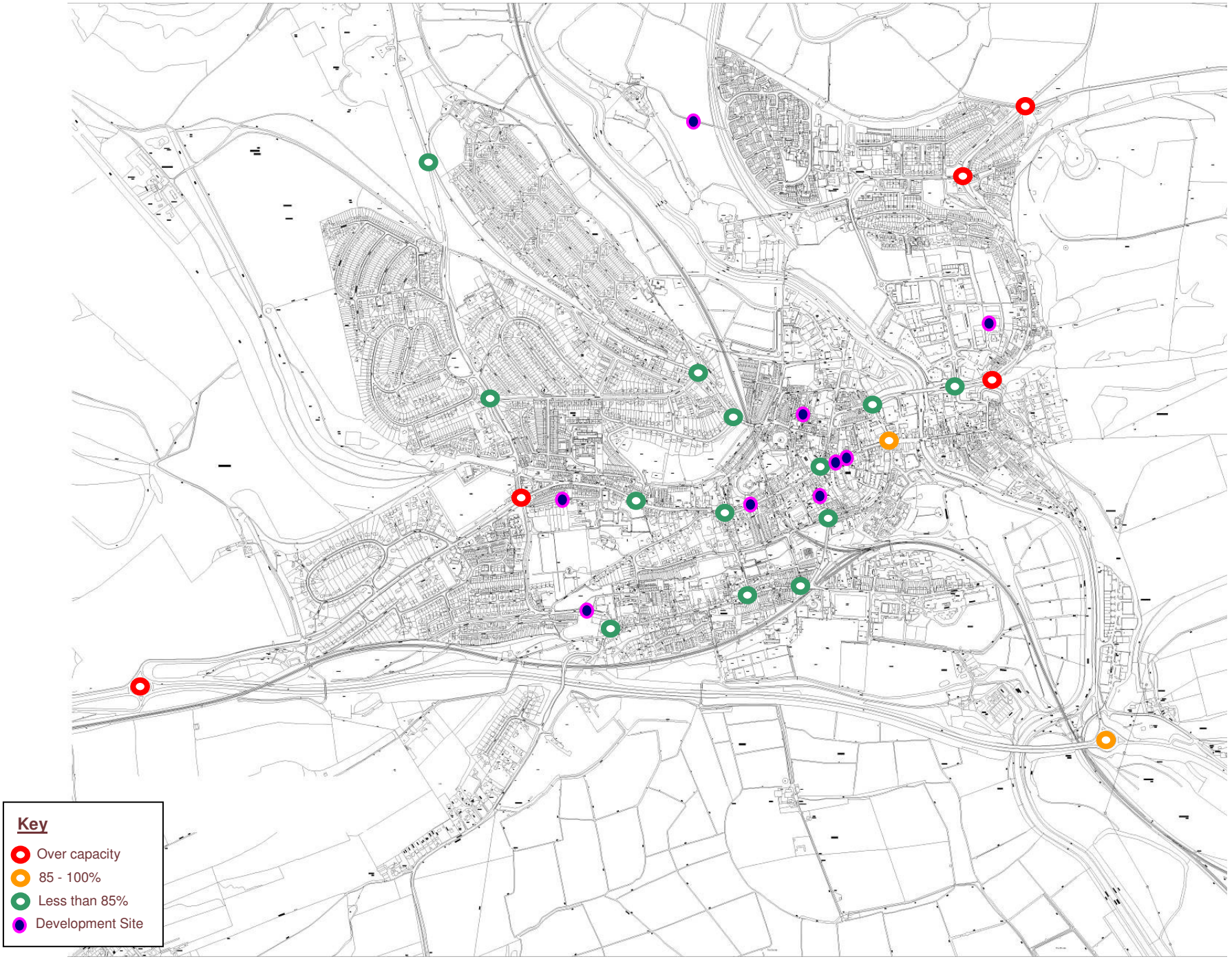
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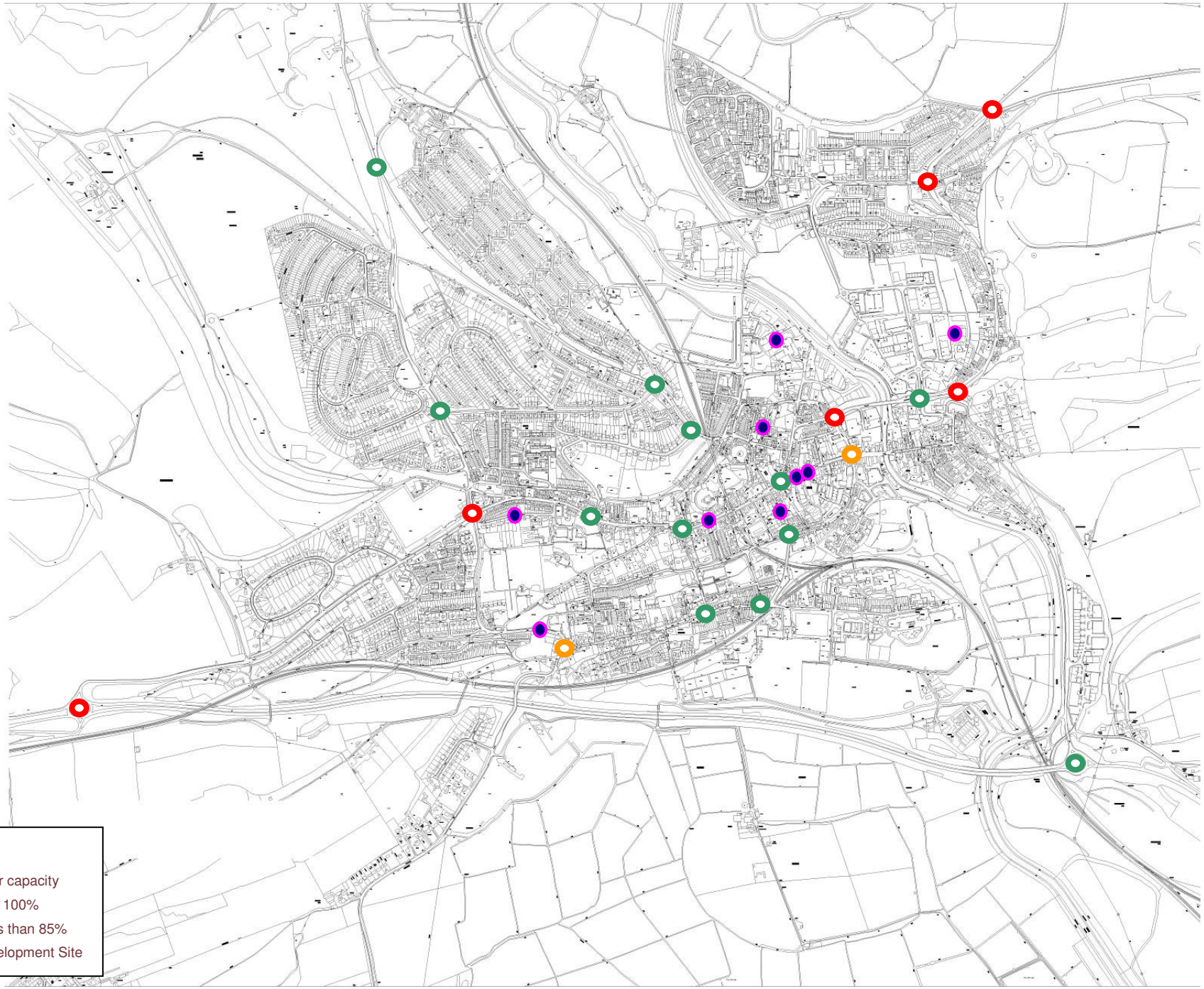
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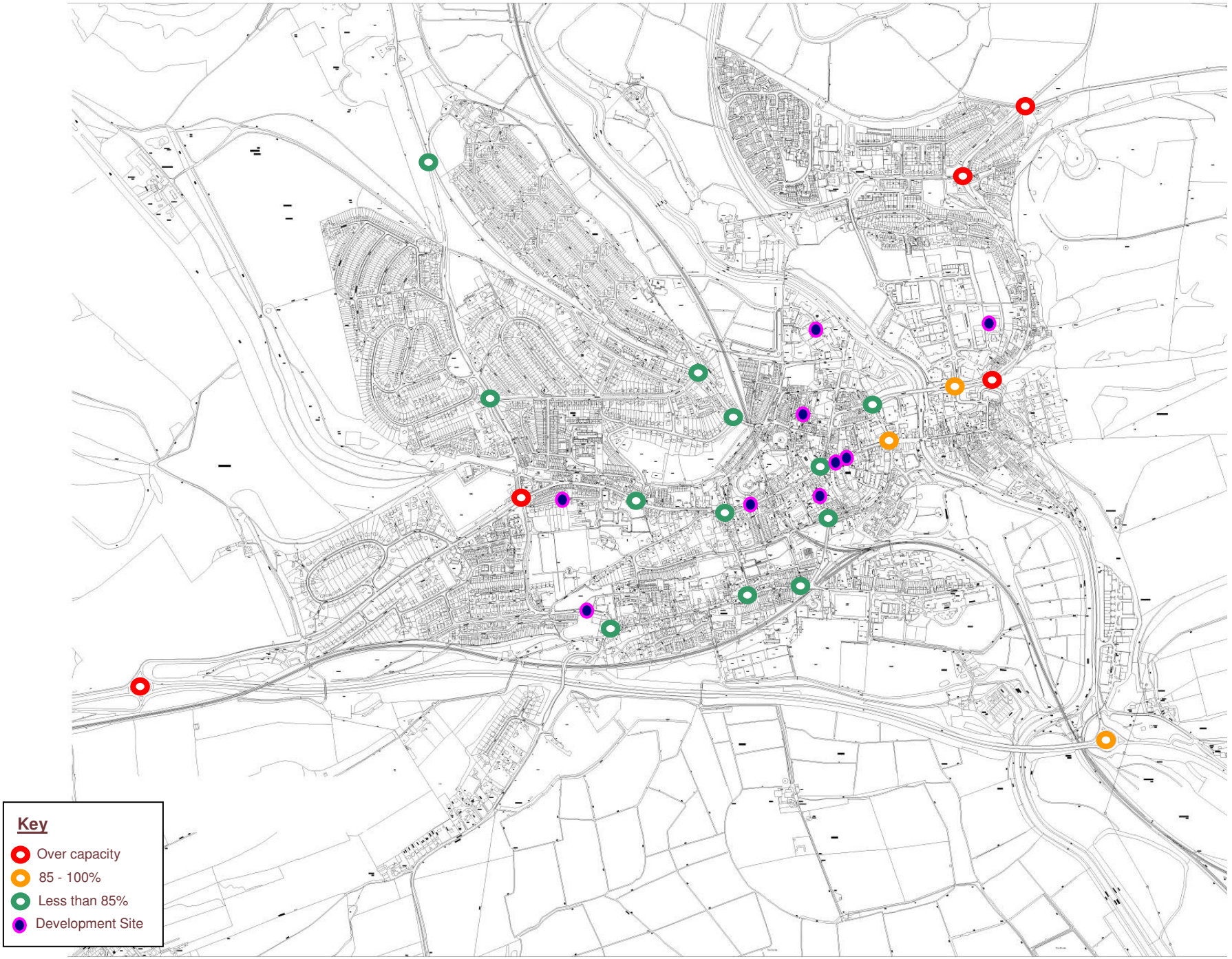
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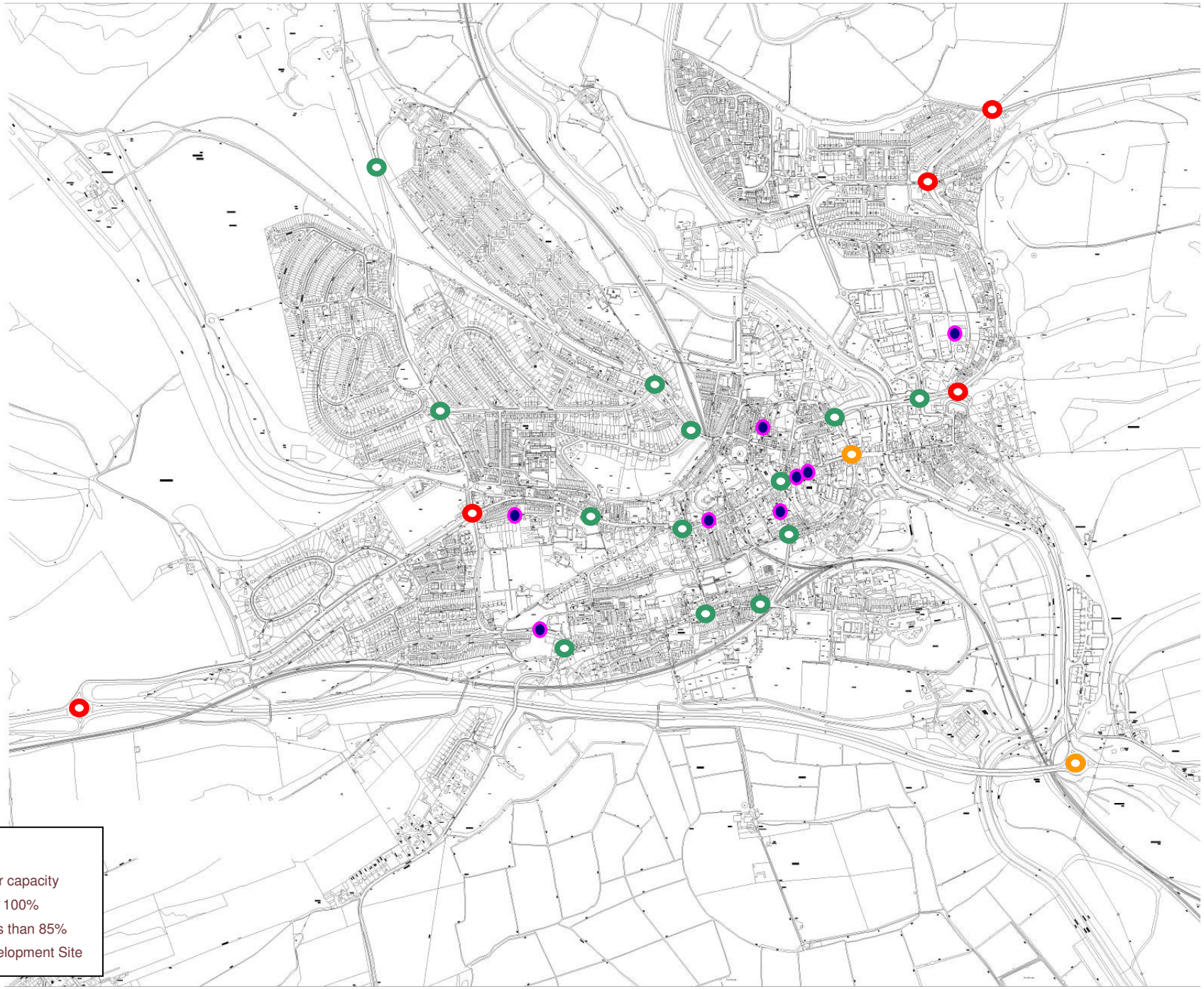
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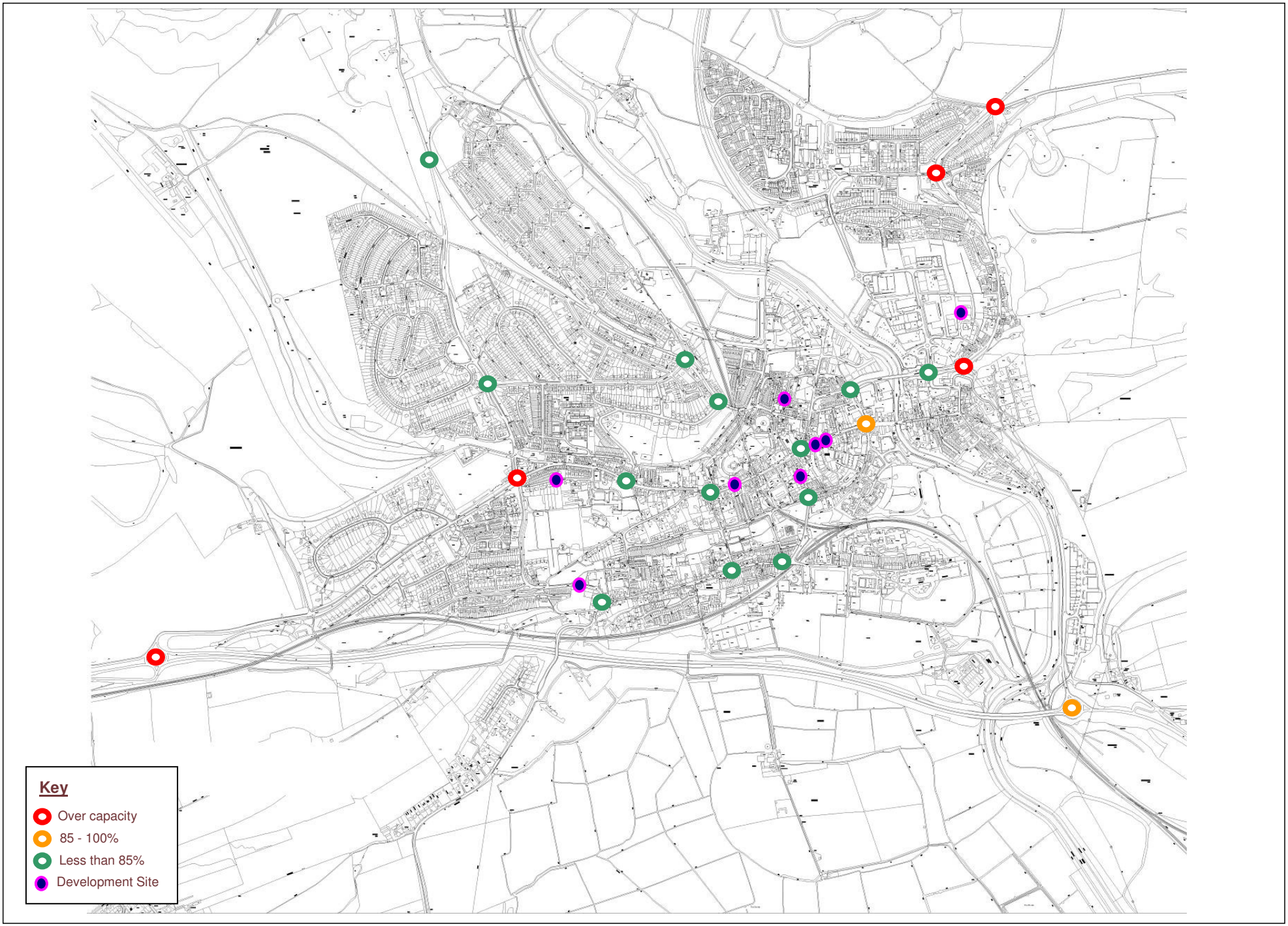
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Development Site

3.14 Whilst there are some current issues during the PM peak at A27/A26 Southerham roundabout, it cannot be determined with certainty, from the model, whether or not the LDF scenarios would result in impacts that would require mitigation at A27 Southerham or Ashcombe junctions.

3.15 The SATURN model indicates that there would be congestion issues at A277 / A275 Prison Crossroads signals, in the forecast reference case and LDF scenarios. However, it is not considered that the capacity limitations, here, should automatically act as a constraint on any of the tested LDF scenario sites. Prison Crossroads is about 1.5km to the west of the centre of Lewes and even further from the LDF scenario sites, for which A26, via Cuilfail Tunnel, is the more natural means of access to the strategic road network, for longer distance traffic generated by those sites.

**Wider Network Performance**

3.16 Summary statistics that indicate the overall performance of the highway network in each of the forecast scenarios, with Test 1, have been extracted from SATURN. The selected performance indicators, weighted by the number of assigned trips, are as follows:

- Total travel time;
- Total travel distance;
- Total queuing delay;
- Total length of over-capacity queues;
- Average vehicle speed; and
- Total fuel consumption.

3.17 In **Table 3.1** there is a summary of network performance statistics for each development scenario in the AM peak, with the Test 1 matrix assumptions. **Table 3.2** shows likewise for the PM peak. The performance comparison is made between each development scenario and the equivalent 2030 reference case.

3.18 The outcome from the analysis of wider network statistics is logical, whereby highway performance is poorer in scenarios with more LDF development options and better in scenarios with fewer LDF development options. In both AM and PM peak periods, performance is poorest in Scenario 1, in which there is greatest development in Lewes (at Old Malling Farm and North Street) and in Ringmer. Conversely, there is least network 'stress' in Scenario 5, which contains Old Malling Farm and Ringmer employment options only.

3.19 The gradation of network performance from least to most network 'stress' is consistent in both AM and PM peaks, as follows:

- Reference Case;
- LDF Scenario 5;
- LDF Scenario 7;
- LDF Scenario 6;
- LDF Scenario 4;
- LDF Scenario 2;
- LDF Scenario 3;
- LDF Scenario 1.

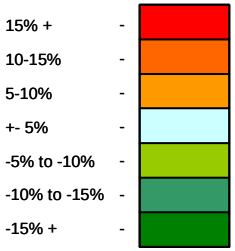
**Corridor Journey Time Statistics**

3.20 Changes in journey time, along key highway corridors, have also been assessed for the specified LDF scenarios, in Test1. **Table 3.3** compares travel times in the AM peak for each scenario with those in the equivalent 2030 reference case. **Table 3.4** shows likewise for the PM peak period.

**Lewes District Local Development Framework Transport Assessment - Network Summary Statistics (AM Peak 0800-0900)**

| Criteria | 2010 Base Year | 2030 Ref Case | Scenario 1 | S1 Diff from Ref Case | Scenario 2 | S2 Diff from Ref Case | Scenario 3 | S3 Diff from Ref Case | Scenario 4 | S4 Diff from Ref Case | Scenario 5 | S5 Diff from Ref Case | Scenario 6 | S6 Diff from Ref Case | Scenario 7 | S7 Diff from Ref Case |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total time (pcu hrs per hr) | 1719.0 | 4295.0 | 5061.0 | 17.83% | 4930.0 | 14.78% | 4984.0 | 16.04% | 4862.0 | 13.20% | 4415.0 | 2.79% | 4768.0 | 11.01% | 4499.0 | 4.75% |
| Total distance (pcu kms per hr) | 72490.0 | 102500.0 | 106500.0 | 3.90% | 105900.0 | 3.32% | 106000.0 | 3.41% | 105600.0 | 3.02% | 104100.0 | 1.56% | 104800.0 | 2.24% | 103900.0 | 1.37% |
| Queuing delay (pcu hrs per hr) | 157.0 | 309.8 | 359.3 | 15.98% | 347.4 | 12.14% | 357.2 | 15.30% | 341.5 | 10.23% | 326.1 | 5.26% | 331.8 | 7.10% | 318.3 | 2.74% |
| Over capacity queues (pcu hrs per hr) | 333.0 | 2240.0 | 2869.0 | 28.08% | 2760.0 | 23.21% | 2802.0 | 25.09% | 2706.0 | 20.80% | 2319.0 | 3.53% | 2638.0 | 17.77% | 2413.0 | 7.72% |
| Av. speed (kph) | 42.0 | 23.9 | 21.0 | -11.90% | 21.5 | -9.97% | 21.3 | -10.89% | 21.7 | -9.05% | 23.6 | -1.26% | 22.0 | -7.92% | 23.1 | -3.27% |
| Total fuel consumption (ltrs per hr) | 6093.0 | 11350.0 | 12600.0 | 11.01% | 12390.0 | 9.16% | 12480.0 | 9.96% | 12270.0 | 8.11% | 11630.0 | 2.47% | 12070.0 | 6.34% | 11690.0 | 3.00% |
| Total trips (pcu) | 11465 | 15635 | 16514 | 5.53% | 16445 | 5.10% | 16467 | 5.24% | 16398 | 4.81% | 15819 | 1.16% | 16237 | 3.79% | 15783 | 0.93% |

Key:




*Note: Opposite for Avg Speed*

**Table 3.1**

**Lewes District Local Development Framework Transport Assessment - Network Summary Statistics (PM Peak 1700-1800)**

| Criteria | 2010 Base Year | 2030 Ref Case | Scenario 1 | S1 Diff from Ref Case | Scenario 2 | S2 Diff from Ref Case | Scenario 3 | S3 Diff from Ref Case | Scenario 4 | S4 Diff from Ref Case | Scenario 5 | S5 Diff from Ref Case | Scenario 6 | S6 Diff from Ref Case | Scenario 7 | S7 Diff from Ref Case |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total time (pcu hrs per hr) | 1086.0 | 2556.0 | 3103.0 | 21.40% | 2992.0 | 17.06% | 3036.0 | 18.78% | 2925.0 | 14.44% | 2640.0 | 3.29% | 2836.0 | 10.95% | 2736.0 | 7.04% |
| Total distance (pcu kms per hr) | 57630.0 | 79740.0 | 83900.0 | 5.22% | 83220.0 | 4.36% | 83400.0 | 4.59% | 82720.0 | 3.74% | 80750.0 | 1.27% | 82040.0 | 2.88% | 81520.0 | 2.23% |
| Queuing delay (pcu hrs per hr) | 117.0 | 249.3 | 294.8 | 18.25% | 292.2 | 17.21% | 291.1 | 16.77% | 290.1 | 16.37% | 263.7 | 5.78% | 282.9 | 13.48% | 266.3 | 6.82% |
| Over capacity queues (pcu hrs per hr) | 138.0 | 958.7 | 1378.0 | 43.74% | 1283.0 | 33.83% | 1324.0 | 38.10% | 1225.0 | 27.78% | 1001.0 | 4.41% | 1160.0 | 21.00% | 1088.0 | 13.49% |
| Av. speed (kph) | 53.0 | 31.2 | 27.0 | -13.33% | 27.8 | -10.87% | 27.5 | -11.96% | 28.3 | -9.36% | 30.6 | -1.96% | 28.9 | -7.28% | 29.8 | -4.49% |
| Total fuel consumption (ltrs per hr) | 4511.0 | 7817.0 | 8902.0 | 13.88% | 8727.0 | 11.64% | 8787.0 | 12.41% | 8612.0 | 10.17% | 7986.0 | 2.16% | 8451.0 | 8.11% | 8217.0 | 5.12% |
| Total trips (pcu) | 9805 | 13191 | 14097 | 6.79% | 14021 | 6.22% | 14045 | 6.40% | 13969 | 5.83% | 13385 | 1.45% | 13799 | 4.56% | 13347 | 1.17% |

Key:

15% + -
10-15% -
5-10% -
+- 5% -
-5% to -10% -
-10% to -15% -
-15% + -

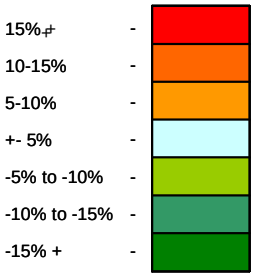
*Note: Opposite for Avg Speed*

**Table 3.2**

**Lewes District Local Development Framework Transport Assessment - Corridor Journey Time Statistics (AM Peak 0800-0900)**

| Corridor | Direction | 2030 Ref Case | Scenario 1 Travel Time (mins) | *S1 Diff from Ref Case* | Scenario 2 Travel Time (mins) | *S2 Diff from Ref Case* | Scenario 3 Travel Time (mins) | *S3 Diff from Ref Case* | Scenario 4 Travel Time (mins) | *S4 Diff from Ref Case* | Scenario 5 Travel Time (mins) | *S5 Diff from Ref Case* | Scenario 6 Travel Time (mins) | *S6 Diff from Ref Case* | Scenario 7 Travel Time (mins) | *S7 Diff from Ref Case* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A275 | Northbound | 29.93 | 31.76 | *6.11%* | 31.85 | *6.41%* | 32.34 | *8.05%* | 31.76 | *6.11%* | 30.28 | *1.17%* | 31.66 | *5.78%* | 30.84 | *3.04%* |
| A275 | Southbound | 7.75 | 8.27 | *6.71%* | 8.00 | *3.23%* | 8.37 | *8.00%* | 8.05 | *3.87%* | 7.77 | *0.26%* | 8.62 | *11.23%* | 7.51 | *-3.10%* |
| A27 | Eastbound | 7.11 | 7.61 | *7.03%* | 7.40 | *4.08%* | 7.57 | *6.47%* | 7.23 | *1.69%* | 7.05 | *-0.84%* | 7.09 | *-0.28%* | 7.19 | *1.13%* |
| A27 | Westbound | 8.29 | 9.16 | *10.49%* | 8.99 | *8.44%* | 9.04 | *9.05%* | 8.89 | *7.24%* | 8.39 | *1.21%* | 8.86 | *6.88%* | 8.54 | *3.02%* |
| A26 | Northbound | 35.40 | 37.46 | *5.82%* | 37.20 | *5.08%* | 37.23 | *5.17%* | 37.11 | *4.83%* | 35.74 | *0.96%* | 36.65 | *3.53%* | 35.77 | *1.05%* |
| A26 | Southbound | 14.76 | 16.01 | *8.47%* | 15.72 | *6.50%* | 16.20 | *9.76%* | 16.01 | *8.47%* | 15.39 | *4.27%* | 15.16 | *2.71%* | 14.78 | *0.14%* |
| A2029 | Eastbound | 4.86 | 4.76 | *-2.06%* | 5.03 | *3.50%* | 4.90 | *0.82%* | 5.13 | *5.56%* | 4.92 | *1.23%* | 4.87 | *0.21%* | 4.84 | *-0.41%* |
| A2029 | Westbound | 6.63 | 7.18 | *8.30%* | 7.14 | *7.69%* | 6.94 | *4.68%* | 7.00 | *5.58%* | 6.54 | *-1.36%* | 6.92 | *4.37%* | 6.55 | *-1.21%* |
| A277 | Eastbound | 2.86 | 2.90 | *1.40%* | 2.90 | *1.40%* | 2.90 | *1.40%* | 2.90 | *1.40%* | 2.88 | *0.70%* | 2.90 | *1.40%* | 2.87 | *0.35%* |
| A277 | Westbound | 2.23 | 2.22 | *-0.45%* | 2.23 | *0.00%* | 2.22 | *-0.45%* | 2.23 | *0.00%* | 2.23 | *0.00%* | 2.22 | *-0.45%* | 2.23 | *0.00%* |

Key:




*Note: Opposite for Avg Speed*

**Table 3.3**

**Lewes District Local Development Framework Transport Assessment - Corridor Journey Time Statistics (AM Peak 0800-0900)**

| Corridor | Direction | 2030 Ref Case | Scenario 1 Travel Time (mins) | *S1 Diff from Ref Case* | Scenario 2 Travel Time (mins) | *S2 Diff from Ref Case* | Scenario 3 Travel Time (mins) | *S3 Diff from Ref Case* | Scenario 4 Travel Time (mins) | *S4 Diff from Ref Case* | Scenario 5 Travel Time (mins) | *S5 Diff from Ref Case* | Scenario 6 Travel Time (mins) | *S6 Diff from Ref Case* | Scenario 7 Travel Time (mins) | *S7 Diff from Ref Case* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A275 | Northbound | 10.97 | 11.49 | *4.74%* | 11.37 | *3.65%* | 11.52 | *5.01%* | 11.24 | *2.46%* | 11.08 | *1.00%* | 11.16 | *1.73%* | 11.24 | *2.46%* |
| A275 | Southbound | 7.28 | 7.24 | *-0.55%* | 7.57 | *3.98%* | 7.51 | *3.16%* | 7.24 | *-0.55%* | 7.02 | *-3.57%* | 7.54 | *3.57%* | 7.42 | *1.92%* |
| A27 | Eastbound | 9.57 | 10.29 | *7.52%* | 10.09 | *5.43%* | 10.13 | *5.85%* | 9.96 | *4.08%* | 9.80 | *2.40%* | 9.60 | *0.31%* | 9.87 | *3.13%* |
| A27 | Westbound | 5.09 | 5.09 | *0.00%* | 5.09 | *0.00%* | 5.09 | *0.00%* | 5.09 | *0.00%* | 5.09 | *0.00%* | 5.09 | *0.00%* | 5.09 | *0.00%* |
| A26 | Northbound | 25.30 | 29.79 | *17.75%* | 29.07 | *14.90%* | 29.31 | *15.85%* | 28.21 | *11.50%* | 25.49 | *0.75%* | 28.28 | *11.78%* | 27.12 | *7.19%* |
| A26 | Southbound | 19.51 | 20.68 | *6.00%* | 20.40 | *4.56%* | 20.67 | *5.95%* | 20.31 | *4.10%* | 19.45 | *-0.31%* | 19.53 | *0.10%* | 20.29 | *4.00%* |
| A2029 | Eastbound | 3.88 | 7.13 | *83.76%* | 6.45 | *66.24%* | 6.47 | *66.75%* | 6.22 | *60.31%* | 3.91 | *0.77%* | 5.69 | *46.65%* | 3.90 | *0.52%* |
| A2029 | Westbound | 6.41 | 6.53 | *1.87%* | 6.52 | *1.72%* | 6.52 | *1.72%* | 6.51 | *1.56%* | 6.42 | *0.16%* | 6.52 | *1.72%* | 6.41 | *0.00%* |
| A277 | Eastbound | 2.82 | 2.94 | *4.26%* | 2.91 | *3.19%* | 2.92 | *3.55%* | 2.90 | *2.84%* | 2.82 | *0.00%* | 2.90 | *2.84%* | 2.82 | *0.00%* |
| A277 | Westbound | 2.32 | 2.34 | *0.86%* | 2.33 | *0.43%* | 2.34 | *0.86%* | 2.34 | *0.86%* | 2.32 | *0.00%* | 2.34 | *0.86%* | 2.32 | *0.00%* |

Key:

15%+ -
10-15% -
5-10% -
+- 5% -
-5% to -10% -
-10% to -15% -
-15% + -

*Note: Opposite for Avg Speed*

**Table 3.4**

3.21 As with wider network performance, the corridor journey time results are logical. Travel times increase in almost every scenario, on each route, when compared with the reference case. The amount of travel time increase is consistent with the number of LDF development options and vehicle trips in each scenario. The gradation of journey time increases, from least to most change, is consistent in the AM and PM peaks, as follows:

- Reference Case;
- LDF Scenario 5;
- LDF Scenario 7;
- LDF Scenario 6;
- LDF Scenario 4;
- LDF Scenario 2;
- LDF Scenario 3;
- LDF Scenario 1.

3.22 A summary of the pcu trip totals is shown is available at **Appendix A** for all forecast matrices (including the further tests done to account for LDF changes).

**Results from Further Model Tests**

3.23 After discussions with ESCC, a limited number of further assignments were performed in the SATURN model, so as to assess the effects of trip matrix adjustments, as represented by Tests 2 – 5, referred to in section 2.34. Primarily, each test was performed on the worst-case LDF scenario (1).

3.24 In addition, an analysis was made of potential junction improvements at A26/B2192 'Earwig Corner', to determine if the predicted future congestion here could be resolved. Two layouts were modelled: a conventional roundabout with 2-lane entries on all approaches, a 30m flare from A26 north and south and a 20m flare from B2192; and a 3-stage signalised junction with separate right turn arrow phase from A26 south to B2192.

3.25 Results from the Earwig Corner scheme modelling, with the Test 1 trip volumes in the reference case and scenario 1, are included in Appendix A. It was found that the Earwig roundabout layout would perform reasonably satisfactorily in both peak periods to 2030. The greatest 'stress' would arise in Scenario 1 with a maximum RFC of 103% in the AM peak. This is considerably better than in any instance with the existing junction and would also allow some attraction of traffic away from the A26 / Ham Lane junction.

3.26 The signalised junction arrangement would not perform satisfactorily, without significant extra land-take, owing to the amount of capacity reduction ('lost time') during the signal cycle.

3.27 A summary of network performance (junction RFC) and trip volume, under the various SATURN sensitivity tests that have been undertaken, is contained in **Table 3.5** and **Table 3.6**.

3.28 Table 3.5 refers to model outputs with the existing highway network. It mainly shows the junction RFC predicted at key locations, under the reference case and under each LDF scenario (1-7), for AM and PM peaks, with the original Test 1 matrix assumptions. It also shows the junction RFC at A26/B2192 Earwig Corner, with the Test 2 – 4 assumptions and the performance of critical junctions, in the reference case only, with Test 5.

3.29 Table 3.6 shows similar results to Table 3.5, but with the proposed roundabout junction at Earwig Corner.

3.30 More detailed analysis of Earwig Corner, with the existing junction, the proposed roundabout and the rejected traffic signal configurations, is shown in **Tables 3.7 and 3.8** for

AM and PM peaks, respectively. The tables indicate the RFC for each turning movement, the amount of vehicle delay and the volume of trips, under each model scenario.

**(CO03022406) Lewes Town Transport Study: Summary of SATURN Model Assignments with Base Highway Network**

| | | | | SATURN Network Configuration & Demand Adjustment | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Test 1: Base Do-Nothing Network; No matrix Adjustment | | | Test2: Base Do-Nothing Network; Matrix with Uckfield LDF Replaced by TEMPRO | | | Test 3: Base Do-Nothing Network; Matrix with Lewes DC LDF Reduced by 10% (Smarter Choices) | | | Test 4: Base Do-Nothing Network; Matrix with Uckfield LDF Replaced by TEMPRO & Lewes DC LDF Reduced by 10% (Smarter Choices) | | |
| Trip Matrix Scenario | Demand Scenario Description | Weekday Peak Time Period | Baseline 2030 Matrix Trip Total (PCU) | Tested in SATURN? | Matrix Trip Total (PCU) | Test Outcome | Tested in SATURN? | Matrix Trip Total (PCU) | Test Outcome | Tested in SATURN? | Matrix Trip Total (PCU) | Test Outcome | Tested in SATURN? | Matrix Trip Total (PCU) | Test Outcome |
| Reference Case | Background growth & committed development | AM | 15635 | Yes | 15635 | A26/B2192 Earwig over-capacity 179%<br>A26/Church Lane over-capacity 107%<br>A26/Phoenix C'wy over-capacity 168%<br>A277/A275 Prison C'roads over-capacity 143% | Yes | 15468 | A26/B2192 Earwig over-capacity 146% | N/A | 15635 | N/A | N/A | 15468 | N/A |
| | | PM | 13191 | Yes | 13191 | A26/B2192 Earwig within capacity 100%<br>A26/Church Lane over-capacity 122%<br>A26/Phoenix C'wy over-capacity 108%<br>A277/A275 Prison C'roads over-capacity 115% | Yes | 13021 | A26/B2192 Earwig within capacity 93% | N/A | 13191 | N/A | N/A | 13021 | N/A |
| Scenario 1 | North St empl & res.<br>Old Malling Fm res.<br>Ringmer empl. & max. res. | AM | 16514 | Yes | 16514 | A26/B2192 Earwig over-capacity 196%<br>A26/Church Lane over-capacity 109%<br>A26/Phoenix C'wy over-capacity 175%<br>A277/A275 Prison C'roads over-capacity 143%<br>Phoeenix C'way/Eastgate St over-capacity 101% | Yes | 16348 | A26/B2192 Earwig over-capacity 164% | Yes | 16426 | A26/B2192 Earwig over-capacity 188% | Yes | 16260 | A26/B2192 Earwig over-capacity 162%<br>A26/Church Lane over-capacity 106%<br>A26/Phoenix C'wy over-capacity 170%<br>A277/A275 Prison C'roads over-capacity 144%<br>Phoeenix C'way/Eastgate St over-capacity 100% |
| | | PM | 14097 | Yes | 14097 | A26/B2192 Earwig over-capacity 109%<br>A26/Church Lane over-capacity 133%<br>A26/Phoenix C'wy over-capacity 114%<br>A277/A275 Prison C'roads over-capacity 117%<br>Phoeenix C'way/Brooks La over-capacity 103% | Yes | 13928 | A26/B2192 Earwig over-capacity 105% | Yes | 14007 | A26/B2192 Earwig over-capacity 109% | Yes | 13837 | A26/B2192 Earwig over-capacity 102%<br>A26/Church Lane over-capacity 130%<br>A26/Phoenix C'wy over-capacity 111%<br>A277/A275 Prison C'roads over-capacity 115%<br>Phoeenix C'way/Brooks La over-capacity 100% |
| Scenario 2 | North St empl & res.<br>Old Malling Fm res.<br>Ringmer empl. & med. res. | AM | 16445 | Yes | 16445 | A26/B2192 Earwig over-capacity 195%<br>A26/Church Lane over-capacity 109%<br>A26/Phoenix C'wy over-capacity 174%<br>A277/A275 Prison C'roads over-capacity 143%<br>Phoeenix C'way/Eastgate St over-capacity 101% | Yes | 16279 | A26/B2192 Earwig over-capacity 155% | Yes | 16364 | A26/B2192 Earwig over-capacity 187% | No | 16198 | |
| | | PM | 14021 | Yes | 14021 | A26/B2192 Earwig over-capacity 105%<br>A26/Church Lane over-capacity 130%<br>A26/Phoenix C'wy over-capacity 113%<br>A277/A275 Prison C'roads over-capacity 116%<br>Phoeenix C'way/Brooks La over-capacity 102% | Yes | 13851 | A26/B2192 Earwig over-capacity 104% | Yes | 13938 | A26/B2192 Earwig over-capacity 108% | No | 13768 | |
| Scenario 3 | North St empl & res.<br>Old Malling Fm res.<br>Ringmer empl. & min. res. | AM | 16467 | Yes | 16467 | A26/B2192 Earwig over-capacity 194%<br>A26/Church Lane over-capacity 110%<br>A26/Phoenix C'wy over-capacity 174%<br>A277/A275 Prison C'roads over-capacity 144%<br>Phoeenix C'way/Eastgate St over-capacity 101% | Yes | 16301 | A26/B2192 Earwig over-capacity 156% | Yes | 16384 | A26/B2192 Earwig over-capacity 193% | No | 16218 | |
| | | PM | 14045 | Yes | 14045 | A26/B2192 Earwig over-capacity 106%<br>A26/Church Lane over-capacity 131%<br>A26/Phoenix C'wy over-capacity 114%<br>A277/A275 Prison C'roads over-capacity 117%<br>Phoeenix C'way/Brooks La over-capacity 102% | Yes | 13875 | A26/B2192 Earwig over-capacity 105% | Yes | 13960 | A26/B2192 Earwig over-capacity 106% | No | 13790 | |
| Scenario 4 | North St empl & res.<br>Old Malling Fm res.<br>Ringmer empl. | AM | 16398 | Yes | 16398 | A26/B2192 Earwig over-capacity 196%<br>A26/Church Lane over-capacity 110%<br>A26/Phoenix C'wy over-capacity 173%<br>A277/A275 Prison C'roads over-capacity 144%<br>Phoeenix C'way/Eastgate St over-capacity 100% | Yes | 16232 | A26/B2192 Earwig over-capacity 157% | Yes | 16322 | A26/B2192 Earwig over-capacity 190% | No | 16156 | |
| | | PM | 13969 | Yes | 13969 | A26/B2192 Earwig over-capacity 104%<br>A26/Church Lane over-capacity 130%<br>A26/Phoenix C'wy over-capacity 112%<br>A277/A275 Prison C'roads over-capacity 116%<br>Phoeenix C'way/Brooks La over-capacity 102% | Yes | 13799 | A26/B2192 Earwig over-capacity 101% | Yes | 13891 | A26/B2192 Earwig over-capacity 102% | No | 13721 | |
| Scenario 5 | Old Malling Fm res.<br>Ringmer empl. | AM | 15819 | Yes | 15819 | A26/B2192 Earwig over-capacity 174%<br>A26/Church Lane over-capacity 108%<br>A26/Phoenix C'wy over-capacity 169%<br>A277/A275 Prison C'roads over-capacity 143%<br>Phoeenix C'way/Eastgate St within capacity 87% | Yes | 15652 | A26/B2192 Earwig over-capacity 150% | Yes | 15800 | A26/B2192 Earwig over-capacity 170% | No | 15634 | |
| | | PM | 13385 | Yes | 13385 | A26/B2192 Earwig over-capacity 115%<br>A26/Church Lane over-capacity 122%<br>A26/Phoenix C'wy over-capacity 109%<br>A277/A275 Prison C'roads over-capacity 115%<br>Phoeenix C'way/Brooks La within capacity 83% | Yes | 13215 | A26/B2192 Earwig within capacity 96% | Yes | 13365 | A26/B2192 Earwig over-capacity 110% | No | 13196 | |
| Scenario 6 | North St empl & res.<br>Ringmer empl. | AM | 16237 | Yes | 16237 | A26/B2192 Earwig over-capacity 201%<br>A26/Church Lane over-capacity 107%<br>A26/Phoenix C'wy over-capacity 172%<br>A277/A275 Prison C'roads over-capacity 144%<br>Phoeenix C'way/Eastgate St over-capacity 101% | Yes | 16071 | A26/B2192 Earwig over-capacity 171% | Yes | 16177 | A26/B2192 Earwig over-capacity 193% | No | 16010 | |
| | | PM | 13799 | Yes | 13799 | A26/B2192 Earwig over-capacity 105%<br>A26/Church Lane over-capacity 131%<br>A26/Phoenix C'wy over-capacity 111%<br>A277/A275 Prison C'roads over-capacity 116%<br>Phoeenix C'way/Brooks La within capacity 96% | Yes | 13630 | A26/B2192 Earwig within capacity 96% | Yes | 13738 | A26/B2192 Earwig over-capacity 105% | No | 13569 | |
| Scenario 7 | Ringmer empl. & max. res. | AM | 15783 | Yes | 15783 | A26/B2192 Earwig over-capacity 178%<br>A26/Church Lane over-capacity 108%<br>A26/Phoenix C'wy over-capacity 169%<br>A277/A275 Prison C'roads over-capacity 143%<br>Phoeenix C'way/Eastgate St within capacity 84% | Yes | 15616 | A26/B2192 Earwig over-capacity 153% | Yes | 15768 | A26/B2192 Earwig over-capacity 174% | No | 15601 | |
| | | PM | 13347 | Yes | 13347 | A26/B2192 Earwig over-capacity 106%<br>A26/Church Lane over-capacity 127%<br>A26/Phoenix C'wy over-capacity 110%<br>A277/A275 Prison C'roads over-capacity 116%<br>Phoeenix C'way/Brooks La within capacity 83% | Yes | 13178 | A26/B2192 Earwig over-capacity 101% | Yes | 13332 | A26/B2192 Earwig over-capacity 105% | No | 13162 | |

**Table 3.5**

**(CO03022406) Lewes Town Transport Study: Summary of SATURN Model Assignments with Scheme Highway Network**

| | | | | SATURN Network Configuration & Demand Adjustment | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Test 1: Base Do-Nothing Network; No matrix Adjustment | | | Test2: Base Do-Nothing Network; Matrix with Uckfield LDF Replaced by TEMPRO | | | Test 3: Base Do-Nothing Network; Matrix with Lewes DC LDF Reduced by 10% (Smarter Choices) | | | Test 4: Base Do-Nothing Network; Matrix with Uckfield LDF Replaced by TEMPRO & Lewes DC LDF Reduced by 10% (Smarter Choices) | | |
| Trip Matrix Scenario | Demand Scenario Description | Weekday Peak Time Period | Baseline 2030 Matrix Trip Total (PCU) | Tested in SATURN? | Matrix Trip Total (PCU) | Test Outcome | Tested in SATURN? | Matrix Trip Total (PCU) | Test Outcome | Tested in SATURN? | Matrix Trip Total (PCU) | Test Outcome | Tested in SATURN? | Matrix Trip Total (PCU) | Test Outcome |
| Reference Case | Background growth & committed development | AM | 15635 | Yes | 15635 | A26/B2192 Earwig over-capacity 103%<br>A26/Church Lane over-capacity 132%<br>A26/Phoenix C'wy over-capacity 165%<br>A277/A275 Prison C'roads over-capacity 143% | Yes | 15468 | A26/B2192 Earwig over-capacity 102% | N/A | 15635 | N/A | N/A | 15468 | N/A |
| | | PM | 13191 | Yes | 13191 | A26/B2192 Earwig within capacity 83%<br>A26/Church Lane over-capacity 102%<br>A26/Phoenix C'wy over-capacity 109%<br>A277/A275 Prison C'roads over-capacity 115% | Yes | 13021 | A26/B2192 Earwig within capacity 80% | N/A | 13191 | N/A | N/A | 13021 | N/A |
| Scenario 1 | North St empl & res.<br>Old Malling Fm res.<br>Ringmer empl. & max. res. | AM | 16514 | Yes | 16514 | A26/B2192 Earwig over-capacity 103%<br>A26/Church Lane over-capacity 121%<br>A26/Phoenix C'wy over-capacity 170%<br>A277/A275 Prison C'roads over-capacity 144%<br>Phoeenix C'way/Eastgate St over-capacity 101% | Yes | 16348 | A26/B2192 Earwig over-capacity 101% | Yes | 16426 | A26/B2192 Earwig over-capacity 101% | Yes | 16260 | A26/B2192 Earwig within capacity 98%<br>A26/Church Lane over-capacity 135%<br>A26/Phoenix C'wy over-capacity 165%<br>A277/A275 Prison C'roads over-capacity 108%<br>Phoeenix C'way/Eastgate St within capacity 89% |
| | | PM | 14097 | Yes | 14097 | A26/B2192 Earwig within capacity 86%<br>A26/Church Lane over-capacity 116%<br>A26/Phoenix C'wy over-capacity 114%<br>A277/A275 Prison C'roads over-capacity 118%<br>Phoeenix C'way/Brooks La within capacity 95% | Yes | 13928 | A26/B2192 Earwig within capacity 87% | Yes | 14007 | A26/B2192 Earwig within capacity 86% | Yes | 13837 | A26/B2192 Earwig within capacity 86%<br>A26/Church Lane over-capacity 108%<br>A26/Phoenix C'wy over-capacity 113%<br>A277/A275 Prison C'roads over-capacity 116%<br>Phoeenix C'way/Brooks La within capacity 90% |
| Scenario 2 | North St empl & res.<br>Old Malling Fm res.<br>Ringmer empl. & med. res. | AM | 16445 | No | 16445 | | Yes | 16279 | A26/B2192 Earwig within capacity 99% | Yes | 16364 | A26/B2192 Earwig over-capacity 100% | No | 16198 | |
| | | PM | 14021 | No | 14021 | | Yes | 13851 | A26/B2192 Earwig within capacity 86% | Yes | 13938 | A26/B2192 Earwig within capacity 86% | No | 13768 | |
| Scenario 3 | North St empl & res.<br>Old Malling Fm res.<br>Ringmer empl. & min. res. | AM | 16467 | No | 16467 | | Yes | 16301 | A26/B2192 Earwig over-capacity 100% | Yes | 16384 | A26/B2192 Earwig over-capacity 102% | No | 16218 | |
| | | PM | 14045 | No | 14045 | | Yes | 13875 | A26/B2192 Earwig within capacity 86% | Yes | 13960 | A26/B2192 Earwig within capacity 86% | No | 13790 | |
| Scenario 4 | North St empl & res.<br>Old Malling Fm res.<br>Ringmer empl. | AM | 16398 | No | 16398 | | Yes | 16232 | A26/B2192 Earwig over-capacity 102% | Yes | 16322 | A26/B2192 Earwig over-capacity 105% | No | 16156 | |
| | | PM | 13969 | No | 13969 | | Yes | 13799 | A26/B2192 Earwig within capacity 85% | Yes | 13891 | A26/B2192 Earwig within capacity 86% | No | 13721 | |
| Scenario 5 | Old Malling Fm res.<br>Ringmer empl. | AM | 15819 | No | 15819 | | Yes | 15652 | A26/B2192 Earwig over-capacity 103% | Yes | 15800 | A26/B2192 Earwig over-capacity 103% | No | 15634 | |
| | | PM | 13385 | No | 13385 | | Yes | 13215 | A26/B2192 Earwig within capacity 80% | Yes | 13365 | A26/B2192 Earwig within capacity 82% | No | 13196 | |
| Scenario 6 | North St empl & res.<br>Ringmer empl. | AM | 16237 | No | 16237 | | Yes | 16071 | A26/B2192 Earwig over-capacity 101% | Yes | 16177 | A26/B2192 Earwig over-capacity 103% | No | 16010 | |
| | | PM | 13799 | No | 13799 | | Yes | 13630 | A26/B2192 Earwig within capacity 86% | Yes | 13738 | A26/B2192 Earwig within capacity 86% | No | 13569 | |
| Scenario 7 | Ringmer empl. & max. res. | AM | 15783 | No | 15783 | | Yes | 15616 | A26/B2192 Earwig over-capacity 102% | Yes | 15768 | A26/B2192 Earwig over-capacity 102% | No | 15601 | |
| | | PM | 13347 | No | 13347 | | Yes | 13178 | A26/B2192 Earwig within capacity 83% | Yes | 13332 | A26/B2192 Earwig within capacity 86% | No | 13162 | |

**Table 3.6**

**Lewes Town Transport Study: Analysis of A26 / B2192 Earwig Corner Junction Performance With and Without Roundabout Improvement - AM Peak**

| | | | Uckfield in and Smarter Choices reduction | | | | | | | | | | | | | | | Uckfield taken out and replaced with TEMPRO (No Smarter Choices reduction) | | | | | | | | | | | | | | test8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L30ADNRC | L30ADNS1 | L30ADNS2 | L30ADNS3 | L30ADNS4 | L30ADNS5 | L30ADNS6 | L30ADNS7 | L30AN1RC | L30AN1S1 | L30AN1S2 | L30AN1S3 | L30AN1S4 | L30AN1S5 | L30AN1S6 | L30AN1S7 | L30ADNRC | L30ADNS1 | L30ADNS2 | L30ADNS3 | L30ADNS4 | L30ADNS5 | L30ADNS6 | L30ADNS7 | L30AN1RC | L30AN1S1 | L30AN1S2 | L30AN1S3 | L30AN1S4 | L30AN1S5 | L30AN1S6 | L30AN1S7 | L30AN1S8 |
| | | | **RFC (%)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 264901308 | 264191306 | A26 South to A26 North | 35 | 45 | 43 | 44 | 38 | 45 | 42 | 45 | 42 | 44 | 45 | 44 | 42 | 45 | 44 | 45 | 43 | 43 | 42 | 41 | 41 | 43 | 37 | 43 | 42 | 42 | 42 | 42 | 41 | 43 | 42 | 43 | 42 |
| 264901307 | 264191304 | A26 South to B2192 | 89 | 101 | 99 | 100 | 91 | 100 | 99 | 100 | 41 | 46 | 45 | 45 | 41 | 45 | 43 | 45 | 94 | 99 | 99 | 100 | 101 | 99 | 88 | 99 | 42 | 45 | 44 | 44 | 42 | 44 | 43 | 45 | 44 |
| 308901307 | 308306304 | A26 North to B2192 | 110 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 4 | 48 | 54 | 47 | 51 | 18 | 44 | 17 | 111 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 10 | 16 | 17 | 17 | 16 | 10 | 16 | 9 | 17 |
| 308901264 | 308306191 | A26 North to A26 South | 110 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 56 | 97 | 98 | 97 | 98 | 89 | 97 | 89 | 111 | 71 | 71 | 71 | 71 | 70 | 71 | 70 | 80 | 90 | 90 | 90 | 89 | 80 | 89 | 80 | 90 |
| 307901264 | 304191264 | B2192 to A26 South | 100 | 100 | 100 | 100 | 100 | 100 | 101 | 100 | 93 | 101 | 100 | 102 | 105 | 103 | 103 | 102 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 102 | 101 | 99 | 100 | 102 | 103 | 101 | 102 | 98 |
| 307901308 | 304306308 | B2192 to A26 North | 2 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 19 | 101 | 100 | 102 | 105 | 103 | 103 | 102 | 2 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 102 | 101 | 74 | 96 | 102 | 103 | 101 | 102 | 59 |
| | 307304191 | B2192 towards A26 junction | 122 | 188 | 187 | 193 | 190 | 170 | 193 | 174 | | | | | | | | | 146 | 164 | 155 | 156 | 157 | 150 | 171 | 153 | | | | | | | | | |
| | | **Average RFC @ Junction** | **81** | **74** | **73** | **74** | **71** | **71** | **74** | **71** | **43** | **73** | **74** | **73** | **74** | **67** | **72** | **67** | **87** | **69** | **68** | **68** | **69** | **67** | **68** | **68** | **63** | **66** | **61** | **65** | **65** | **64** | **65** | **63** | **58** |
| | | | **Delay (secs)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 264901308 | 264191306 | A26 South to A26 North | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 264901307 | 264191304 | A26 South to B2192 | 89 | 105 | 93 | 93 | 60 | 91 | 93 | 91 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 45 | 89 | 90 | 91 | 114 | 87 | 52 | 88 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| 308901307 | 308306304 | A26 North to B2192 | 110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 16 | 17 | 15 | 16 | 9 | 14 | 9 | 197 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 10 | 10 | 10 | 9 | 8 | 9 | 8 | 10 |
| 308901264 | 308306191 | A26 North to A26 South | 110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 18 | 19 | 17 | 18 | 11 | 16 | 11 | 197 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 12 | 12 | 12 | 11 | 10 | 11 | 10 | 12 |
| 307901264 | 304191264 | B2192 to A26 South | 100 | 105 | 111 | 105 | 105 | 102 | 118 | 102 | 15 | 72 | 58 | 85 | 135 | 99 | 112 | 81 | 76 | 101 | 101 | 101 | 101 | 99 | 102 | 99 | 84 | 61 | 40 | 43 | 81 | 86 | 54 | 67 | 36 |
| 307901308 | 304306308 | B2192 to A26 North | 2 | 64 | 60 | 63 | 52 | 61 | 59 | 61 | 17 | 74 | 60 | 87 | 137 | 101 | 114 | 83 | 25 | 56 | 54 | 54 | 54 | 54 | 47 | 54 | 86 | 63 | 42 | 45 | 83 | 88 | 56 | 69 | 38 |
| | 307304191 | B2192 towards A26 junction | 122 | 1579 | 1559 | 1666 | 1613 | 1268 | 1677 | 1330 | | | | | | | | | 836 | 1156 | 997 | 1012 | 1032 | 900 | 1285 | 952 | | | | | | | | | |
| | | **Average Delay @ Junction** | **81** | **265** | **260** | **275** | **262** | **217** | **278** | **226** | **10** | **32** | **27** | **36** | **53** | **39** | **45** | **33** | **90** | **41** | **41** | **41** | **45** | **40** | **33** | **40** | **33** | **26** | **19** | **20** | **33** | **34** | **24** | **28** | **18** |
| | | | **Demand Flow** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 264901308 | 264191306 | A26 South to A26 North | 902 | 1221 | 1194 | 1214 | 1177 | 1196 | 1180 | 1210 | 697 | 736 | 751 | 737 | 752 | 744 | 751 | 747 | 899 | 1161 | 1131 | 1127 | 1119 | 1139 | 1129 | 1153 | 700 | 692 | 702 | 702 | 712 | 702 | 702 | 699 | 709 |
| 264901307 | 264191304 | A26 South to B2192 | 477 | 330 | 333 | 329 | 340 | 335 | 334 | 339 | 677 | 775 | 747 | 766 | 738 | 744 | 727 | 749 | 513 | 344 | 345 | 350 | 349 | 348 | 344 | 352 | 707 | 779 | 756 | 760 | 737 | 743 | 731 | 755 | 762 |
| 308901307 | 308306304 | A26 North to B2192 | 79 | 43 | 43 | 42 | 41 | 41 | 41 | 44 | 23 | 36 | 34 | 36 | 37 | 33 | 36 | 33 | 102 | 41 | 40 | 40 | 39 | 40 | 40 | 42 | 31 | 29 | 29 | 29 | 30 | 31 | 30 | 28 | 30 |
| 308901264 | 308306191 | A26 North to A26 South | 1505 | 1840 | 1804 | 1816 | 1785 | 1731 | 1796 | 1772 | 790 | 1407 | 1429 | 1401 | 1426 | 1232 | 1410 | 1245 | 1587 | 1805 | 1769 | 1778 | 1763 | 1693 | 1767 | 1732 | 1109 | 1281 | 1292 | 1291 | 1279 | 1095 | 1275 | 1102 | 1302 |
| 307901264 | 304191264 | B2192 to A26 South | 285 | 366 | 361 | 369 | 367 | 330 | 357 | 346 | 1041 | 872 | 819 | 858 | 800 | 854 | 815 | 902 | 321 | 372 | 353 | 363 | 352 | 330 | 359 | 348 | 894 | 954 | 905 | 918 | 889 | 915 | 889 | 975 | 924 |
| 307901308 | 304306308 | B2192 to A26 North | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 19 | 31 | 26 | 29 | 19 | 21 | 22 | 23 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 15 | 34 | 23 | 26 | 19 | 18 | 18 | 23 | 28 |
| | 307304191 | B2192 towards A26 junction | 246 | 315.9 | 322.6 | 321.2 | 331.8 | 276.5 | 311.1 | 283 | | | | | | | | | 257 | 332.1 | 329.7 | 342.6 | 325.1 | 279.6 | 312.1 | 288.7 | | | | | | | | | |

**Key**

SATURN Run Naming Conventions:
A = AM
P = PM
30 = 2030
DN = Do Nothing
N1 = Earwig Corner Roundabout
N2 = Earwig Corner Signals
RC = Reference Case Trip Matrix
S1-7 = LDF Scenario 1-7 Matrix

Ratio of Flow to Capacity: Greater than 100%

Ratio of Flow to Capacity: 85%-100%

Ratio of Flow to Capacity: Less than 85%

**Table 3.7**

**Lewes Town Transport Study: Analysis of A26 / B2192 Earwig Corner Junction Performance With and Without Roundabout Improvement - PM Peak**

| | | | Uckfield in and Smarter Choices reduction | | | | | | | | | | | | | | | Uckfield taken out and replaced with TEMPRO (No Smarter Choices reduction) | | | | | | | | | | | | | | | test8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L30PDNRC | L30PDNS1 | L30PDNS2 | L30PDNS3 | L30PDNS4 | L30PDNS5 | L30PDNS6 | L30PDNS7 | L30PN1RC | L30PN1S1 | L30PN1S2 | L30PN1S3 | L30PN1S4 | L30PN1S5 | L30PN1S6 | L30PN1S7 | L30PDNRC | L30PDNS1 | L30PDNS2 | L30PDNS3 | L30PDNS4 | L30PDNS5 | L30PDNS6 | L30PDNS7 | L30PN1RC | L30PN1S1 | L30PN1S2 | L30PN1S3 | L30PN1S4 | L30PN1S5 | L30PN1S6 | L30PN1S7 | L30AN1S8 |
| | | | **RFC (%)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 264901308 | 264191306 | A26 South to A26 North | 31 | 47 | 47 | 47 | 47 | 43 | 47 | 46 | 71 | 83 | 83 | 83 | 83 | 78 | 84 | 82 | 33 | 46 | 46 | 46 | 34 | 34 | 36 | 33 | 75 | 82 | 81 | 82 | 81 | 75 | 83 | 77 | 82 |
| 264901307 | 264191304 | A26 South to B2192 | 75 | 96 | 97 | 96 | 96 | 96 | 97 | 97 | 78 | 86 | 86 | 86 | 86 | 82 | 86 | 86 | 79 | 97 | 99 | 98 | 92 | 79 | 78 | 87 | 80 | 87 | 86 | 86 | 85 | 80 | 86 | 83 | 86 |
| 308901307 | 308306304 | A26 North to B2192 | 0 | 103 | 103 | 103 | 102 | 1 | 100 | 101 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 0 | 101 | 101 | 1 | 1 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |
| 308901264 | 308306191 | A26 North to A26 South | 34 | 103 | 103 | 103 | 102 | 56 | 100 | 101 | 61 | 75 | 75 | 75 | 74 | 73 | 73 | 75 | 38 | 101 | 101 | 60 | 45 | 39 | 41 | 41 | 64 | 73 | 72 | 72 | 71 | 66 | 70 | 71 | 73 |
| 307901264 | 304191264 | B2192 to A26 South | 78 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 41 | 62 | 60 | 61 | 59 | 58 | 59 | 60 | 93 | 100 | 100 | 100 | 100 | 96 | 96 | 100 | 51 | 61 | 59 | 60 | 57 | 55 | 57 | 58 | 60 |
| 307901308 | 304306308 | B2192 to A26 North | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | 307304191 | B2192 towards A26 junction | 24 | 109 | 108 | 106 | 102 | 110 | 105 | 105 | | | | | | | | | 27 | 105 | 104 | 105 | 101 | 27 | 26 | 101 | | | | | | | | | |
| | | **Average RFC @ Junction** | **35** | **80** | **80** | **79** | **78** | **58** | **79** | **79** | **42** | **52** | **51** | **51** | **51** | **49** | **51** | **51** | **39** | **79** | **79** | **59** | **53** | **39** | **40** | **52** | **45** | **51** | **50** | **50** | **49** | **46** | **50** | **49** | **51** |
| | | | **Delay (secs)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 264901308 | 264191306 | A26 South to A26 North | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 6 | 6 | 6 | 6 | 5 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 6 | 6 | 6 | 6 | 5 | 6 | 6 | 6 |
| 264901307 | 264191304 | A26 South to B2192 | 75 | 58 | 60 | 57 | 57 | 47 | 59 | 61 | 7 | 8 | 8 | 8 | 8 | 7 | 8 | 8 | 13 | 61 | 68 | 64 | 25 | 13 | 13 | 18 | 7 | 8 | 8 | 8 | 8 | 7 | 8 | 8 | 8 |
| 308901307 | 308306304 | A26 North to B2192 | 0 | 62 | 61 | 49 | 29 | 0 | 8 | 17 | 8 | 10 | 10 | 10 | 10 | 9 | 9 | 10 | 0 | 10 | 12 | 0 | 0 | 0 | 0 | 0 | 9 | 10 | 10 | 10 | 9 | 9 | 9 | 10 | 10 |
| 308901264 | 308306191 | A26 North to A26 South | 34 | 62 | 61 | 49 | 29 | 0 | 8 | 17 | 10 | 12 | 12 | 12 | 12 | 11 | 11 | 12 | 0 | 10 | 12 | 0 | 0 | 0 | 0 | 0 | 11 | 12 | 12 | 12 | 11 | 11 | 11 | 12 | 12 |
| 307901264 | 304191264 | B2192 to A26 South | 78 | 76 | 76 | 76 | 76 | 69 | 76 | 76 | 6 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 26 | 76 | 76 | 76 | 53 | 34 | 36 | 49 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| 307901308 | 304306308 | B2192 to A26 North | 1 | 35 | 34 | 35 | 35 | 25 | 34 | 34 | 8 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 34 | 34 | 34 | 15 | 12 | 13 | 13 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| | 307304191 | B2192 towards A26 junction | 24 | 168 | 147 | 102 | 40 | 177 | 87 | 95 | | | | | | | | | | 92 | 73 | 90 | 10 | 0 | 0 | 10 | | | | | | | | | |
| | | **Average Delay @ Junction** | **35** | **66** | **63** | **53** | **38** | **45** | **39** | **43** | **8** | **9** | **9** | **9** | **9** | **9** | **9** | **9** | **7** | **40** | **39** | **38** | **15** | **8** | **9** | **13** | **8** | **9** | **9** | **9** | **8** | **8** | **8** | **9** | **9** |
| | | | **Demand Flow** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 264901308 | 264191306 | A26 South to A26 North | 792 | 1431 | 1427 | 1407 | 1375 | 1190 | 1375 | 1325 | 697 | 957 | 952 | 950 | 950 | 856 | 968 | 868 | 876 | 1382 | 1373 | 1357 | 985 | 905 | 1032 | 910 | 777 | 870 | 872 | 886 | 871 | 777 | 902 | 772 | 870 |
| 264901307 | 264191304 | A26 South to B2192 | 913 | 617 | 618 | 605 | 592 | 647 | 594 | 577 | 1034 | 1208 | 1177 | 1191 | 1146 | 1106 | 1129 | 1168 | 879 | 601 | 612 | 596 | 924 | 850 | 878 | 930 | 1039 | 1244 | 1191 | 1198 | 1160 | 1066 | 1133 | 1180 | 1233 |
| 308901307 | 308306304 | A26 North to B2192 | 5 | 10 | 15 | 11 | 11 | 9 | 9 | 9 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 13 | 13 | 9 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 5 |
| 308901264 | 308306191 | A26 North to A26 South | 665 | 1228 | 1228 | 1220 | 1207 | 1097 | 1193 | 1199 | 659 | 814 | 821 | 814 | 824 | 811 | 816 | 800 | 754 | 1194 | 1195 | 1186 | 882 | 772 | 805 | 815 | 709 | 766 | 766 | 770 | 770 | 725 | 759 | 745 | 765 |
| 307901264 | 304191264 | B2192 to A26 South | 557 | 210 | 208 | 203 | 198 | 300 | 202 | 199 | 508 | 697 | 675 | 689 | 658 | 652 | 658 | 680 | 584 | 202 | 202 | 203 | 498 | 584 | 564 | 563 | 615 | 704 | 682 | 691 | 665 | 653 | 666 | 678 | 703 |
| 307901308 | 304306308 | B2192 to A26 North | 4 | 1 | 0 | 3 | 1 | 0 | 1 | 0 | 4 | 5 | 5 | 5 | 4 | 4 | 4 | 5 | 3 | 1 | 1 | 0 | 3 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 5 |
| | 307304191 | B2192 towards A26 junction | 473 | 164.9 | 163.2 | 160.2 | 153.1 | 249.3 | 156.6 | 162.6 | | | | | | | | | | 157.4 | 153.4 | 155.1 | 441 | 531.2 | 506.3 | 510.2 | | | | | | | | | |

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SATURN Run Naming Conventions:
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N1 = Earwig Corner Roundabout
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Ratio of Flow to Capacity: Greater than 100%

Ratio of Flow to Capacity: 85%-100%

Ratio of Flow to Capacity: Less than 85%

**Table 3.8**

## 4.0 CONCLUSIONS

4.1 The updated Lewes SATURN traffic model has been used, successfully, to predict the likely performance of the local road network, in the AM and PM peaks at 2030, under various LDF scenarios for Lewes and Ringmer and under a reference case with no LDF allocation.

4.2 Primarily, the model has been run with an agreed set of forecasting assumptions ('Test 1').

4.3 Outcomes from the performance appraisal are logical, in so far as they show that the network will operate less well and with greater 'stress' in those LDF scenarios that have more land use allocations and higher total trip volumes. The LDF outcome with the poorest performance will be Scenario 1, whilst the outcome with the best performance will be Scenario 5.

4.4 The ranking of scenarios in worsening order of junction RFC and corridor travel time will be as follows:

- Reference Case;
- LDF Scenario 5;
- LDF Scenario 7;
- LDF Scenario 6;
- LDF Scenario 4;
- LDF Scenario 2;
- LDF Scenario 3;
- LDF Scenario 1.

4.5 There are several critical junctions at which flows will exceed capacity, in the reference case and in all LDF Scenarios 1-7, at 2030 AM and PM peaks, as follows

- A26 / B2192 Earwig Corner major/minor junction;
- A26 / Church Street major/minor junction; and
- A26 / Phoenix Causeway roundabout.

4.6 These junctions will require some form of improvement to accommodate background growth of traffic demand in the reference case, with only committed development and also to enable any of the Lewes / Ringmer LDF development options to be implemented.

4.7 Some further junctions will experience flows in excess of capacity under certain scenarios, as follows:

- Phoenix Causeway / Eastgate Street major/minor junction – This junction will require some form of improvement in the AM peak, in all scenarios containing the Lewes North Street development option(i.e. not 5 or 7); and
- Phoenix Causeway / Brooks Lane roundabout – This junction will require some form of improvement in the PM peak, in all scenarios containing the Lewes Old Malling Farm development option (i.e. not 6 or 7).

4.8 Testing of highway mitigation schemes to resolve the above junction problems has not been requested as part of the study.

4.9 Predicted congestion issues at A277/A275 Prison Crossroads, in the forecast reference case and LDF scenarios, should not act as a constraint on development of the tested LDF scenario sites, because of the distance of Prison Crossroads from those sites and the availability of A26, via Cuilfail Tunnel, as the more natural route for strategic traffic between A27 and those sites. It cannot be determined with certainty, from the model, whether or not the LDF scenarios would result in impacts that would require mitigation, at either A27 Southerham or Ashcombe junctions.

4.10 Agreed adjustments have been made to the Test 1 forecasting assumptions, in order to assess the sensitivity of the model results. These adjustments have comprised the following:

- Test 2 – Replace Uckfield zone LDF site-specific trips with TEMPRO factored trips;
- Test 3 – Reduce internal LDF development options in scenarios 1-7 by 10%, to reflect 'smarter choices';
- Test 4 – Combine Uckfield TEMPRO-factored trips and 10%-reduced LDF trips; and
- Test 5 – Adjust all TEMPRO-factored zones (including Uckfield) to match new TEMPRO (database 6.2).

4.11 Congestion problems will arise at the existing A26/B2192 Earwig Corner priority junction, in all forecast situations. Traffic delays, here, will also occur even with the following demand adjustments:

- With Test 2 – in all AM and PM scenarios, except for the PM reference case and PM scenarios 5 and 6, which exclude Ringmer residential development;
- With Test 3 – in all AM and PM scenarios;
- With Test 4 – in the maximum LDF Scenario 1; and
- With Test 5 – in the reference case, AM peak only.

4.12 The need for junction improvement at Earwig Corner, with the Ringmer LDF development option in place, will arise regardless of whether or not the Uckfield LDF development also proceeds. Furthermore, the need for the improvement with Ringmer LDF development option will not be removed by Smarter Choices initiatives (10% reduction in vehicle trips).

4.13 Problems at Earwig Corner could be largely resolved by introducing a new roundabout design with 2-lane entries from all arms. A signal arrangement would not perform satisfactorily without significant land-take.

4.14 With the proposed roundabout design and the maximum demand situation (LDF Scenario 1, in Test 1), the highest RFC at the roundabout would be as follows:

- 103% in the AM peak, without demand interventions.

4.15 The maximum RFC at the Earwig roundabout would fall to 98% in the AM peak with Scenario 1, if there was no Uckfield LDF development and if Smarter Choices were implemented (i.e. Test 4). The maximum RFC would be even lower under Test 5 assumptions, with new TEMPRO V6.2 growth rates.

4.16 Forecasts from the Lewes SATURN model are considered to be sufficiently robust for the study purpose. However, there are some limitations, which would require further actions in order to produce detailed results, namely:

- New trip O-D survey data to produce an improved base model validation;
- New classified traffic count data for base validation; and
- Extension of the SATURN network outside Lewes, especially to the east, to enable accurate representation of route choice for longer-distance trips.