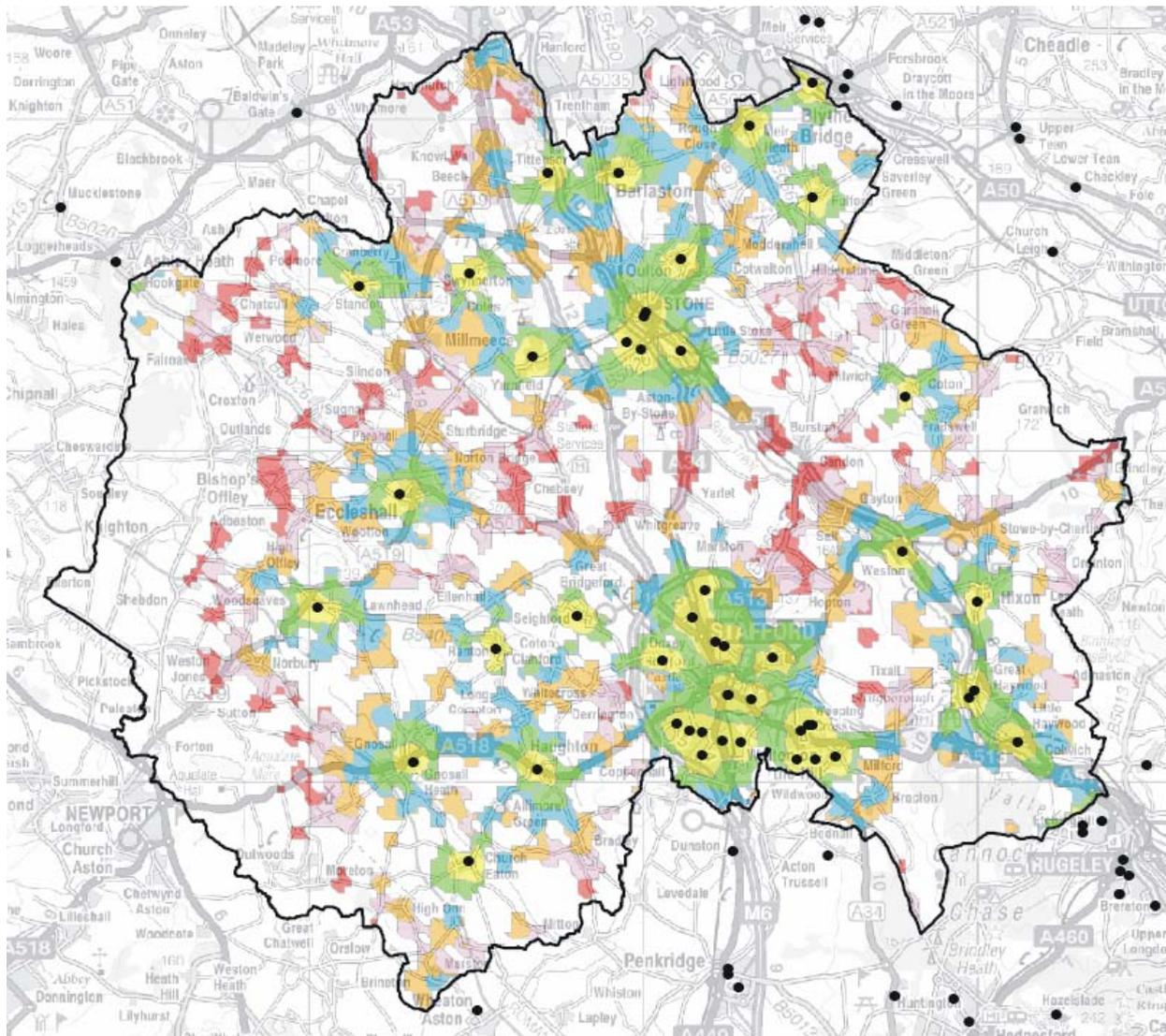


# Stafford Borough Council Local Development Framework



## Accessibility Appraisal February 2009

**Staffordshire**  
County Council

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# 1. Introduction

- 1.1 Stafford Borough Council (SBC) is engaged in the staged preparation of the Core Strategy of the Local Development Framework which will guide development in the Borough in the period to 2026. Staffordshire County Council (SCC) is working alongside the Borough Council to provide transport advice.
- 1.2 Stafford Borough Council has completed an assessment of the services and facilities located in settlements within Stafford Borough. The evidence that this document provides will be utilised as part of the 'principles for settlement development' methodology to identify settlements with future development potential. The Core Strategy will then determine those towns and villages considered suitable to accommodate development through the Local Development Framework.
- 1.3 Government guidance suggests that new development should be focussed in locations where residents can make use of existing services and facilities to maximise travel choice and minimise additional travel by private car. Accession analysis has been undertaken by SCC to help identify the most sustainable locations across the Borough, and rank settlements within the Borough in terms of their relative sustainability.
- 1.4 This report details the findings of the study describing the analysis of the Accession work. It makes clear recommendations concerning the most appropriate locations for new development on transport grounds, thereby informing the principles for settlement development.

## 2. Approach

- 2.1 Accession accessibility planning software was developed by MVA consultancy for the Department for Transport to enable Local Authorities to measure and monitor local accessibility as part of the Accessibility Strategy in their Local Transport Plans. Accession calculates journey times based upon public transport timetable data, road network information and a range of user-defined parameters. The calculations can be applied to a range of destination types including doctor's surgeries, schools and town centres.
- 2.2 Accessibility in Stafford Borough was calculated for the following destinations:
- Employment;
  - Secondary Schools;
  - GP Surgeries;
  - Supermarkets;
  - Primary Schools;
  - Further Education Colleges; and
  - Hospitals.
- 2.3 It should be noted that the provision of these services and facilities may change over time. It is likely that developers will provide additional transport infrastructure, public transport services and/ or local facilities. Destination datasets are accurate for December 2008.
- 2.4 Accessibility was calculated using public transport for the majority of destinations; this included the use of bus and/ or rail services. The timetables used were dated 25th November 2008 and October 2007 for bus and rail respectively. A new London Midland rail service between Crewe and London Euston, calling at Stone and Stafford station commenced operation on 15<sup>th</sup> December 2008. This service has been added to the 2007 rail timetable to more accurately represent travel choice for Borough residents. However, it is acknowledged that the accuracy of rail interchanges is limited as the timings of existing services may have altered. When calculating accessibility for public transport, the software takes into account walk time to the stop/ station, wait time for the service, in vehicle travelling time and walk time to the destination. It also allows for interchange between services and modes such as bus and rail.
- 2.5 For primary and secondary school accessibility calculations; it is more appropriate to calculate accessibility on foot as some children use contracted services which are not included in the bus timetable. This calculation uses the road network and applies an average walk speed of 4.8kph.
- 2.6 For all calculations, a threshold of 60 minutes was set within which the entire journey must be completed including any interchanges. The software computes a journey time for every ten minute interval within the defined time period to the nearest destination point and the shortest journey times are returned. Therefore, the accessibility contour maps represent the best journey time that can be achieved within the defined time period.
- 2.7 For some destination types, such as employment, it is not appropriate to calculate accessibility to the nearest destination point; as the nearest point of employment may not be suitable i.e. lack of job choice. For employment and further education

- 2.8 In all the following Accession calculations were made:
- Public Transport Access to Employment (bus and rail) - Wednesday 07:30 to 09:30 hours – Hansen scores;
  - Walking Times to Secondary Schools (10 minute travel time isochrones);
  - Walking Times to Primary Schools (10 minute travel time isochrones);
  - Public Transport Access to Further Education Colleges (bus and rail) Wednesday 0700 to 0900 hours – Hansen scores;
  - Public Transport Access to Retail Supermarkets (bus and rail) Saturday 1000-1300 hours (10 minute travel time isochrones);
  - Public Transport Access to Retail Supermarkets (bus and rail) Wednesday 1000-1300 hours (10 minute travel time isochrones);
  - Public Transport Access to GP Surgeries (bus and rail) Wednesday 0800-1000 hours (10 minute travel time isochrones);
  - Walking Times to GP Surgeries (10 minute travel time isochrones); and
  - Public Transport Access to Hospitals (bus and rail) Wednesday 0800-1000 hours (10 minute travel time isochrones).
- 2.9 Contour maps showing the results of these calculations are included in Appendix A. The plots highlight relative levels of existing accessibility by mode across Stafford Borough to individual destinations.
- 2.10 It is useful to be able to combine this information into an overall accessibility score for an area. In 2006 the Department for Transport (DfT) published '*Technical Guidance on Accessibility Planning in Local Transport Plans*'. This included details of the methodology used by DfT to calculate the National Core Accessibility Indicators. Part of this is the calculation of an overall measure of accessibility at ward level. This methodology has been applied to accessibility calculations in Stafford Borough using local data sources. The geography of Lower Layer Super Output Areas (LSOA) has been applied as it overlays the rural settlements in the Borough more closely than ward boundaries.
- 2.11 The composite score includes calculations of accessibility to the destinations listed above using the same time periods. In the case of the supermarket calculation, the combined accessibility score utilised the results for a Saturday as it is assumed to be one of the main supermarket shopping days. Access to GP surgeries is represented by the public transport calculation as this mode is important in the rural parts of the Borough. For the composite accessibility score, population weighted Hansen scores were calculated for each destination set. Population weighted Hansen scores combine the number of destinations that can be accessed within a 60 minutes journey time with the disbenefits of travel in terms of journey time and the total number of people affected by the modelled

- 2.12 The weighting enables the results to be summed across the origin points within a LSOA to create a LSOA Hansen score. Employment Hansen scores are also weighted by the total number of jobs at each destination point.
- 2.13 The LSOA Hansen scores are then ranked in descending order and divided into octiles. LSOAs located in each of the octiles are allocated the following scores:
- Top octile - 8 (good accessibility);
  - 2nd octile - 7;
  - 3rd octile - 6;
  - 4th octile - 5;
  - 5th octile - 4;
  - 6th octile - 3;
  - 7th octile - 2; and
  - Bottom octile - 1 (poor accessibility).
- 2.14 The DfT methodology uses deciles, but for the number of super output areas in the Stafford study, octiles were calculated to be the appropriate division. The following formula was applied:
- $$K = 1 + 3.3 \log_{10} n$$
- Where  $k$  = the number of classes; and  
 $n$  = the sample size, in this case 80.
- 2.15 The process of obtaining LSOA scores and allocating octile scores is completed for each destination set. To obtain a composite accessibility score, the different destinations must be combined. The dataset includes three education measures and two health related measures. To ensure that education and health were not over represented in the composite score, combined education and health scores were produced by summing the relevant octile scores and ranking the result. To produce the final composite score, the octile scores of the four destination types; employment, supermarket, education and health, were summed and ranked.
- 2.16 This produces an unweighted composite accessibility score for all LSOAs in Stafford Borough. The composite accessibility score has also been calculated by applying trip purpose weightings to the four destination types. The weightings have been derived from Staffordshire County Council's Local Household Travel Survey 2005 using data for the whole County. Data has been extracted to include only home to destination trips to be consistent with Accession. The resulting weightings relate to the total number of recorded journeys for the whole sample by destination type and have been applied at the point where the four LSOA octile scores are summed.
- 2.17 The weightings are as follows:
- Employment: 0.50;

- Supermarket: 0.34;
- Education: 0.08; and
- Health: 0.08.

2.18 The composite accessibility scores provide a useful evidence base from which to consider the sustainability of settlements in Stafford Borough. It should be viewed with caution when considering individual sites as the scores are an average for the entire LSOA. Parts of the LSOA may score higher or lower than the average score.

2.19 The journey time contour and Hansen calculation maps provide more detailed information. They enable existing modelled accessibility levels to specific destination types to be viewed. This information could provide a base for considering the sustainability in accessibility terms of developments sites in Stafford Borough.

## 3. Findings

### Journey Time Accessibility Maps

- 3.1 The following section presents key findings from the journey time accessibility plots provided in Appendix A.

#### **Access to Employment**

- 3.2 Figure 1 shows that Stafford has the best access to employment as the majority of the urban area has a score within the top quintile. Only the outskirts of the Town receive a lower access to employment score. The results are a combination of the number of jobs available within the Town and the public transport links to other centres such as Birmingham, Stoke-on-Trent and Wolverhampton. Stone has the next highest score with the majority of the urban area receiving a score in the top two quintiles. Parts of Eccleshall, Gnosall and Blythe Bridge also have good access to employment. Smaller settlements and rural parts of the Borough have lower levels of access to employment which reflects the limited choice of destinations by public transport.

#### **Access to Education**

- 3.3 Three calculations were made to measure access to education; walking access to primary schools, walking access to secondary schools and a public transport access to further education colleges Hansen score.
- 3.4 Figure 2 shows the results of the further education accessibility mapping. Stafford has the highest scores in terms of opportunities to access Further Education Colleges followed by Stone. They have access to a reasonably wide choice of colleges. This is important as not all Further Education Colleges offer the same courses. The smaller rural villages including Milwich, Norbury, and Bishops Offley have no public transport access to a college. It should be noted that this calculation does not take account of A-levels offered by sixth form colleges attached to secondary schools.
- 3.5 Access to primary schools, shown in Figure 3, is good across the Borough with the larger villages having a primary school. In some of the rural parts of the Borough, walking access is shown to primary schools in other villages. In practice it would not be safe enough for children to walk between villages along rural roads. Figure 4 shows that within the Borough, secondary schools are only located in Stafford and Stone. It is likely that residents of Blythe Bridge and Hanchurch will attend secondary schools in neighbouring Districts. Only residents Stafford and Stone are within sensible walking distances of secondary schools. These are the locations that could provide the most sustainable development in terms of access to secondary schools as buses or contract services are less likely to be required.

### **Access to Healthcare**

- 3.6 Figure 5 examines public transport access to GP surgeries. The majority of Stafford is within a 20 minute journey of a GP surgery by public transport. The exceptions are parts of Doxey, Wildwood and Beaconside. Other parts of the District have lower levels of access. Stone and Gnosall show high levels of access as the majority of the urban area is also within a 20 minute journey time of a GP surgery. Public transport access to GP surgeries is important in the rural areas of Stafford Borough where pedestrian facilities are not sufficient to enable people to walk safely between villages. GP surgeries are only located in the larger settlements within the Borough (e.g. Eccleshall and Blythe Bridge) and some of the smaller villages have no public transport access.
- 3.7 Walking access (as shown in Figure 6) is naturally more concentrated around the individual GP surgeries, with a spread of residential areas around Stafford, the centre of Stone and Eccleshall within a 20 minute walk of a GP surgery.
- 3.8 Public transport access to hospitals is demonstrated by Figure 7, showing that the majority of residents in Stafford have access to a local hospital within a 30 minute public transport journey. Many of the smaller villages such as Bradley and Stowe-by-Chartley have no access to a hospital by public transport. It should be noted that this calculation does not necessarily represent access to an Accident and Emergency Department as some hospitals in the data set do not have this facility. The calculation does not include private hospitals.

### **Access to Supermarkets**

- 3.9 Figures 8 and 9 show public transport accessibility assessments to supermarkets on a weekday (Wednesday) and Saturday. Timetabling of the bus services provides better rural access to a supermarket on a Wednesday than a Saturday. The calculation considers a journey between 10am and 1pm which is likely to include some infrequent off-peak shopper bus services. Residents of Stafford and Stone both enjoy good access (20 minute) to the main supermarkets in the area.

### **Composite Accessibility Scores**

- 3.10 Appendix B includes the results of the LSOA composite accessibility scores, Figures 10 to 20. The weighted and unweighted overall composite accessibility score maps, Figures 10 and 11, highlight Stafford and Stone as the most accessible settlements within the Borough overall. Three areas to the North of the Borough also have relatively high scores. However, because of their geographical proximity to the North Staffordshire conurbation; residents of these areas enjoy good access to the services available outside the Borough boundary. LSOAs that make up parts of Eccleshall and Gnosall both receive seventh octile scores.
- 3.11 The remaining parts of the District which are predominantly rural form the bottom octile. The unweighted score places Castlefields, Rowley Park and Littleworth in Stafford in the second octile whereas they are third octile when the weighting is applied. The difference is due to the octile scores received for employment

- 3.12 The scores for the LSOAs in Stafford mostly fall within the top five octiles. Exceptions to this are Weeping Cross, Queensville and the furthest extent of Doxey which are within the sixth octile using the weighted composite scores. Parts of Baswich and Walton fall within the seventh octile using both the weighted and unweighted composite scores.
- 3.13 Stone receives lower octile scores overall for access to employment and education. In the overall composite accessibility scores Stone was classified as sixth and seventh octile. Stone scores the highest for access to supermarkets followed by access to colleges. The rural parts of Stafford Borough score the highest for access to supermarkets. Access to primary schools is also good in rural areas.

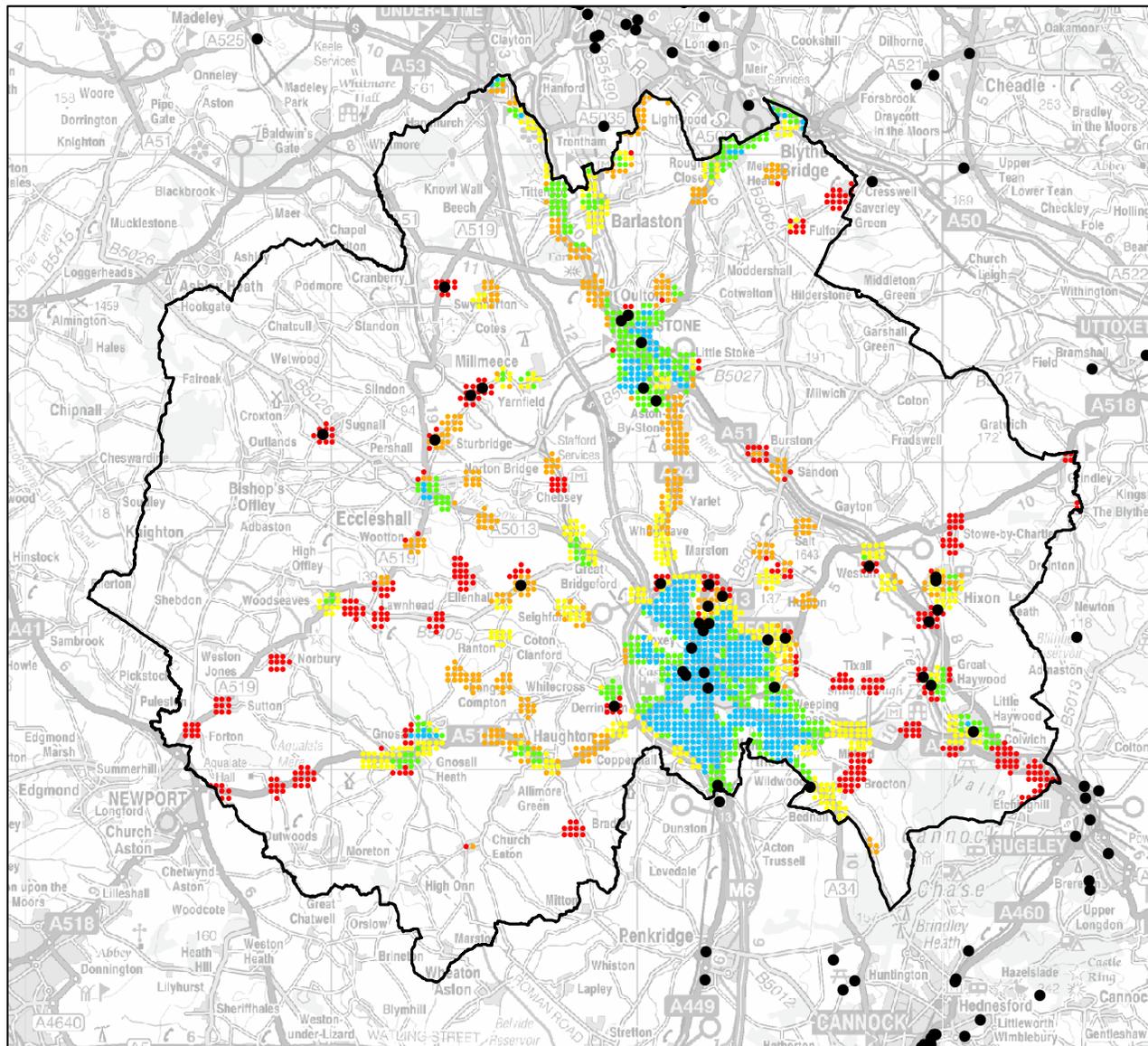
## 4. Conclusions

- 4.1 Analysis of the various accessibility calculations has built up a robust picture of those areas within the Borough that are more sustainable, in terms of access to key services using existing transport infrastructure.
- 4.2 The LSOA level composite scores highlight Stafford as most consistently having high accessibility scores. The next most accessible settlement is Stone for the majority of destinations. The journey time contour maps show that these areas experience relatively short journey times to services. In addition these locations commonly have a number of the key services in their locality enabling residents to easily access these services through walking or using public transport. Parts of Eccleshall and Gnosall also have higher rankings than the remainder of the rural area.
- 4.3 The majority of rural areas in Stafford borough consistently receive accessibility scores that fall within the bottom two octiles.
- 4.4 These findings support the Regional Spatial Strategy's (RSS) classification of Stafford as a strategic centre. The revision to the RSS identifies Stafford as a settlement of significant development and recommends that 70% of the new housing development for the Borough in the period to 2026 be located in the town. Sustainable development in terms of access to services and facilities would be challenging to deliver in the rural parts of the Borough as existing levels of public transport services are limited and few facilities are located there.

# Appendix A – Journey Time Accessibility Maps

Figure 1

Public Transport Access  
to Employment Centres  
(Bus and Rail)  
Wednesday 07:30 to 09:30 hours



- Employment Centres
- Hansen Score
- 13.61 - 9097.78      worst score
- 9097.79 - 46969.20
- 46969.21 - 205451.82
- 205451.83 - 1943120.42
- 1943120.44 - 27699689.13      best score

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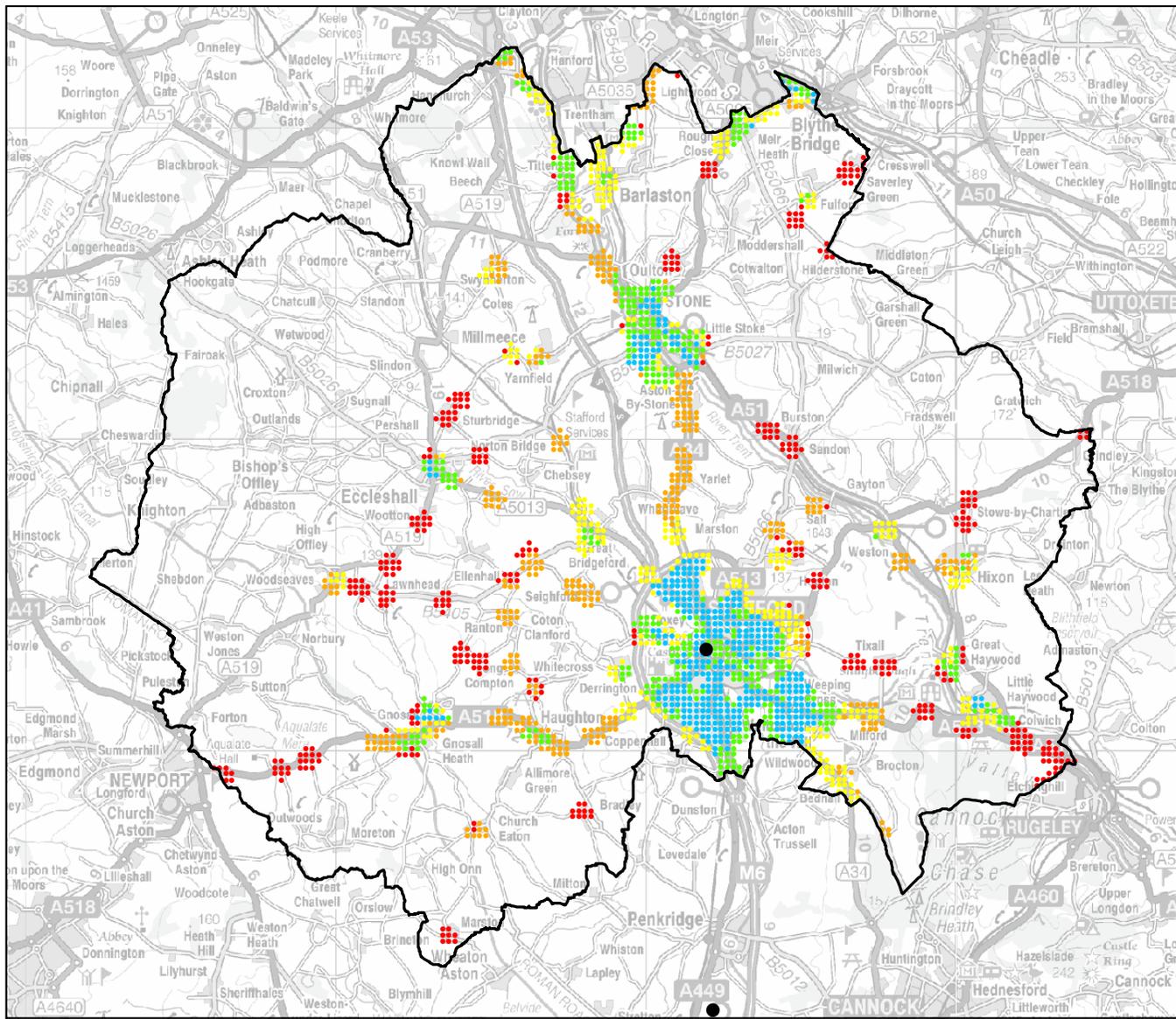


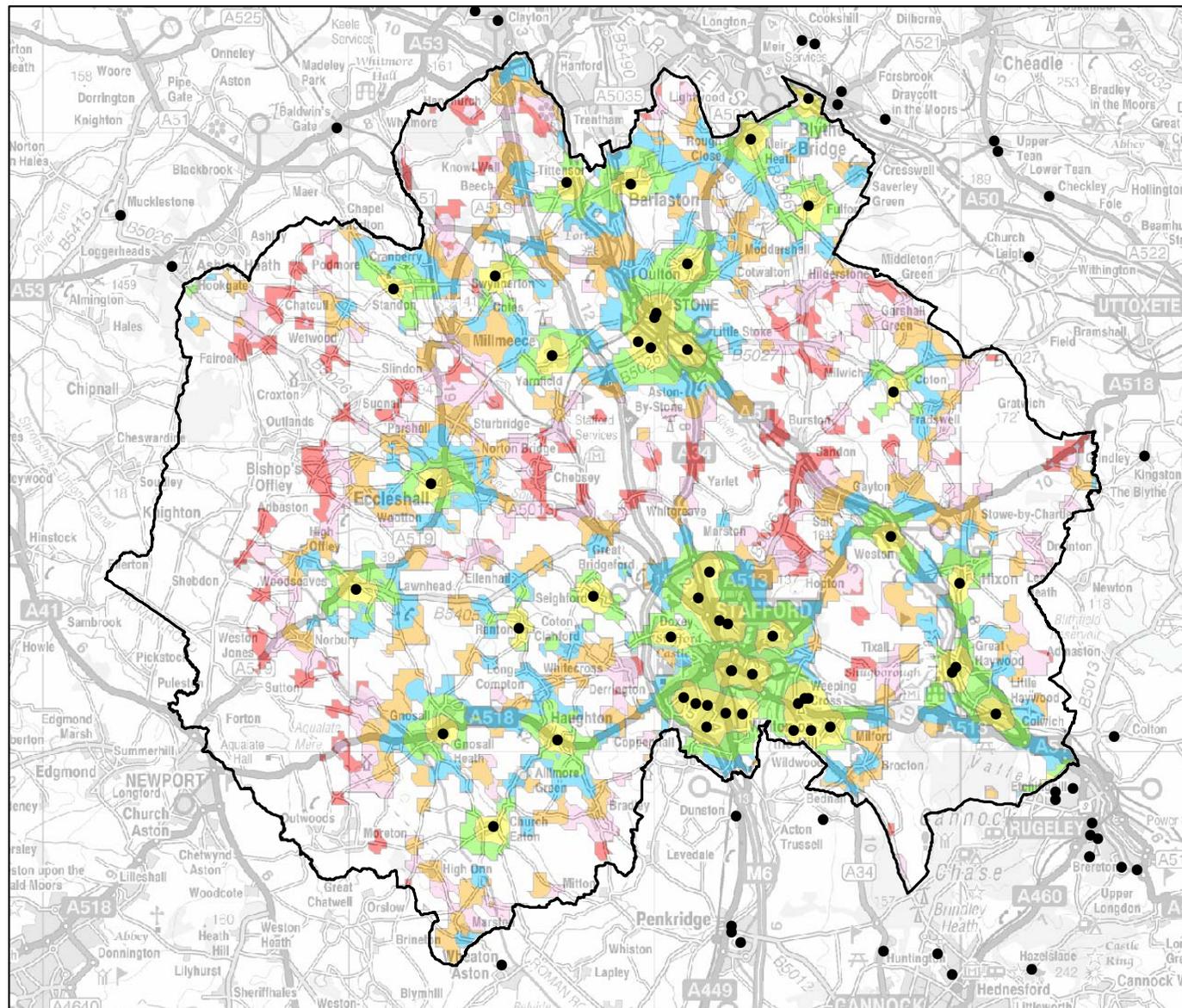
Figure 2  
 Public Transport Access  
 to Further Education Colleges  
 (Bus and Rail)  
 Wednesday 07:00 to 09:00 hours

- Further Education Colleges
- Hansen Score
- 0.21 - 1.25      worst score
- 1.26 - 5.10
- 5.11 - 24.01
- 24.02 - 147.40
- 147.41 - 1066.80      best score

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Figure 3

Walking Times  
to Primary Schools



- Primary Schools
- 10 minutes
- 20 minutes
- 30 minutes
- 40 minutes
- 50 minutes
- 60 minutes



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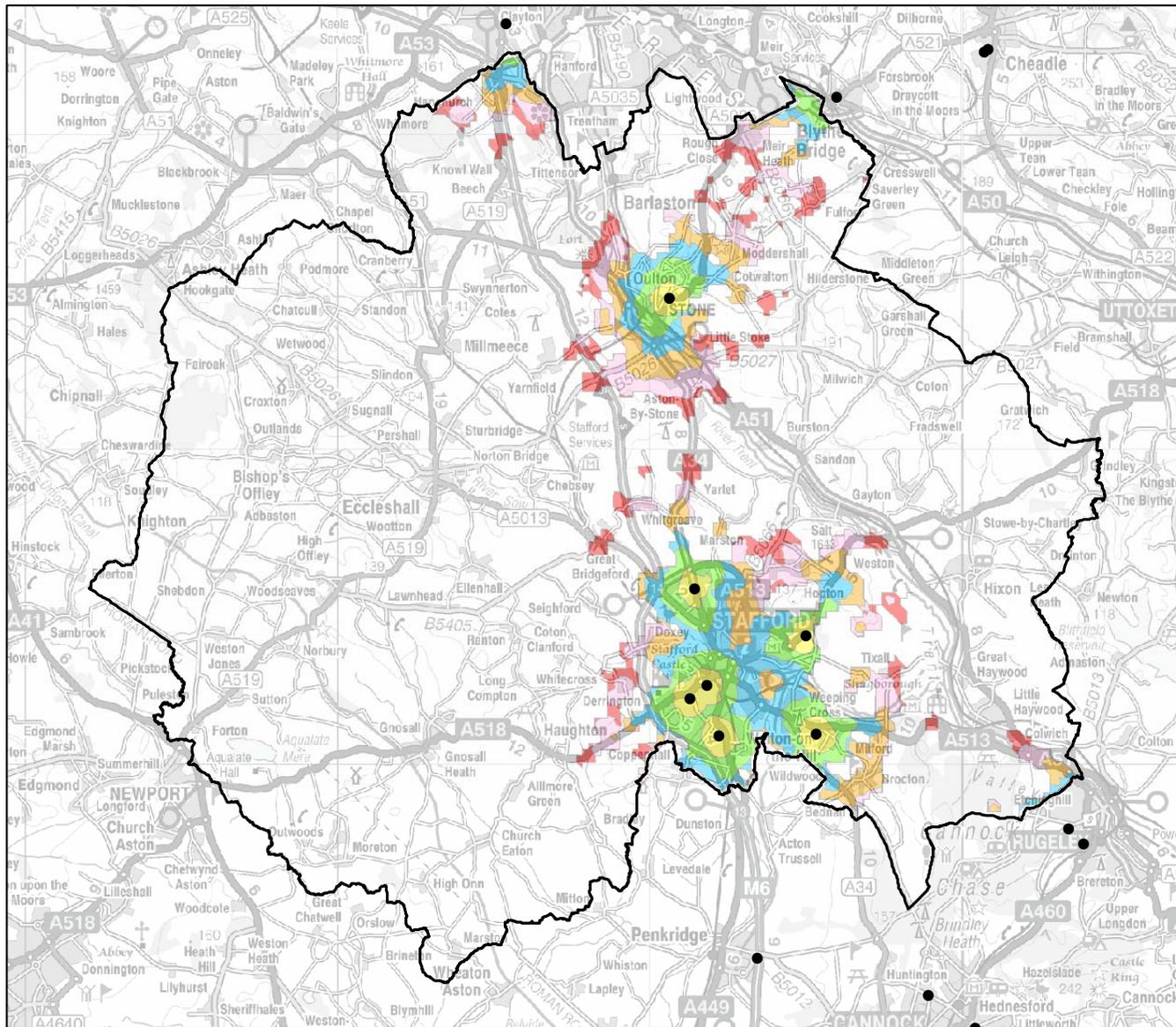


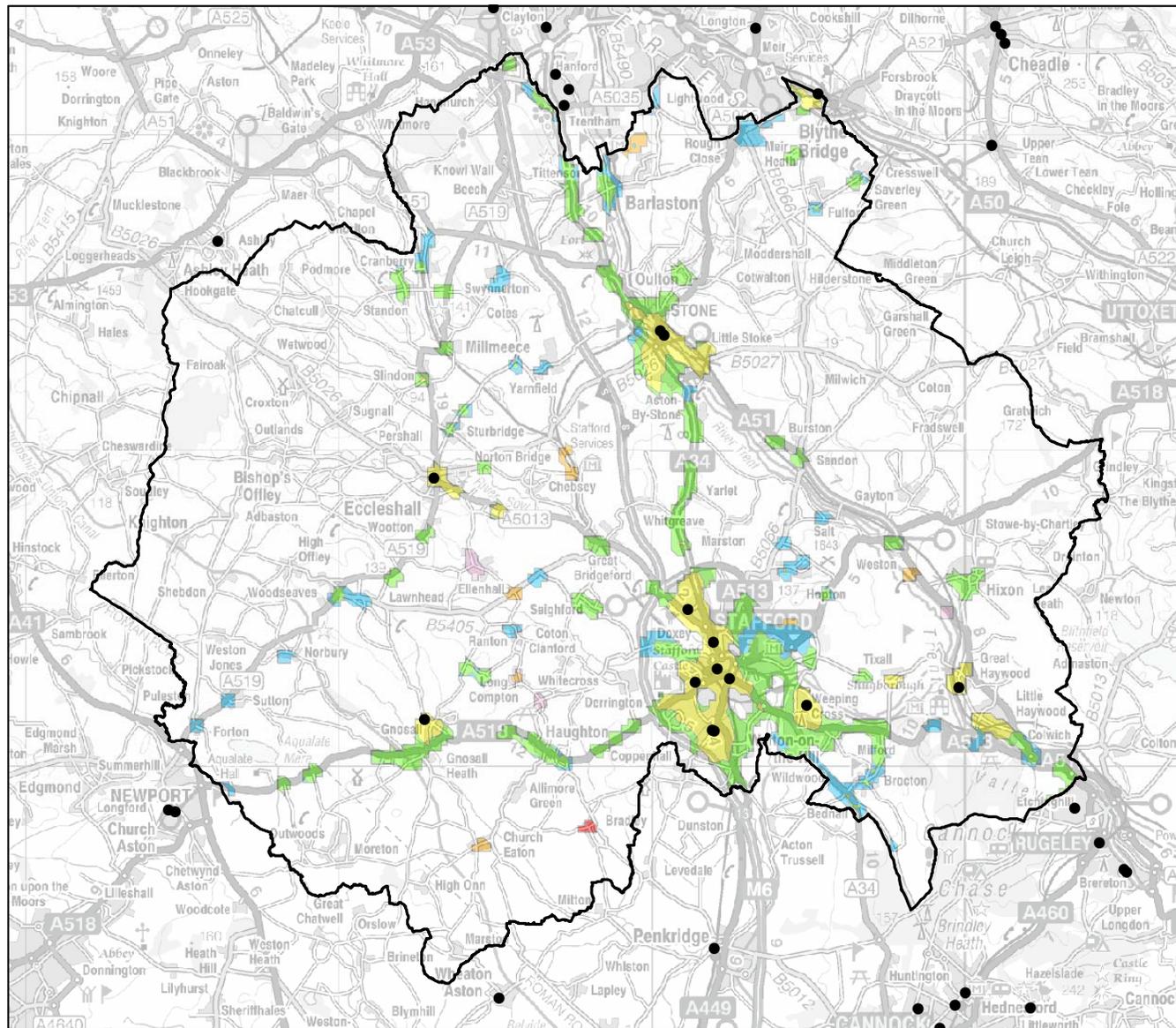
Figure 4  
Walking Times  
to Secondary Schools

- Secondary Schools
- 10 minutes
- 20 minutes
- 30 minutes
- 40 minutes
- 50 minutes
- 60 minutes

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Figure 5

Public Transport Access  
to GP Surgeries  
(Bus and Rail)  
Wednesday 08:00 to 10:00 hours



- GP Surgeries
- 10 minutes
- 20 minutes
- 30 minutes
- 40 minutes
- 50 minutes
- 60 minutes



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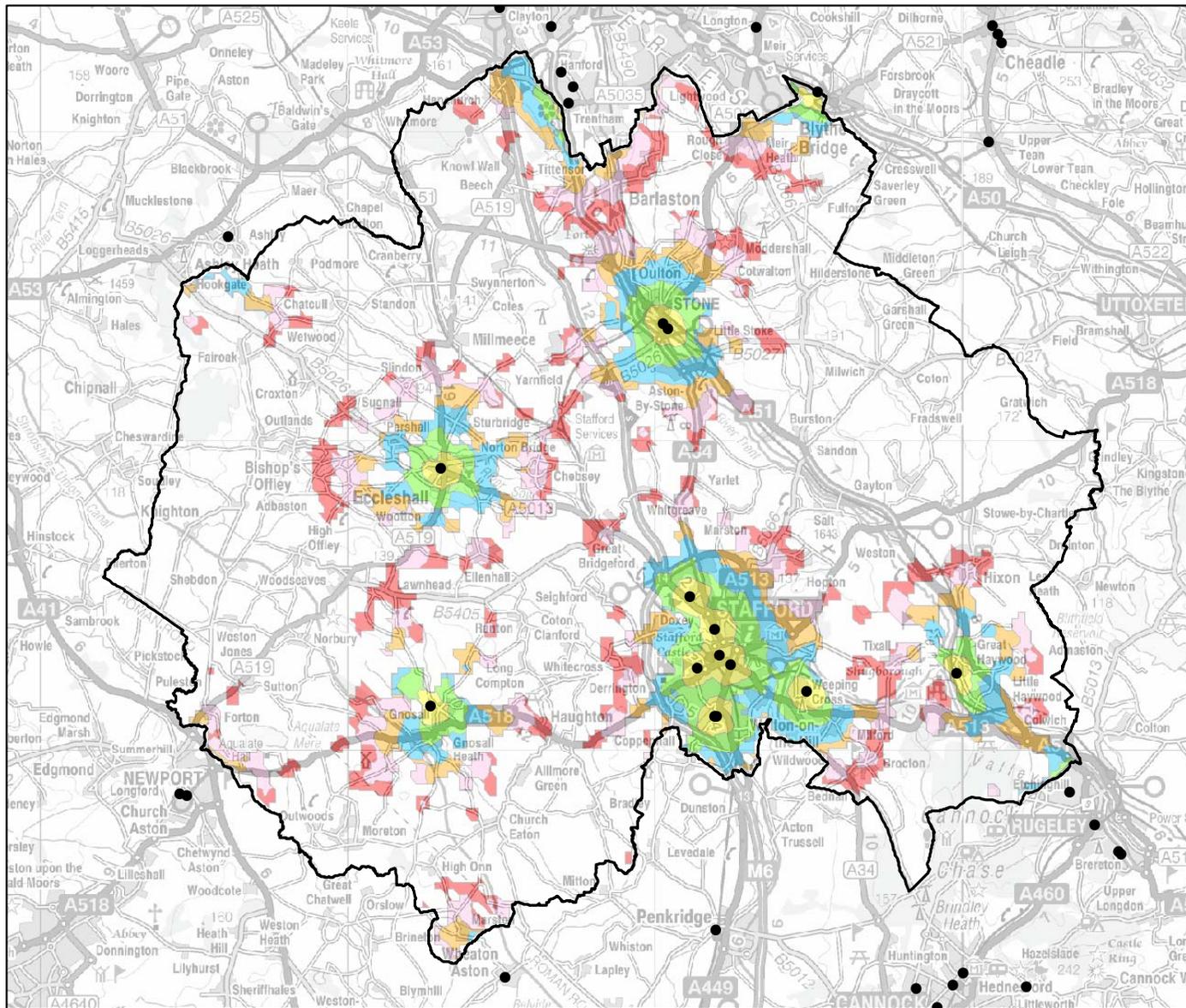


Figure 6

Walking Times to GP Surgeries

- GP Surgeries
- 10 minutes
- 20 minutes
- 30 minutes
- 40 minutes
- 50 minutes
- 60 minutes



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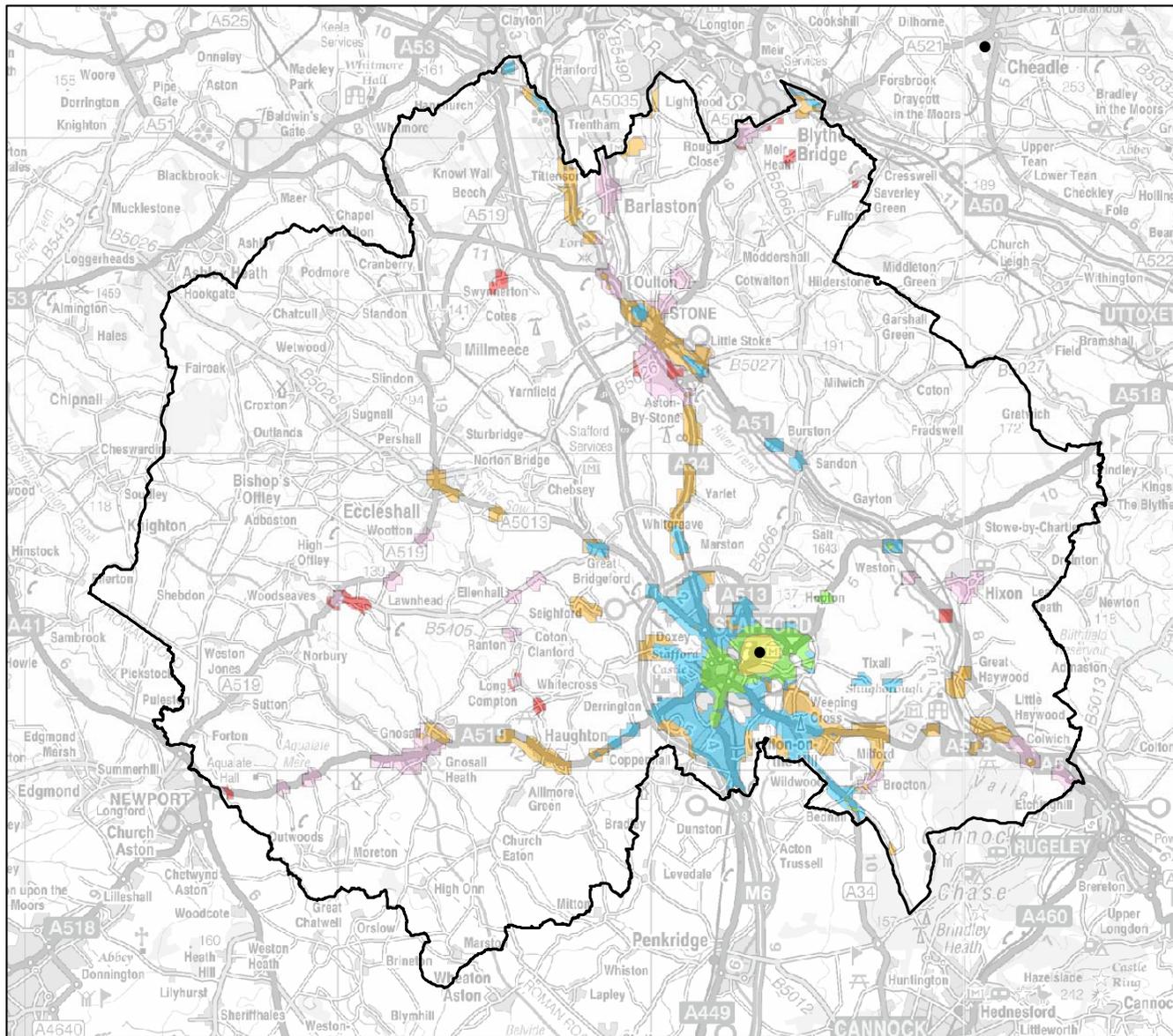


Figure 7  
 Public Transport Access  
 to Hospitals  
 (Bus and Rail)  
 Wednesday 08:00 to 10:00 hours

- Hospitals
- 10 minutes
- 20 minutes
- 30 minutes
- 40 minutes
- 50 minutes
- 60 minutes



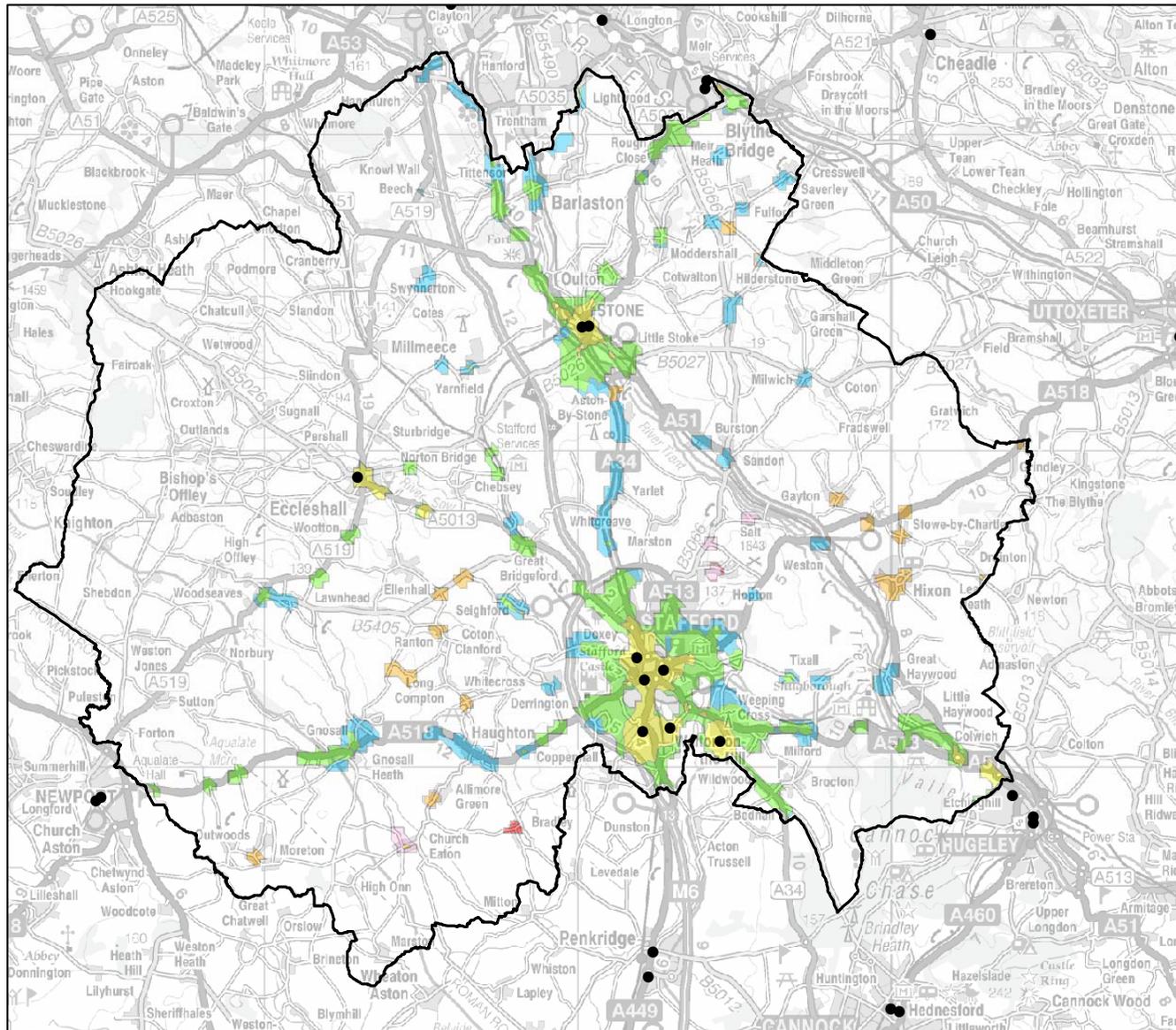
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Figure 8

Public Transport Access  
to Retail Supermarkets  
(Bus and Rail)

Wednesday 10:00 to 13:00 hours



- Retail Supermarkets
- 10 minutes
- 20 minutes
- 30 minutes
- 40 minutes
- 50 minutes
- 60 minutes



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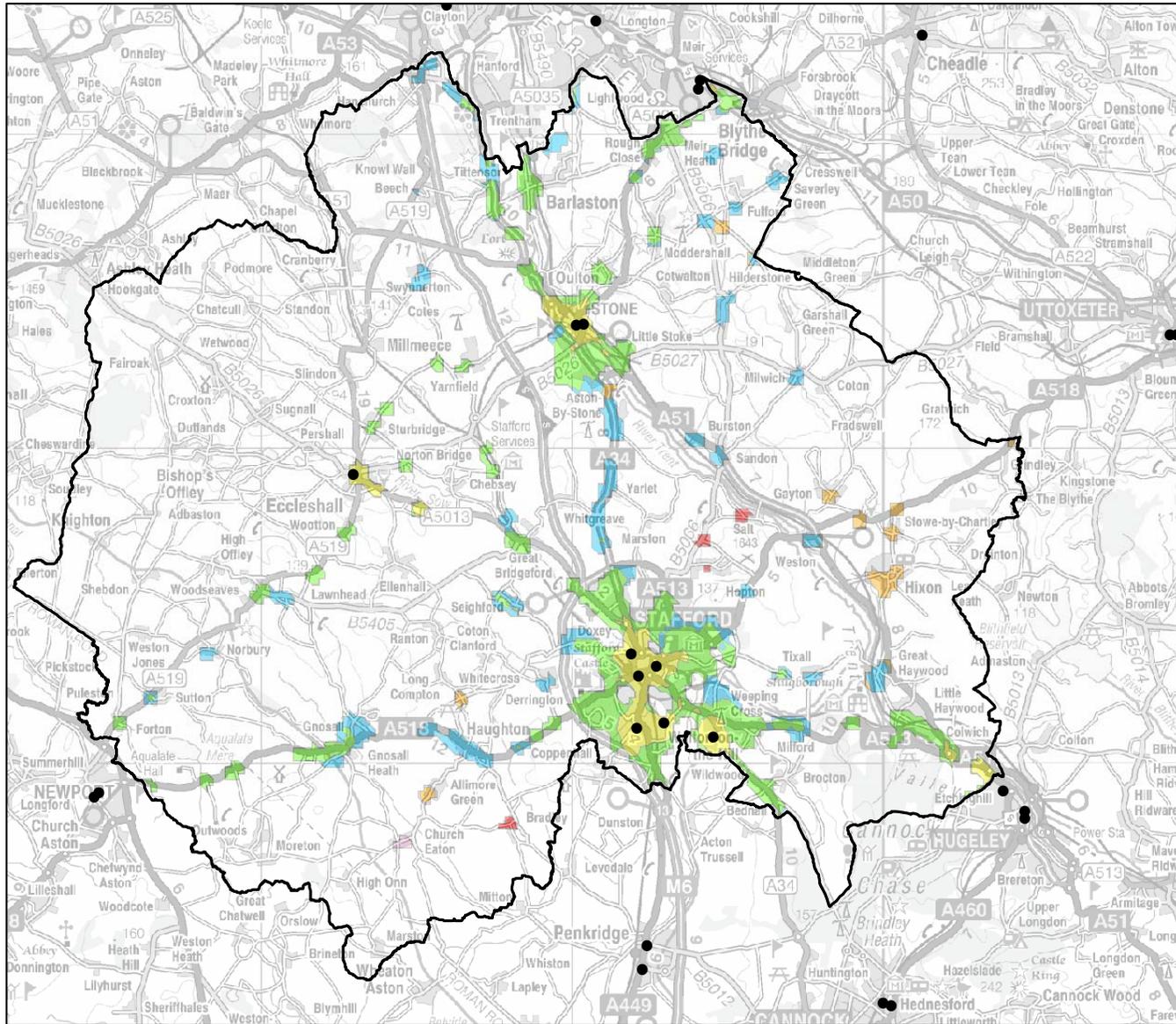


Figure 9  
 Public Transport Access  
 to Retail Supermarkets  
 (Bus and Rail)  
 Saturday 10:00 to 13:00 hours

- Retail Supermarkets
- 10 minutes
- 20 minutes
- 30 minutes
- 40 minutes
- 50 minutes
- 60 minutes

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# Appendix B – Composite Accessibility Maps

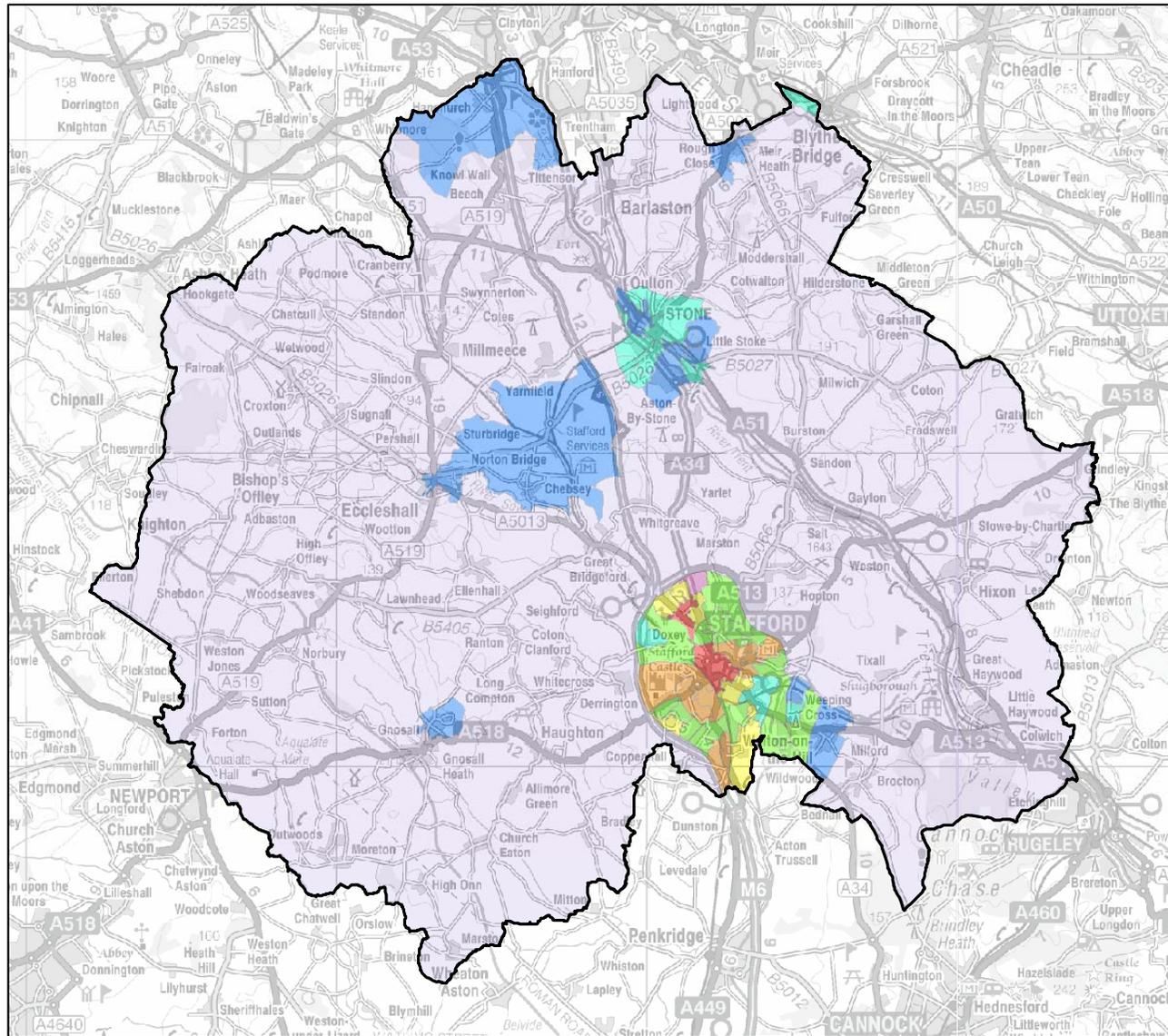
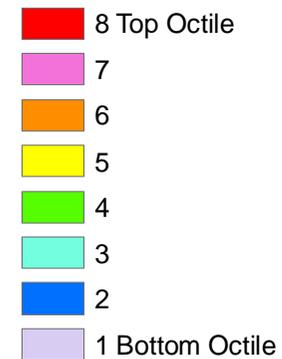


Figure 10  
Weighted Overall  
Composite Accessibility Score

Weighted Octiles



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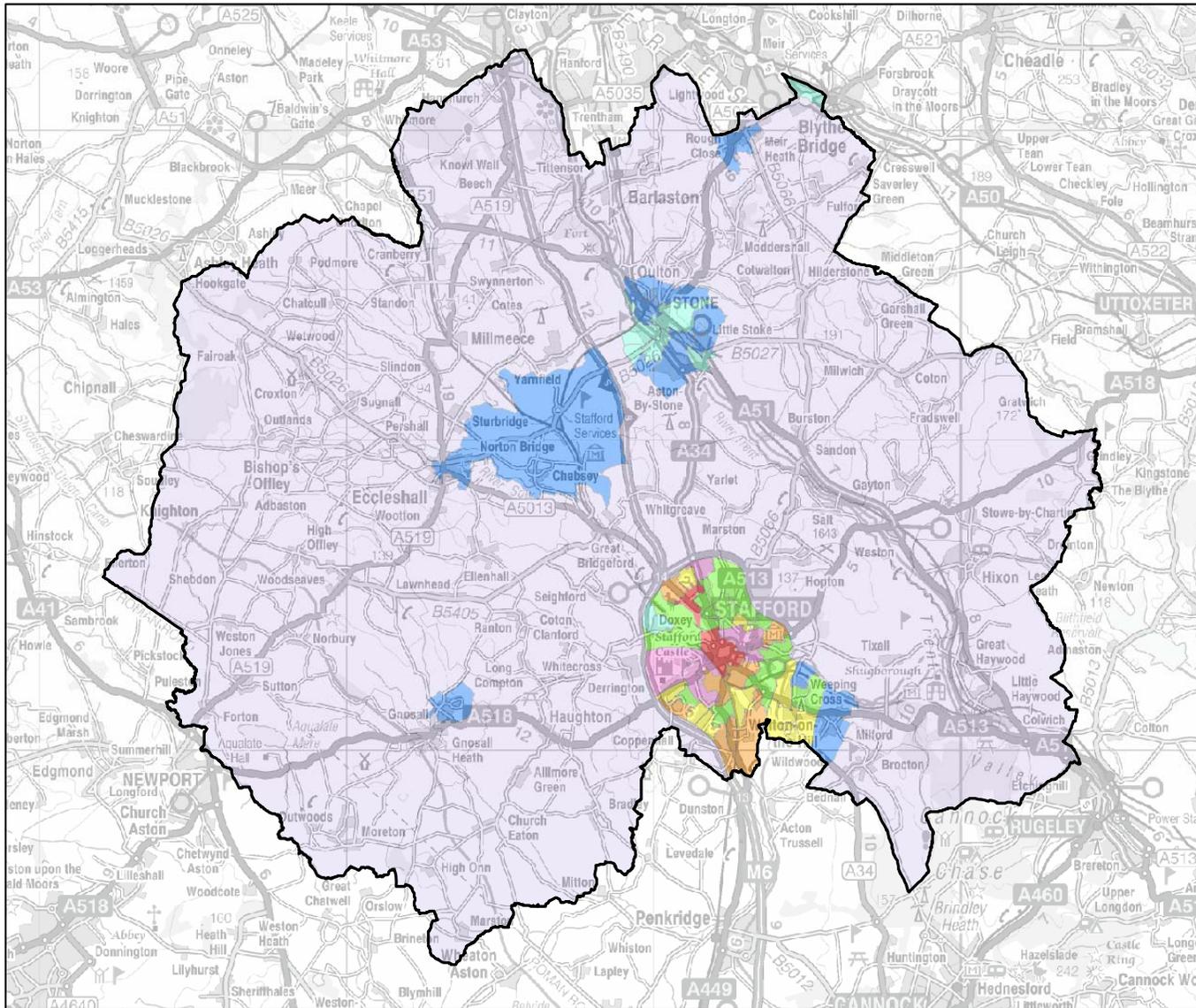


Figure 11  
Unweighted Overall  
Composite Accessibility Score



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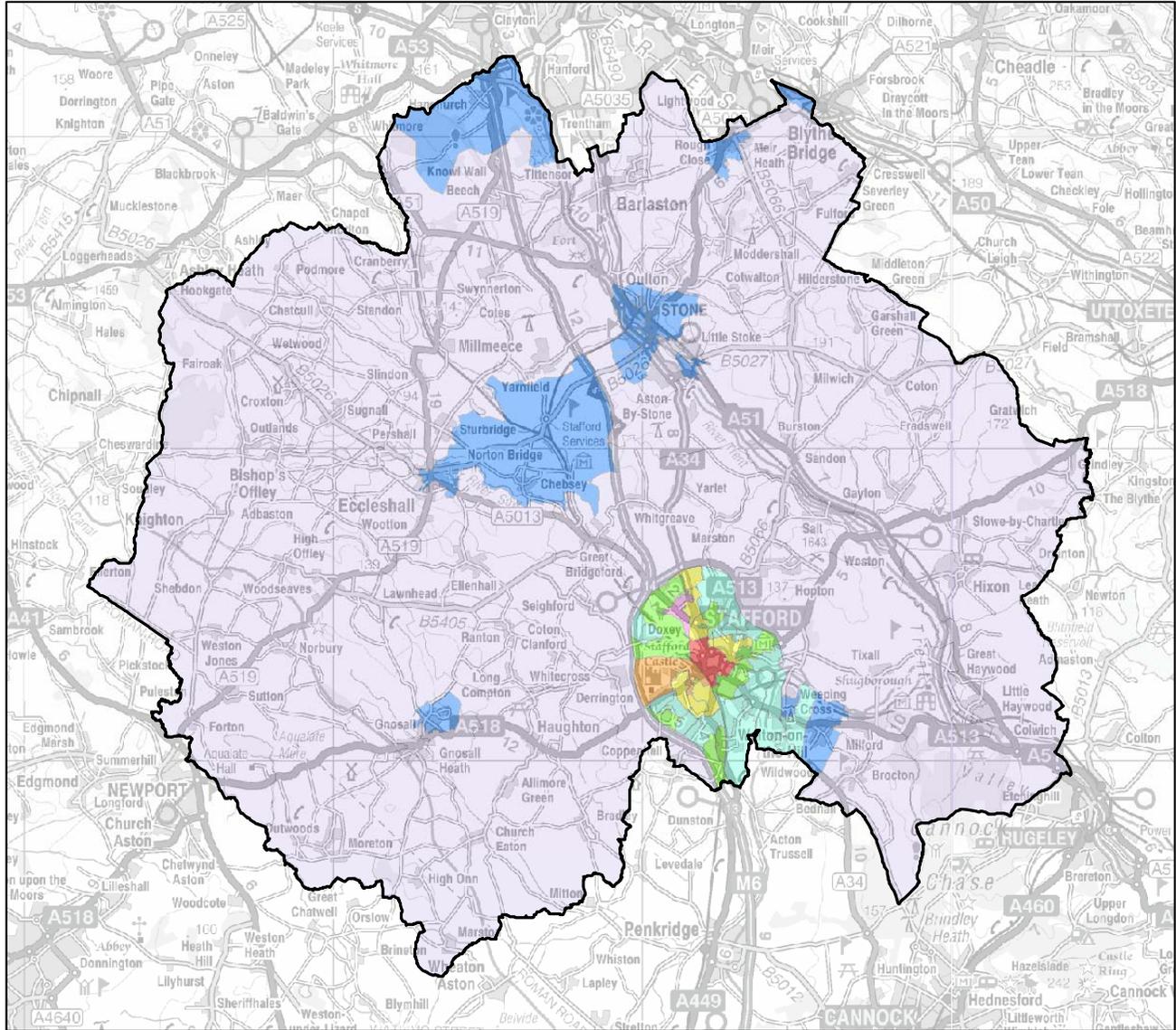


Figure 12

Public Transport Access  
to Employment Centres  
(Bus and Rail)

Wednesday 07:30 to 09:30 hours

Employment Centre Octiles

- 8 Top Octile
- 7
- 6
- 5
- 4
- 3
- 2
- 1 Bottom Octile



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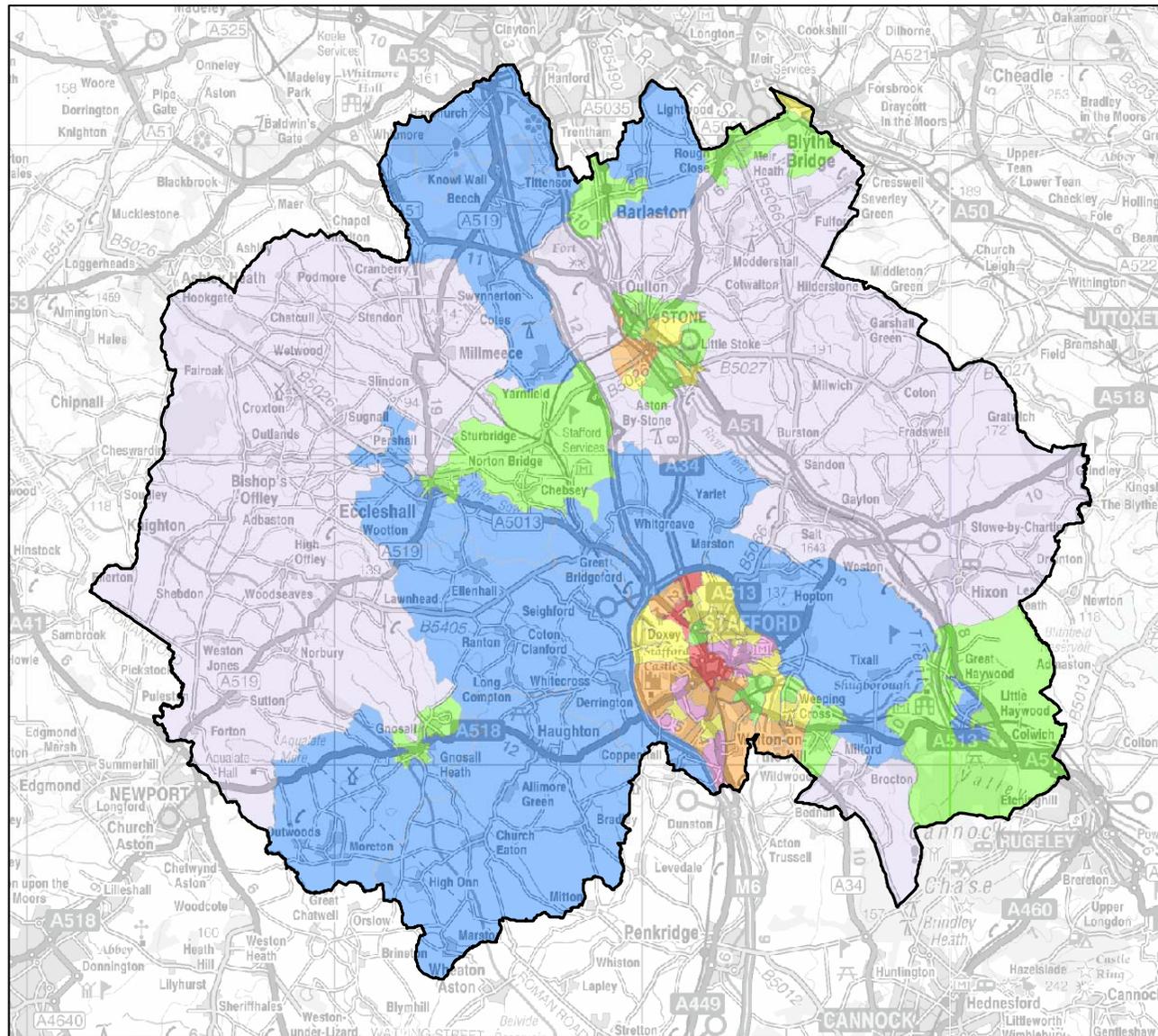


Figure 13

Public Transport Access  
to Retail Supermarkets  
(Bus and Rail)  
Saturday 10:00 to 13:00 hours

Retail Supermarket Octiles

- 8 Top Octile
- 7
- 6
- 5
- 3 - 4
- 2
- 1 Bottom Octile



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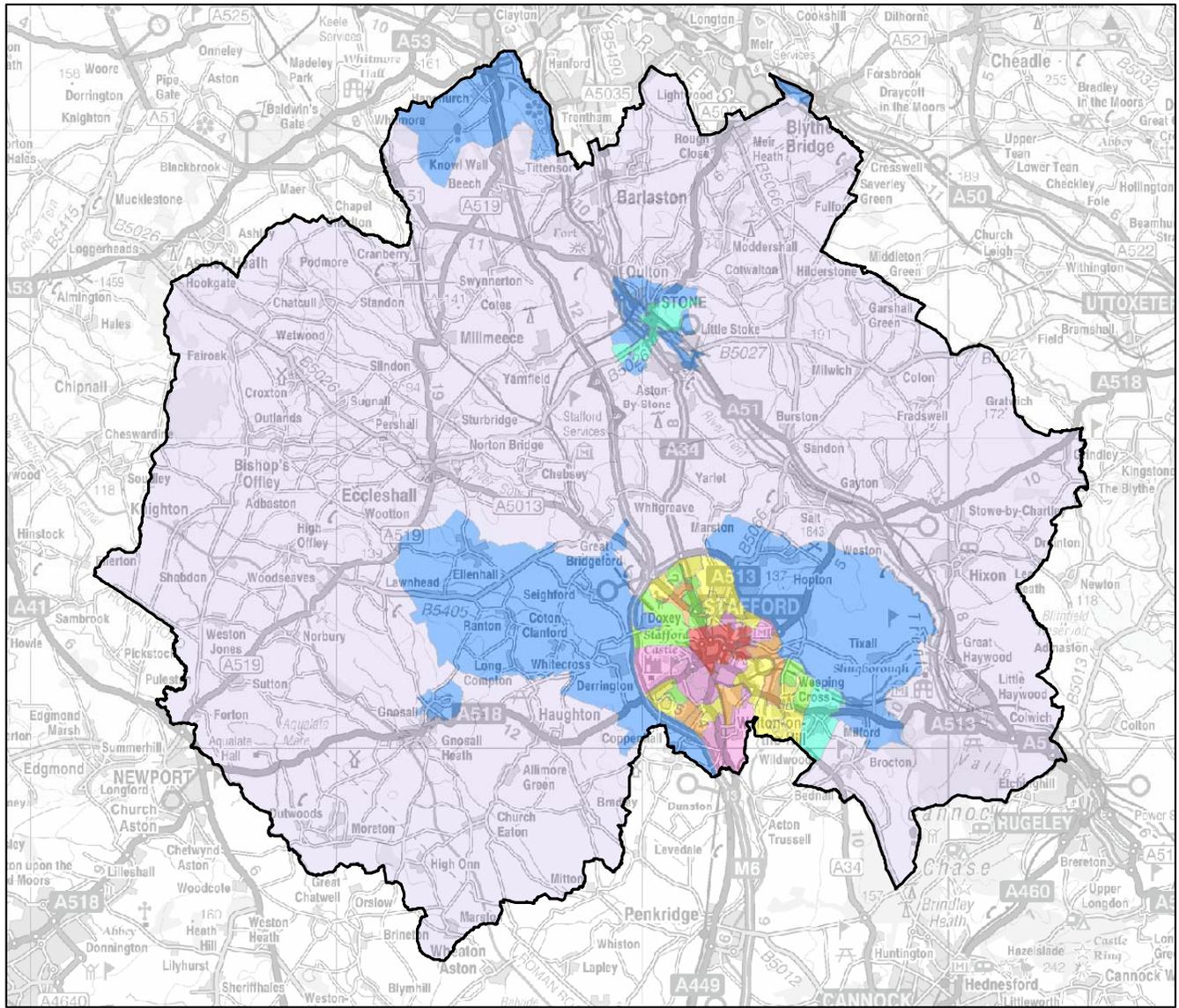


Figure 14  
Education  
Composite Accessibility Score

Education Octiles

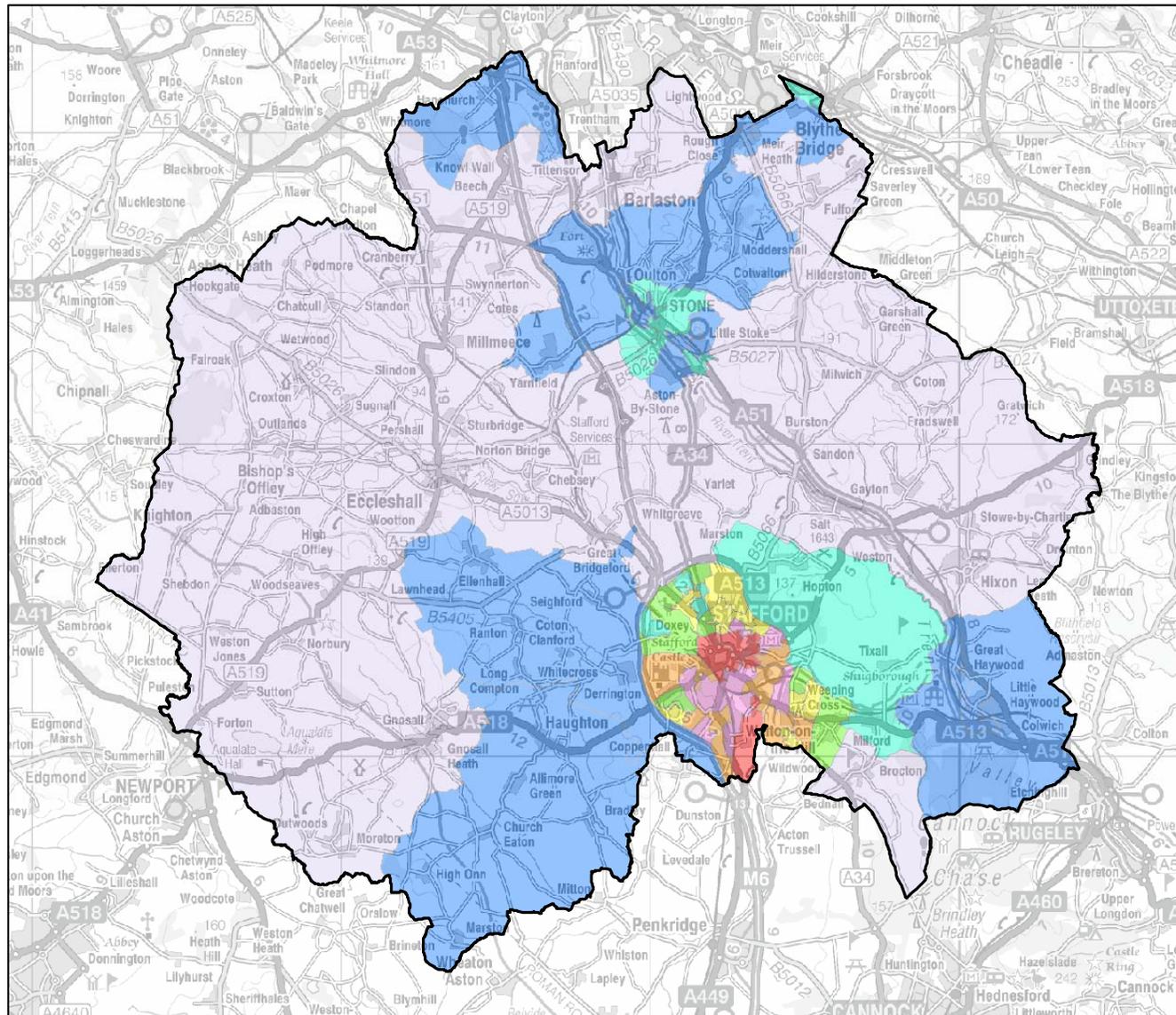
- 8 Top Octile
- 7
- 6
- 5
- 4
- 3
- 2
- 1 Bottom Octile



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Figure 15  
Walking Access  
to Primary Schools



Primary School Octiles

- 8 Top Octile
- 7
- 6
- 5
- 4
- 3
- 2
- 1 Bottom Octile



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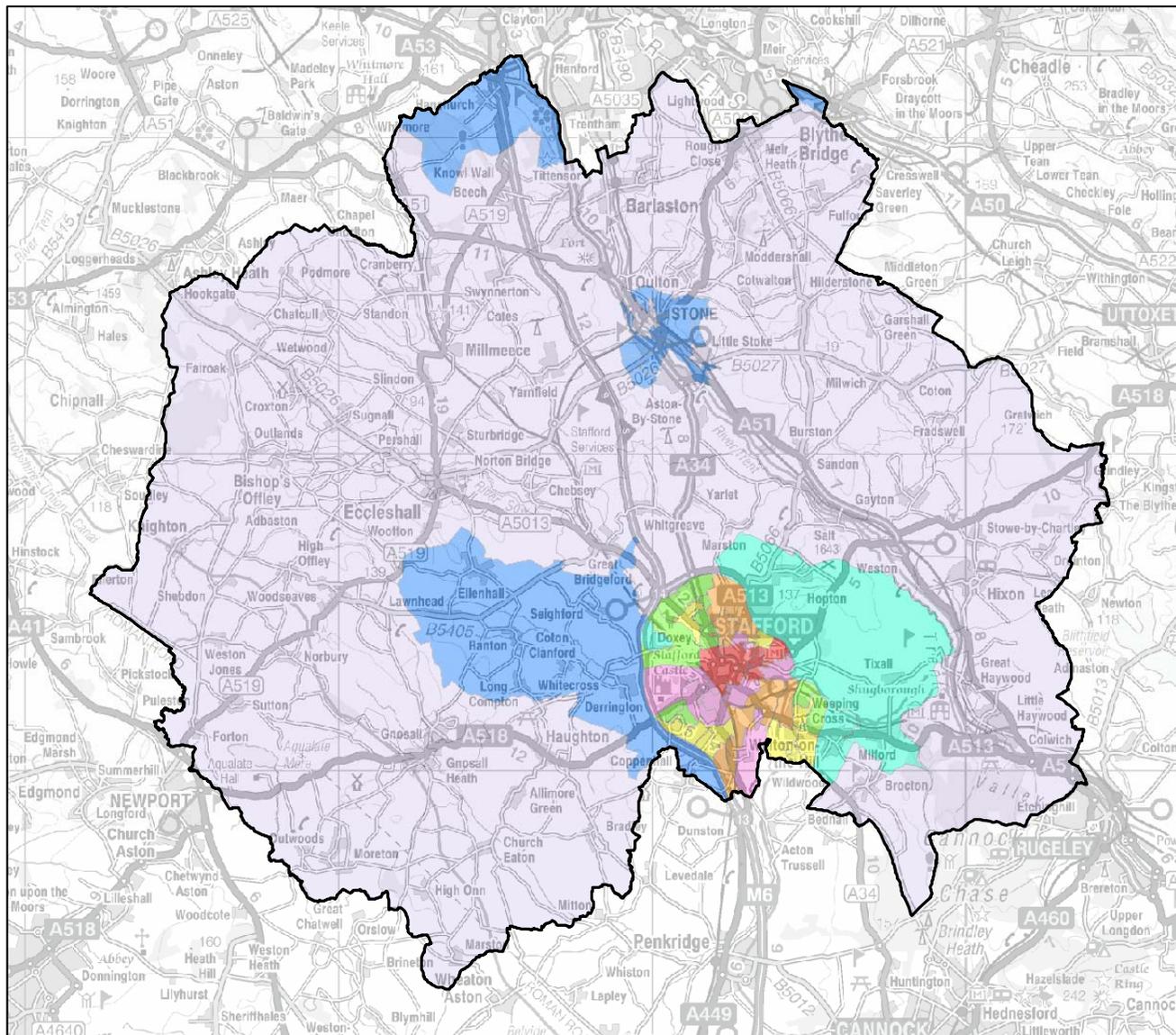


Figure 16

Walking Access  
to Secondary Schools

Secondary School Octiles

- 8 Top Octile
- 7
- 6
- 5
- 4
- 3
- 2
- 1 Bottom Octile

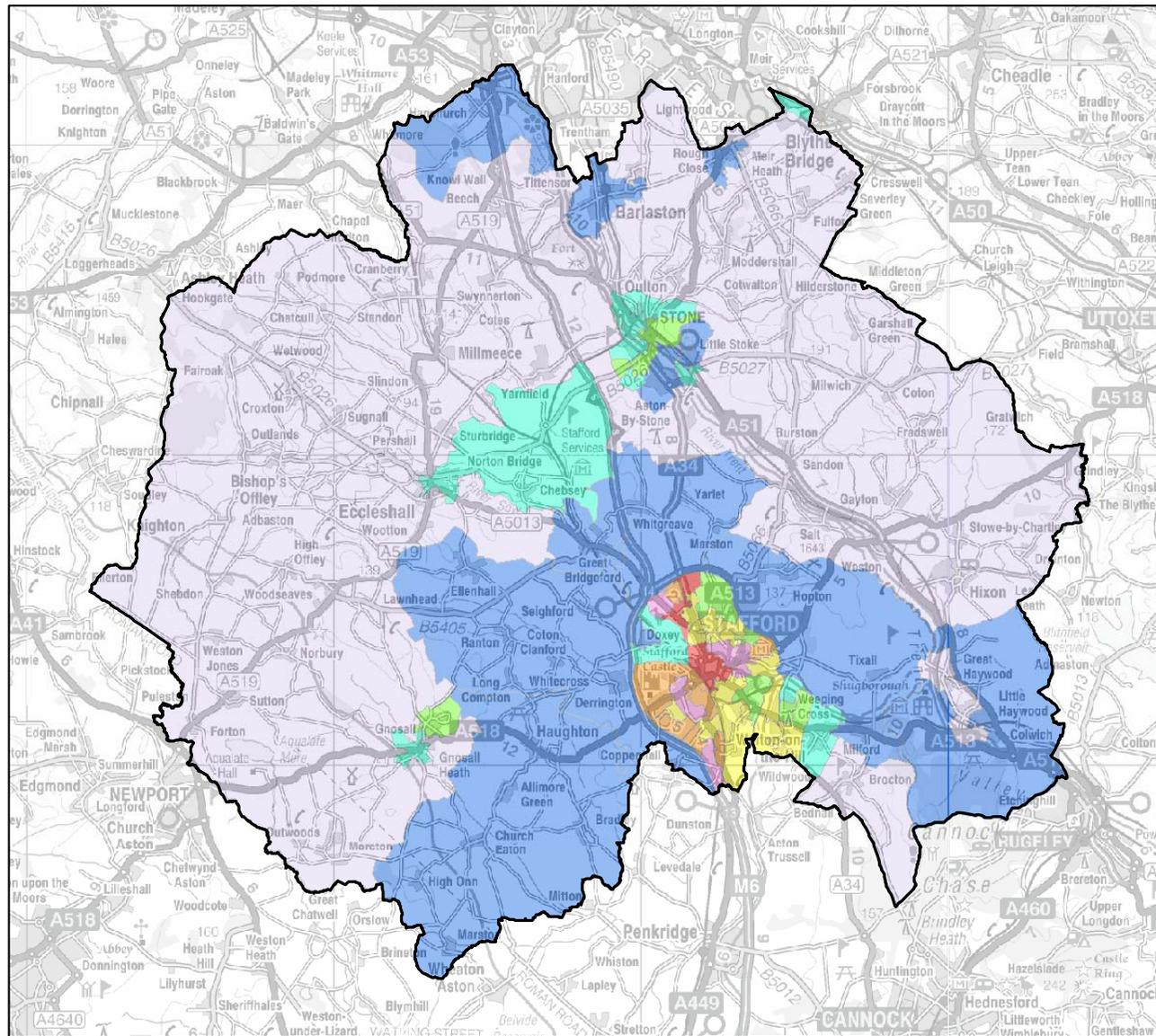


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Figure 17

Public Transport Access  
to Further Education Colleges  
(Bus and Rail)  
Wednesday 07:00 to 09:00 hours



Further Education College Octiles

- 8 Top Octile
- 7
- 6
- 5
- 4
- 3
- 2
- 1 Bottom Octile



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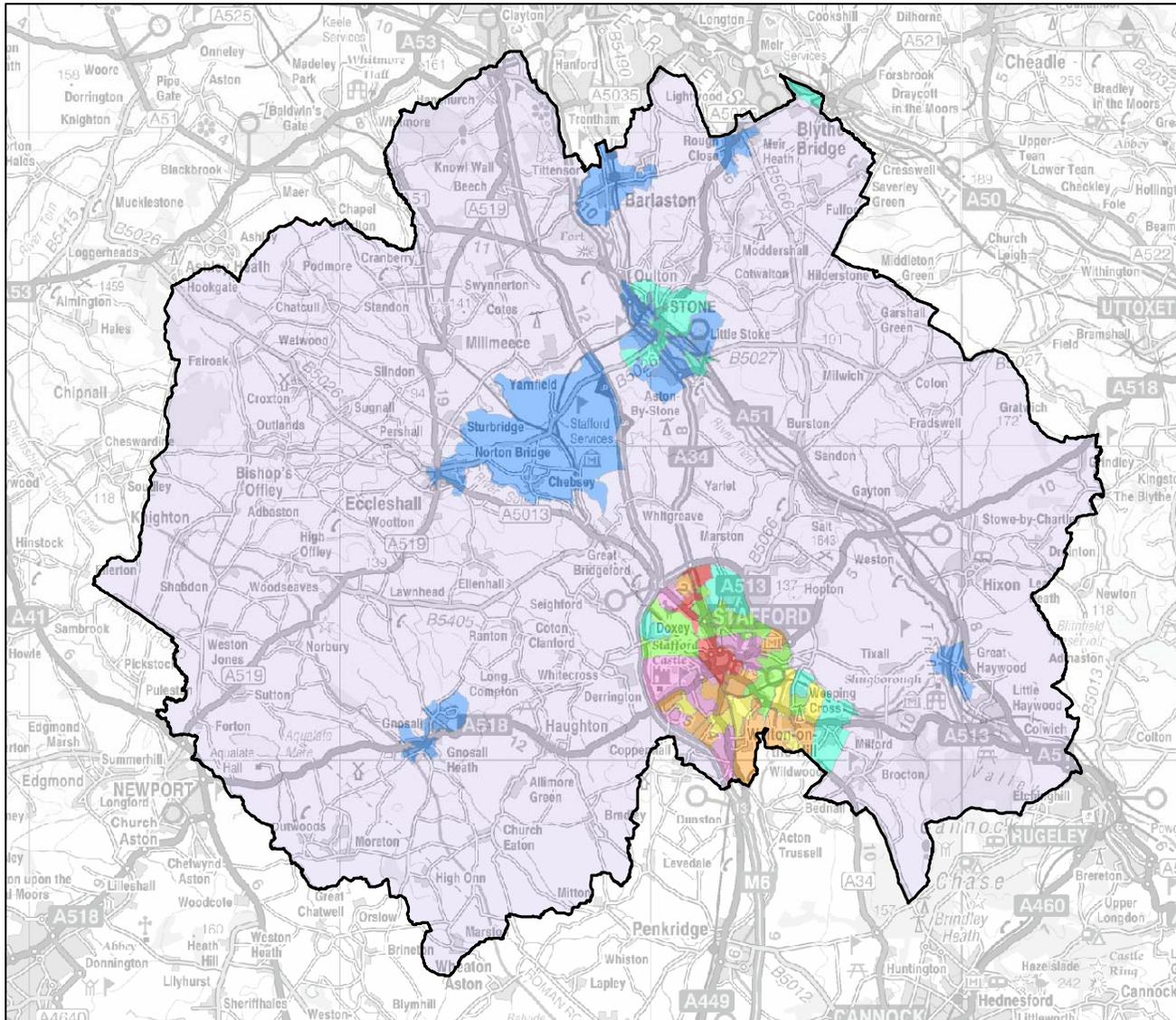


Figure 18  
Healthcare  
Composite Accessibility Score

Healthcare Octiles

- 8 Top Octile
- 7
- 6
- 5
- 4
- 3
- 2
- 1 Bottom Octile



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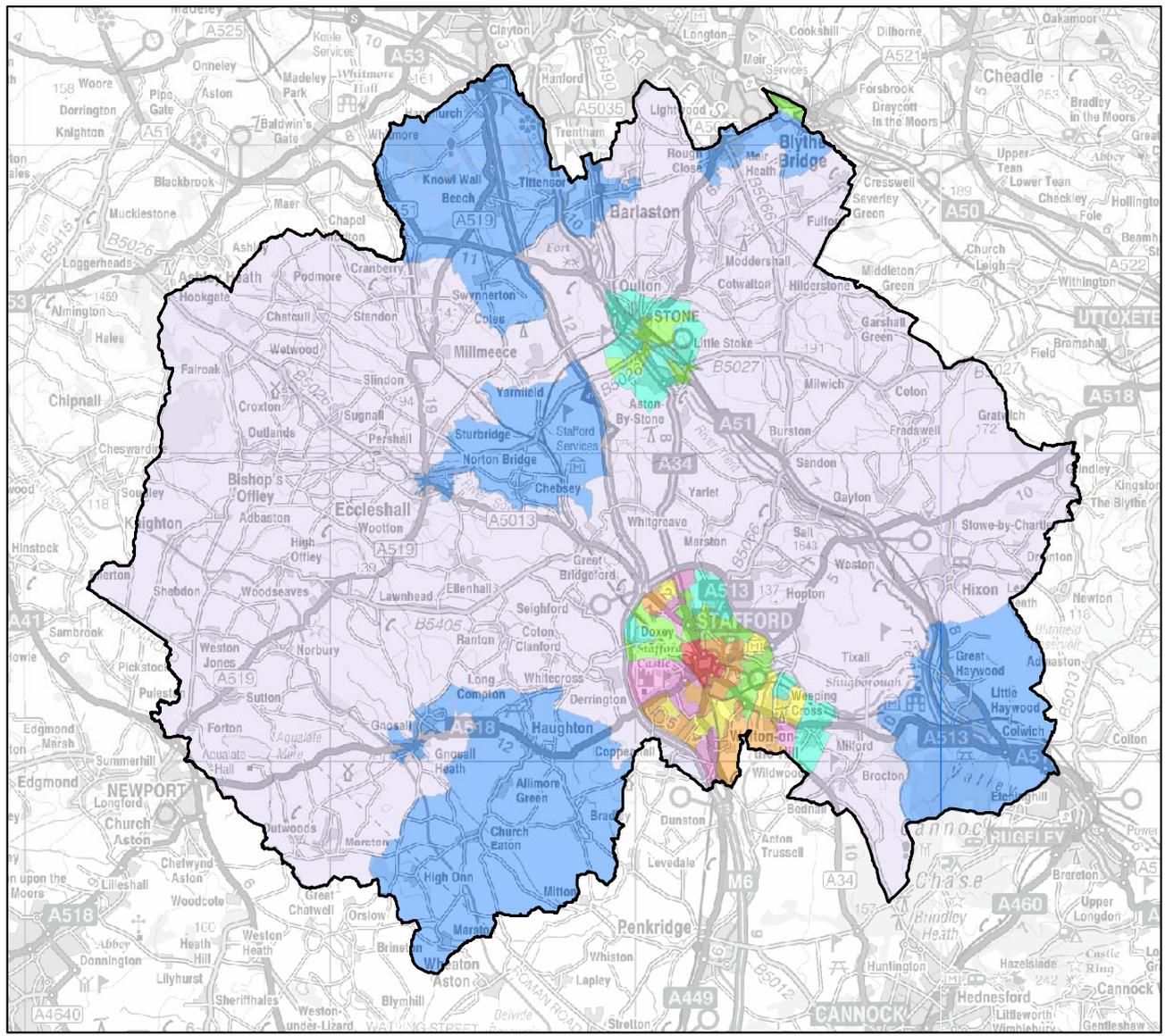


Figure 19

Public Transport Access  
to GP Surgeries  
(Bus and Rail)  
Wednesday 08:00 to 10:00 hours

GP Surgery Octiles

- 8 Top Octile
- 7
- 6
- 5
- 4
- 3
- 2
- 1 Bottom Octile



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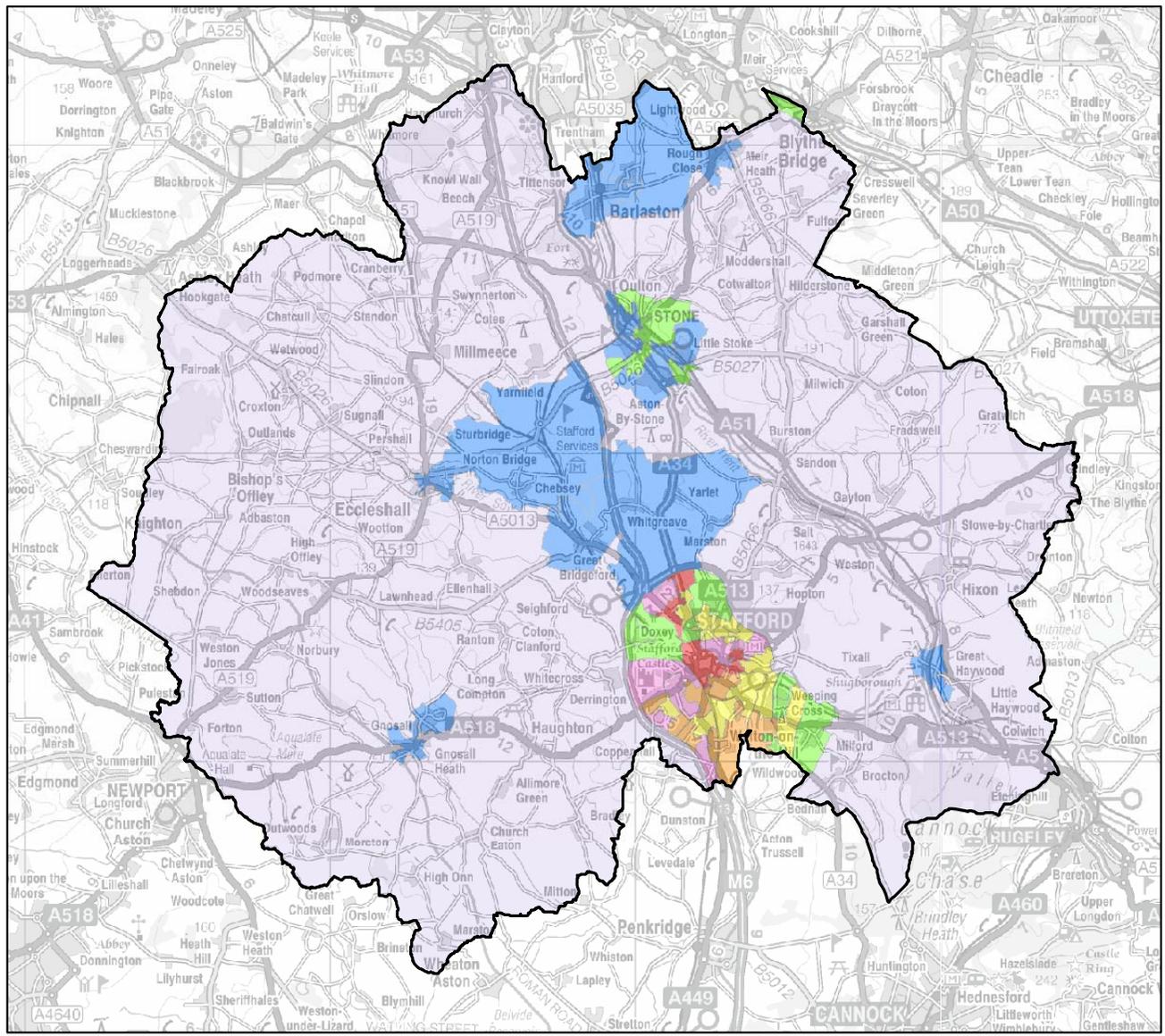
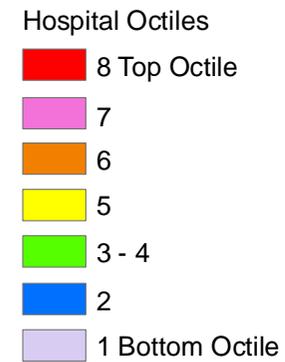


Figure 20

Public Transport Access  
to Hospitals  
(Bus and Rail)  
Wednesday 08:00 to 10:00 hours



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