



North Yorkshire County Council and Selby
District Council

SELBY STRATEGIC MODEL UPDATE

Stage 1 Results Summary





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WSP

Three White Rose Office Park
Millshaw Park Lane
Leeds
LS11 0DL

Phone: +44 113 395 6200

Fax: +44 113 395 6201

WSP.com



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1 INTRODUCTION AND SCOPE OF WORK

- 1.1.1. North Yorkshire County Council (NYCC) along with Selby District Council (SDC) requested WSP to undertake the updating of the existing Strategic Highway Model (SHM) for the Selby Town area to support the development of the Selby District Council's new Local Plan (SDLP).
- 1.1.2. The SDLP outlines the district's targets for employment and housing growth over the next 20 years, and is currently in preparation by SDC.
- 1.1.3. The earlier SATURN model focused mainly on Selby Town area whereas the Selby District Local Plan covers the entire district, implying that additional modelling will be required as part of the Evidence Base for the Local Plan at an Examination in Public.
- 1.1.4. Hence NYCC and SDC have commissioned WSP to provide support for the new Local Plan for Selby outlining the following work;
 - I. Strategic transport modelling to identify the impacts of growth on the levels of traffic and congestion, both with and without measures to mitigate it.
 - II. An infrastructure delivery plan (IDP) to identify what infrastructure is needed to enable this growth to take place and set out how it will be delivered.
 - III. A viability assessment of the local plan to confirm sites allocated in the plan are viable and deliverable. This will also help identify any funding gaps that will have to be bridged through securing other sources of funding.
- 1.1.5. The scope of work outlined within the brief is listed below
 - I. Produce a strategic transport model to reduce, to an acceptable level, the risk of the outputs being open to legal challenge.
 - II. Use the transport model to:
 - a. establish the baseline position in relation to traffic movements
 - b. Model future years (principally 2040) with 'committed' development and infrastructure (i.e. the 'do minimum' case)
 - c. Model future years (principally 2040) with 'committed' development and 'required' infrastructure to mitigate the effects of development (this ultimately will be set out in the Infrastructure Delivery Plan) i.e. the 'do something' case.
 - III. Using work from the Selby DC Viability Study to identify the infrastructure funding gaps.
- 1.1.6. It is likely that the above will be iterative (requiring several iterations) because of:
 - i Site allocations may change following consultation (additional 'further sites consultation' yet to be confirmed);
 - i The affordability (effects on viability) of the 'required infrastructure' tested through the local plan site viability work.
- 1.1.7. The Local Plan is proposed to be developed in two stages namely;

- i The Local Plan Preferred Options draft will be available for consultation January – February 2021. This will require reporting to Members in December 2020;
 - i The submission draft Local Plan will be available for consultation in January – February 2022 with reporting to Members in December 2021.
- 1.1.8. An inception note was agreed in February 2020 wherein a methodology and approach was agreed with SDC and NYCC.
- 1.1.9. The inception note was based on WSP's discussion with SDC and NYCC and proposed to undertake the required modelling work in two stages, namely;
- i Stage 1: Identify locations where the network is constrained or is likely to become constrained within the Local Plan period – this work will be based on the existing Selby Traffic Model and will provide the transport evidence base for the Preferred Options Draft of the Local Plan;
 - i Stages 2 and 3: Detailed model build – 2021 Base year update and Future year model build (2040DM and 2040DS) – a more detailed model build will be required to provide the transport evidence base for the Draft Local Plan but the extent of the requirement for more detailed modelling will only become clear once the Preferred Options Draft has been prepared.
- 1.1.10. The objective / deliverable for Stage 1 is to undertake a high-level assessment to
- i identify areas within Selby District which are most likely to experience higher levels of congestion and
 - i identify those potential development locations where the constraints of the highway network may prevent the development and, as such, they may not warrant further consideration as part of the Local Plan.
- 1.1.11. Key assumptions / exclusions for Stage 1 as highlighted in the inception report were:
- i SDC/ NYCC to provide development log summarising the committed developments and future year developments to be included within 2040DM and 2040DS scenarios. We understand that currently, as these developments are being confirmed as part of Local Plan Preferred Options draft, there might be some uncertainty in the developments which fall in the above categories;
 - i SDC/ NYCC to provide development details, like land use, trip rates or trips, spreads of development, number of jobs a development is expected to generate;
 - i The forecast models are based on the developments currently identified (and used) within the current version of the development log developed as part of this exercise. We understand that it is likely to change depending on the outcome of the consultation of the draft local plan currently scheduled around January 2021.
 - i SDC / NYCC to provide information on committed infrastructure/ highway schemes to be included within the various scenarios if available;
 - i WSP has allowed for modelling requirements only. No design or identification of mitigation and local model development (like individual junction modelling) has been included as part of Stage 1 work.
- 1.1.12. Copy of the scoping note and the inception report is included in Appendix A.

2 OVERVIEW OF BASE YEAR MODEL

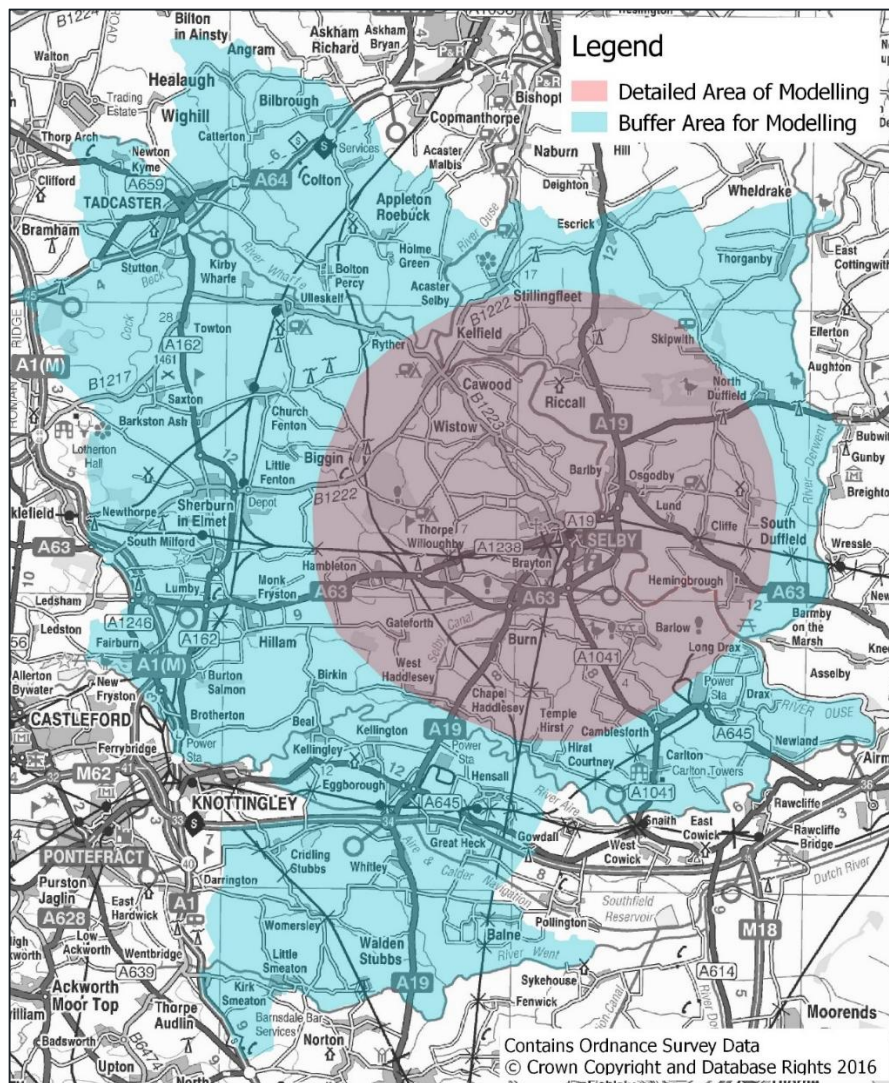
2.1 BACKGROUND

- 2.1.1. NYCC and SDC commissioned WSP (previously Mouchel) to produce an updated traffic model for Selby reflective of 2016 travel demands and to test a future year Reference Forecast in line with the Local Plan period of 15 years.
- 2.1.2. The existing model was developed to allow SDC to test the transport impacts of possible development sites and infrastructure improvements included in the Local Plan / PLAN Selby.
- 2.1.3. PLAN Selby is the Sites and Policies Local Plan which Selby District Council (SDC) has been developing to deliver the strategic vision outlined in the Core Strategy (adopted in 2013).

2.2 EXISTING TRAFFIC MODEL

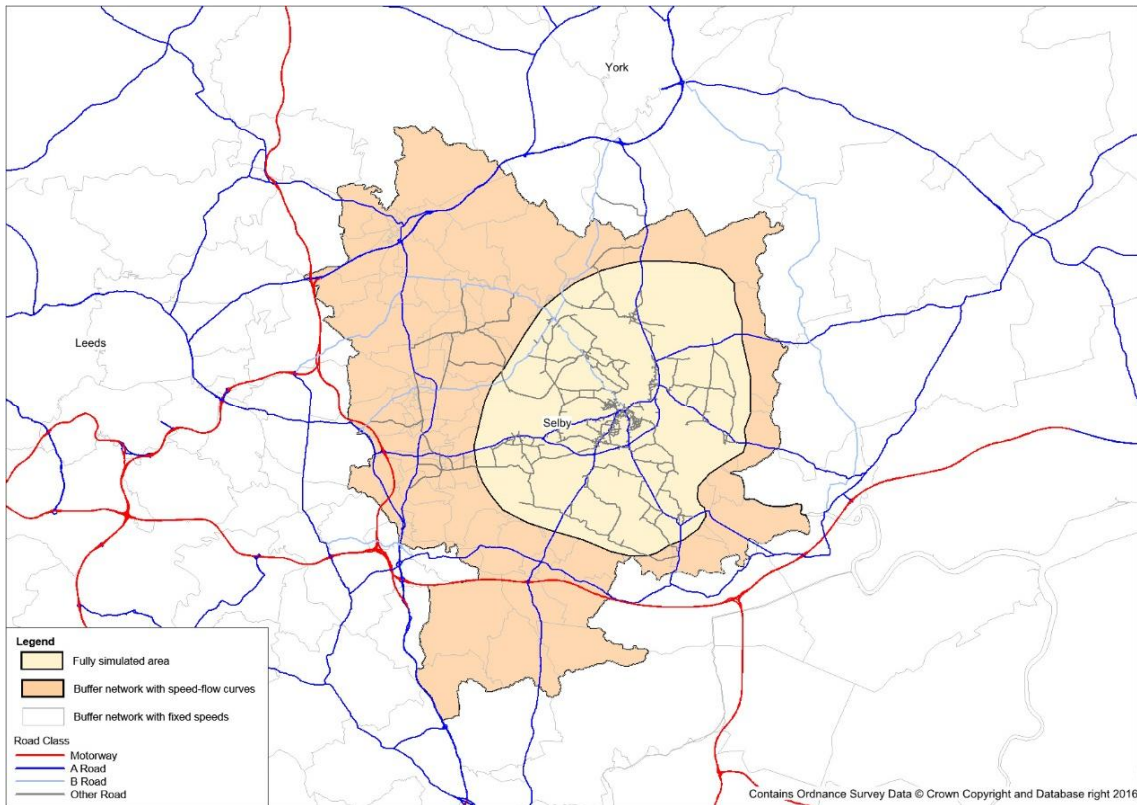
- 2.2.1. Figure 2-1 below shows the extents of the simulation and buffer areas in the model.

Figure 2-1 - Study area for existing Selby town model



- 2.2.2. An area has been defined around Selby town centre extending to Cawood to the north west of the town and Hemingbrough to the south east. This is the area referred to as the ‘fully modelled area’ (FMA) in accordance with TAG Unit M3-1. It provides a sufficient area of detailed modelling to allow developments to be rigorously tested within and in proximity to Selby town centre.
- 2.2.3. It should be noted that although the junctions in the ‘buffer area’ have not been modelled in as much detail as in the FMA, the model accurately assesses route choice. The ‘buffer area’ thus provides an accurate assessment of route choice to / from the FMA (i.e. Selby), but does not provide a detailed assessment of those junctions.
- 2.2.4. Beyond Selby District lie those areas which are modelled in respect of their interaction with Selby but do not provide full coverage of flows between localised areas.
- 2.2.5. Figure 2-2 shows the network coverage in the SATURN model

Figure 2-2 - Hierarchical Network Structure



- 2.2.6. The model has been developed for the base year 2016 and represents three hours for an average weekday as below:
 - ┆ AM Peak Hour (0800-0900);
 - ┆ Inter-Peak Average hour of flows from (1000-1600); and
 - ┆ PM Peak Hour (1700-1800).
- 2.2.7. In accordance with Section 2.6 of TAG M3.11, five vehicle/user classes have been modelled in the Selby Traffic Model as below:
 - ┆ Car – Employer Business;

- ┆ Car – Commuting;
- ┆ Car – Others;
- ┆ Light Goods Vehicles (LGV); and
- ┆ Heavy Goods Vehicles (HGV) including OGV1, OGV2.

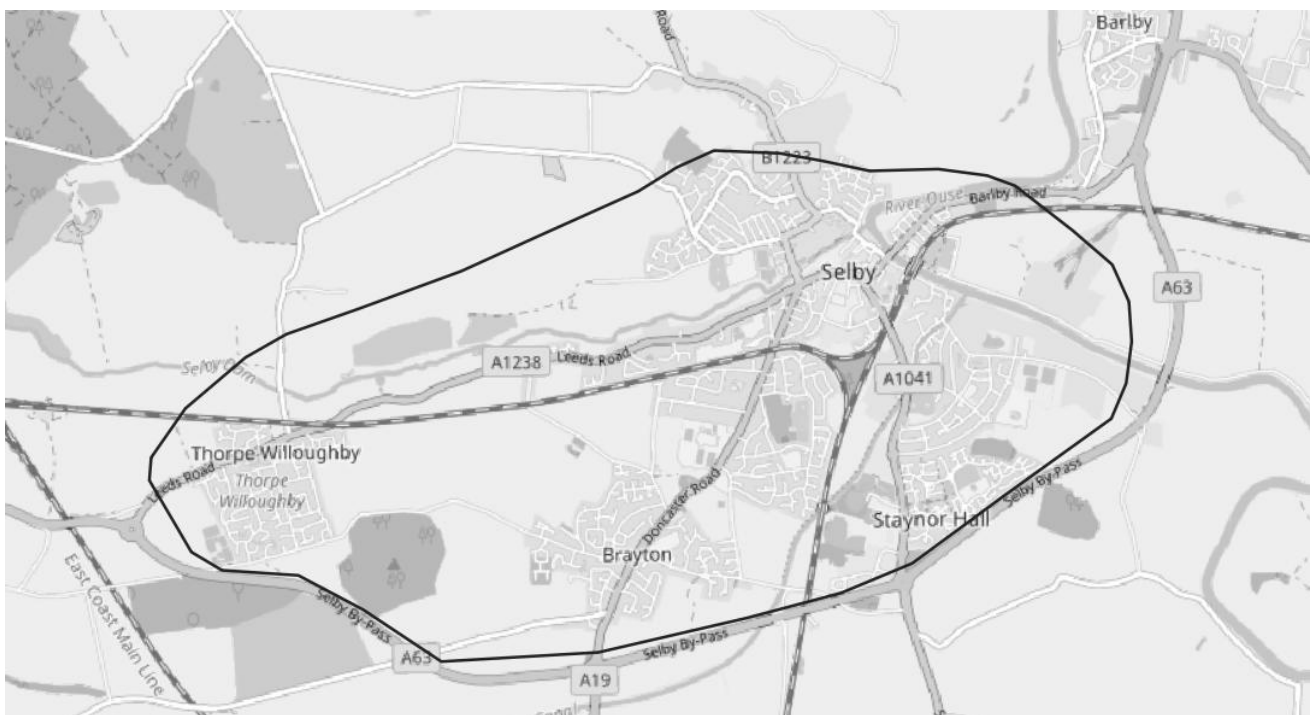
2.2.8. As part of the previous commission the following model runs were produced by WSP using the Selby Strategic Model

- ┆ 2016 Base year model;
- ┆ 2027 Future year models (a number of scenarios were tested as part of this commission focussing around changes in the Cross Hills Lane area north west of Selby town); and
- ┆ 2031 Future year model.

2.2.9. The 2016 Selby town model focuses on the traffic movements within Selby town. Hence a cordon within the A63 Selby bypass was created as a control mechanism to calibrate and validate the traffic movements along the cordon.

2.2.10. The figure below shows the location of the cordon.

Figure 2-3 – Location of outer cordon



2.2.11. Although the cordon does not include the junctions on the A63 Selby bypass and A19, the modelled traffic flows along the important junctions on the A63 Selby bypass and A19 leading to York (between the A63 Main Road/ A1238 Leeds Road and A19/ A163 Market Weighton Road) are well within the guidelines parameters set by WebTag (measured against observed count data).

2.2.12. As part of the Stage 2 model update, the traffic movements towards the periphery of the district (particularly A19 leading towards York) will be modelled in more detail to replicate observed traffic movements.

3 CURRENT COMMISSION OVERVIEW OF FORECASTING PROCESS

3.1 OVERVIEW

3.1.1. This chapter provides an overview of the traffic forecasting processes. The approach to forecasting was outlined in the Inception Report submitted in February 2020 and agreed with NYCC and SDC.

3.2 OVERVIEW OF DEMAND FORECASTING PROCEDURES

3.2.1. The demand forecasting procedure involves applying growth to the validated base year demand matrices. Growth in demand reflects local planning information and national forecasts and as such TEMPRO growth for car trips whilst NTM growth was applied to goods vehicle trips. Forecast Time Periods and Years

3.2.2. The three modelled time periods detailed in Section 2 of this report remained unchanged in the forecasting.

3.2.3. The forecasting is intended to estimate the impact on the highway network of major developments. Based on the discussion with SDC and NYCC it was decided to develop the following future year scenarios

- ┆ 2020 Do-minimum (DM);
- ┆ 2030 DM; and
- ┆ 2040 DM & Do-something (DS).

3.2.4. Future year demand estimates have been based on a number of elements, including:

- ┆ The general growth in travel demands due to changes in population, employment, income and car ownership;
- ┆ The specific changes in travel associated with new developments; and
- ┆ Changes in goods vehicle movements relating to future land use patterns and economic activity.

3.2.5. Future year growth assumptions were therefore derived using data from a number of sources, including:

- ┆ Planning data on developments and transport schemes from local authority to be used in the definition of future year scenarios;
- ┆ The latest (version 7) National Trip End Model (NTEM) and TEMPRO software;
- ┆ Transport Assessments (TA) for large developments; and
- ┆ The National Transport Model (NTM) for goods vehicle growth.

3.2.6. The process of defining the scenarios was based on the developments identified by SDC as part of the new call for sites.

3.2.7. SDC provided an uncertainty log comprising of residential and employment development sites within the Selby district. The information included the developments built or proposed to be built for each of the future years.

3.2.8. There were not infrastructure schemes identified. These might be identified as part of the Infrastructure Delivery Plan (IDP) proposed to be assessed as part of the Stage 2 work.

3.2.9. On SDC's request no minimum threshold for the developments was adopted. A total of 422 residential developments and 189 employment sites were included in the development log.

3.3 DEVELOPMENT TRIP ENDS

3.3.1. The development log summarises the residential and employment schemes to be included in the various future years.

3.3.2. TRICS, an industry standard program developed to estimate trip ends from various land use types, was used by NYCC to estimate the trip rates for the various developments.

3.3.3. Figure 1 in Appendix B shows the location of these developments within the Selby area and Table 1 in Appendix B, summarises the particulars relating to each development used in the forecast scenario. The trip rates for various land uses are summarised in table below.

Table 3-1 – Trip rates

Land use type	AM		IP		PM	
	Dest	Ori	Dest	Ori	Dest	Ori
A1 – 01/I Local Shops	1.188	1.161	1.7903	1.7622	2.118	2.163
A1 – 01/C Food Stores	2.407	1.68	4.315	4.291	4.061	4.156
A1 – 01/O Convenience Stores	4.421	4.247	8.0668	7.9117	9.889	10.704
A1 – 14/A Car Dealership	0.702	0.215	0.461	0.4723	0.409	0.642
A3 – Hotel & Restaurants	0	0	1.427	1.3347	1.728	1.012
B1 – Business Park <2395sqm	0.881	0.068	0.5843	0.5532	0.44	1.456
B1 – Business Park >2395sqm	1.926	0.189	0.3103	0.3372	0.15	1.651
B1A – 2A Office	2.536	0.228	0.438	0.5673	0.32	2.33
B1A – 2B Business Park	0.881	0.068	0.5843	0.5532	0.44	1.456
B1C – Industrial Estate	0.439	0.334	0.3012	0.3103	0.196	0.333
B2 – Industrial Estate <4600sqm	0.439	0.334	0.3012	0.3103	0.196	0.333
B2 – Industrial Estate <33000sqm	0.222	0.096	0.1392	0.149	0.08	0.251
B2 – Industrial Estate >33000sqm	0.367	0.109	0.1718	0.1832	0.088	0.388
B8 – Warehouse	0.184	0.09	0.1132	0.1115	0.051	0.153
C2 – Health & Care Home	0.145	0.396	0.1765	0.1733	0.349	0.174
C3 – Housing <799	0.115	0.413	0.1518	0.15	0.368	0.173
C3 – Housing >799	0.101	0.143	0.151	0.154	0.076	0.101
D1 - Education	3.761	2.45	0.6743	0.7582	0.346	0.516
D1&A3 – Hotel & Restaurants	0	0	1.4697	1.3928	1.792	1.068
D2 – Fitness Club	0.704	0.899	0.8535	0.9772	2.189	1.095



- 3.3.4. We understand that the sites currently included within the development log are subject to change based on the outcome of the consultation for the Local Plan Preferred Options draft planned to the held in January-February 2021.
- 3.3.5. The Stage 1 work undertaken as part of this commission is based only on the sites included in the current version of the development log.

4 FORECASTING INPUTS AND ASSUMPTIONS

4.1 BACKGROUND

4.1.1. The previous chapter described the processes adopted for determining the developments that were mostly likely to be completed by the respective forecast year. This chapter sets out the assumptions and inputs into these forecasts.

4.2 TRAFFIC FORECASTING

4.2.1. The demand matrices for the forecast year have been derived by merging the background traffic matrices with the development traffic matrices.

4.2.2. TEMPRO growth factors have been applied to the calibrated base year matrices at the origin-destination level to create background traffic matrices.

4.2.3. Development trip matrices have then been developed by estimating trip generation of developments by land use and applying trip distributions from a set of donor zones with similar land uses.

4.2.4. The methodology for development trips is included in Section 3 of this report.

4.2.5. The model development process considers each of the forecast year scenario for the AM, IP and PM peak hour assessments. The forecast traffic levels for the respective forecast year were estimated by applying growth factors to the 2016 base model matrices.

4.2.6. These growth factors were derived from the Department for Transport's TEMPRO program (Trip End Model Presentation Program) Version 7.2.

4.2.7. The overall traffic growth (i.e. including development related traffic) between the 2016 base year and Do-minimum forecast years in the AM, IP and PM peak hour models have not been controlled to TEMPRO as the traffic growth due to committed developments was higher than the TEMPRO growth.

4.2.8. The growth factors presented in the following table provide an indication of the growth at different geographical levels. The growth factors as applied to the 2016 base year matrices are presented in Appendix C of this report.

4.3 VALUES OF TIME AND OPERATING COST

4.3.1. SATURN uses a function of generalised cost (in form of relative weighting of time and distance) to normalise travel time, distance and monetary charges, determining the route on which a vehicle is assigned.

4.3.2. Monetary time (pence per minute) and distance (pence per kilometre) values used for the forecast year model were derived from Tag data book unit A1.3.6 (May 2020).

4.3.3. The TAG databook only relates to the driver's time and does not take into account the influence of freight operators on the routing of their vehicles, which can affect HGV movements. Hence, guidance in TAG M3.1 has been used for estimating the weighting values for HGVs.

4.3.4. The tables below show the summary of PPM PPK values for the forecast years are included in Appendix C of this report.

4.4 MATRIX DEVELOPMENT

4.4.1. The outturn future year matrix totals which includes fuel income adjustment factors are summarised in the table below.

Table 4-1 – Outturn matrix totals

Period	2020 DM		2030 DM		2040 DM		2040 DS	
	Total	Diff with 2016	Total	Diff with 2016	Total	Diff with 2016	Total	Diff with 2016
AM	226396.5	7.03%	262702.4	24.19%	291571.5	37.84%	292345.8	38.20%
IP	180520.8	6.82%	211030	24.87%	243472.9	44.07%	244004.6	44.38%
PM	261017.7	6.58%	302890.1	23.68%	333923.3	36.35%	334635.3	36.64%

5 MODELLING RESULTS

- 5.1.1. The traffic models have been run for the following forecast year scenarios.
- i 2020 Do-minimum (DM);
 - i 2030 DM; and
 - i 2040 DM & Do-something (DS).
- 5.1.2. As per the methodology agreed in the inception note for stage 1, the traffic flows predicted by the modelling exercise have been reported for each road (link) that is represented within the existing model. These flows have then been compared with an assumed capacity for each link (assumed reference link capacity).
- 5.1.3. This is primarily as the buffer network principally provides a route choice and does not model the buffer network in the same detail as the simulation area. Hence, it was agreed to use an assumed reference link capacity as a tool to measure the Volume over Capacity (VoC) in assessing operation of the link.
- 5.1.4. The VoC is calculated as a function of demand (predicted traffic flow on road/link) compared to the assumed reference capacity got that type of road. For links which are predicted to have greater demand than the assumed capacity will show a VoC for greater than 100% and those links with demand less than the assumed capacity will show smaller than 100%.
- 5.1.5. Previously, DMRB provided guidance on link capacities for road links. The guidance is out of date. Hence TAG guidance from Tag unit A5.4 has been adopted to identify the assumed link capacities for various links. The table below summarises the link capacities based on the TAG guidance for the main links.

Table 5-1 – Suggested average capacities

Road Type	Motorway	Trunk & Principal Dual	Trunk & Principal single	B roads	C and Unclassified Road
Capacity flow (PCU)	2330	2100	1380	1150	1050

- 5.1.6. This exercise is undertaken to enable us to identify potential areas where the future highway network is predicted to come under stress due to the travel demands from the proposed developments.

5.2 FORECASTING RESULTS

- 5.2.1. The following section summarises the results from the modelling exercise for the forecast years modelled.
- 5.2.2. The analysis included in this section show the calculated VoC for the links on a GIS background for model links within the buffer area of the current Selby town strategic model, along with some select links within the simulation area of the model.

5.2.3. For the purposes of this report and of ease of display, the VoC is represented in the colour bands summarised in the table below.

Table 5-2 – Colour banding adopted for representing VoC

VoC range	Colour coding used
Links with VoC less than 60%	Grey
Links with VoC between 60% and 80%	Blue
Links with VoC between 80% and 90%	Yellow
Links with VoC between 90% and 100%	Orange
Links with VoC greater than 100%	Red

5.2.4. The figures included within the forthcoming sections of this report make use of the colour banding (from Table 5-2) to highlight the VoC for the links represented within the models and the various scenarios assessed.

5.2.5. The links highlighted in yellow, orange and red show the locations where the highway network is predicted to operate in congestion conditions with less capacity to accommodate the daily variations in traffic.

5.2.6. Larger versions of all the figures included within this section

5.3 2020 DM FORECAST YEAR

5.3.1. Figures 5-1, 5-2 and 5-3 below shows the VoC plot for 2020 DM AM, IP and PM scenario respectively.

5.3.2. Figure 5-1 shows that the majority of links have a VoC of less than 60%. There are considerable sections of the A162 (around Sherburn in Elmet Burton Salmon), A19 and B1222 leading to York where the VoC is predicted to operate within the range of 60% and 80%.

5.3.3. The routes above 100% VoC are primarily on the A64 in both directions near Tadcaster.

Figure 5-1 - VoC plot for 2020 DM AM scenario



5.3.4. The table below summarises the links which are predicted to operate over 80% of their capacity (VoC 80%)

Table 5-3 – Summary of links predicted with VoC greater than 80%, 2020 DM AM scenario

VoC Banding (between 80% and 90%)		VoC Banding (between 90% and 100%)		VoC Banding (greater than 100%)	
Link / Road	Area	Link / Road	Area	Link / Road	Area
		A1246 SB	Fairburn	A64	Tadcaster
		A19	Eggborough, leading to M62		
		B1222, NB York Road	Naburn		
		B1228, NB	Elvington		

Figure 5-2 - VoC plot for 2020 DM IP scenario



5.3.5. The Interpeak shows the vast majority of links are under 80% VoC.

5.3.6. The table below summarises the links which are predicted to operate over 80% of their capacity (VoC 80%)

Table 5-4 – Summary of links predicted with VoC greater than 80%, 2020 DM IP scenario

VoC Banding (between 80% and 90%)		VoC Banding (between 90% and 100%)		VoC Banding (greater than 100%)	
Link / Road	Area	Link / Road	Area	Link / Road	Area
		A64	Between Tadcaster and York		

5.3.7. The model predicts that section of the A645 in Pontefract to operate above 100%. This is outside of the Selby district boundary and traffic from the forecasted developments traffic is unlikely to be the only contributor for towards it.

Figure 5-3 - VoC plot for 2020 DM PM scenario



- 5.3.8. The PM shows the worst performance of the time periods with a significantly higher number of links above 100% VoC.
- 5.3.9. The table below summarises the links which are predicted to operate over 80% of their capacity (VoC 80%)

Table 5-5 – Summary of links predicted with VoC greater than 80%, 2020 DM PM scenario

VoC Banding (between 80% and 90%)		VoC Banding (between 90% and 100%)		VoC Banding (greater than 100%)	
Link / Road	Area	Link / Road	Area	Link / Road	Area
A1246 NB	Fairburn	A1246 SB	Fairburn	A64	Tadcaster
A162	Tadcaster	A19, NB	Eggborough, leading to M62	A19, SB	Eggborough, leading to M62
B1222, NB York Road	Naburn	A19, NB	Escrick	A1246 SB	Fairburn
A164, leading to M62	Rawcliffe	B1228, NB	Elvington	B1228, SB	Elvington
		A162 NB	Burton Salmon	B1222, SB York Road	Naburn

5.4 2030 DM FORECAST YEAR

5.4.1. Figures 5-4, 5-5 and 5-6 below shows the VoC plot for 2030 DM AM, IP and PM scenario respectively.

Figure 5-4 – VoC plot for 2030 DM AM scenario



5.4.2. The 2030 AM plot shows a similar pattern to the 2020 AM with more number of links approaching capacity and existing the links showing higher VoC compared to those in 2020 AM scenario.

Table 5-6 – Summary of links predicted with VoC greater than 80%, 2030 DM AM scenario

VoC Banding (between 80% and 90%)		VoC Banding (between 90% and 100%)		VoC Banding (greater than 100%)	
Link / Road	Area	Link / Road	Area	Link / Road	Area
A162 NB, A63	Monk Fryston	A162 SB	Monk Fryston	A64	Tadcaster
A162 NB	Burton Salmon	A162 SB	Burton Salmon	A1246 SB	Fairburn
Pontefract Road	Knottingley	A19	Escrick	A19	Eggborough, leading to M62
A19 NB	Crockey Hill	B1228, SB	Elvington	B1222, NB York Road	Naburn
A164 WB	Leading to M62 Jn36	A164 EB	Leading to M62 Jn36	B1228, NB	Elvington

Figure 5-5 - VoC plot for 2030 DM IP scenario



5.4.3. The 2030 IP plot shows a similar pattern to the 2020 IP with the links showing higher VoC compared to those in 2020 IP scenario.

Table 5-7 – Summary of links predicted with VoC greater than 80%, 2030 DM IP scenario

VoC Banding (between 80% and 90%)		VoC Banding (between 90% and 100%)		VoC Banding (greater than 100%)	
Link / Road	Area	Link / Road	Area	Link / Road	Area
A1246 SB	Fairburn	A64, EB coming into Tadcaster	Tadcaster	A64	Between Tadcaster and York
A64, WB towards Leeds	Tadcaster	A19	Eggborough, leading to M62 Jn34		
B1228, SB	Elvington				

5.4.4. The Interpeak shows that majority of links are under 80% VoC.

5.4.5. There are a higher number of links which are predicted to be congested compared to the 2020 IP.

Figure 5-6 - VoC plot for 2030 DM PM scenario



5.4.6. The PM shows the worst performance of the time periods with a significantly higher number of links above 100% VoC. The 2030 PM plot shows a similar pattern to the 2020 PM with the links showing higher VoC compared to those in 2020 PM scenario.

Table 5-8 – Summary of links predicted with VoC greater than 80%, 2030 DM PM scenario

VoC Banding (between 80% and 90%)		VoC Banding (between 90% and 100%)		VoC Banding (greater than 100%)	
Link / Road	Area	Link / Road	Area	Link / Road	Area
A645 Knottingley Road, EB	Freeybridge	A162, NB	Tadcaster	A64, A162 SB	Tadcaster
A19 NB	Nabum	A19	Escrick	A19	Eggborough, leading to M62
A162 SB	Burton Salmon	Pontefract Road	Knottingley	A1246 ,SB	Fairburn
A63, WB	Monk Fryston	A164, leading to M62	Rawcliffe	B1228, SB	Elvington

A162, SB	South Milford	B1228, NB	Elvington	B1222, SB York Road	Naburn
B1222 EB	Newthorpe	A164, EB	Rawcliffe	A1246 SB	Fairburn
				A164, WB	Rawcliffe
				A63, EB	Monk Fryston

5.5 2040 DM FORECAST YEAR

5.5.1. Figures 5-7, 5-8 and 5-9 below shows the VoC plot for 2040 DM AM, IP and PM scenario respectively.

Figure 5-7 – VoC plot for 2040 DM AM scenario



5.5.2. The 2040 plot shows a similar pattern to the 2030 AM with the links showing higher VoC compared to those in 2030 AM scenario. 100% VoC are primarily on the following links

5.5.3. There are a higher number of links which are predicted to be congested compared to the 2030 AM.

Table 5-9 – Summary of links predicted with VoC greater than 80%, 2040 DM AM scenario

VoC Banding (between 80% and 90%)		VoC Banding (between 90% and 100%)		VoC Banding (greater than 100%)	
Link / Road	Area	Link / Road	Area	Link / Road	Area
A162	Ferrybridge	A162	Tadcaster	A64	Tadcaster
A162 NB	Monk Fryston	A19	Escrick	A19	Eggborough, leading to M62
A162, SB	South Milford	Pontefract Road	Knottingley	A1246, NB	Fairburn
B1222 WB	Newthorpe	A164, WB leading to M62	Rawcliffe	B1228	Elvington
A162, SB	Sherburn in Emlet	A164, EB	Rawcliffe	B1222, NB York Road	Naburn
A19	Escrick	A19 SB	Naburn	A1246 SB	Fairburn
		A19, NB	Crockey Hill	A164, WB	Rawcliffe
				A63, WB	Monk Fryston

Figure 5-8 - VoC plot for 2040 DS IP scenario



- 5.5.4. The 2040 IP plot shows a similar pattern to the 2030 IP with the links showing higher VoC compared to those in 2030 IP scenario.
- 5.5.5. The Interpeak shows that majority of links are under 80% VoC.
- 5.5.6. There are a higher number of links which are predicted to be congested compared to the 2030 IP.

Table 5-10 – Summary of links predicted with VoC greater than 80%, 2040 DM IP scenario

VoC Banding (between 80% and 90%)		VoC Banding (between 90% and 100%)		VoC Banding (greater than 100%)	
Link / Road	Area	Link / Road	Area	Link / Road	Area
A162	Botherton, Monk Fryston	A19	Eggborough, leading to M62 Jn34	A64	Between Tadcaster and York
B1222	Naburn	A11246, SB	Fairburn		
B1228, SB	Elvington	B1228	Elvington		

Figure 5-9 - VoC plot for 2040 DM PM scenario



5.5.7. The PM shows the worst performance of the time periods with a significantly higher number of links above 100% VoC. The 2040 PM plot shows a similar pattern to the 2030 PM with the links showing higher VoC compared to those in 2030 PM scenario.

Table 5-11 – Summary of links predicted with VoC greater than 80%, 2030 DM PM scenario

VoC Banding (between 80% and 90%)		VoC Banding (between 90% and 100%)		VoC Banding (greater than 100%)	
Link / Road	Area	Link / Road	Area	Link / Road	Area
A645 Knottingley Road, EB	Freeybridge	A162, NB	Tadcaster	A64, A162 SB	Tadcaster
A19 NB	Naburn	A162	Monk Fryston	A19	Eggborough, leading to M62
A162 SB	Burton Salmon	B1222 EB	Newthorpe	A1246 ,SB	Fairburn
A63, WB	Monk Fryston	A19	Cockey Hill	B1228	Elvington
A162, SB	South Milford	A19	Barlby	B1222	Naburn
B1222 WB	Newthorpe			A1246 SB	Fairburn
				A164	Rawcliffe
				A63, EB	Monk Fryston
				Pontefract Road	Knottingley
				A19, NB	Escrick

5.5.8. There are a significantly higher number of links which are predicted to be congested compared to the 2030 PM.

5.6 2040 DS FORECAST YEAR RESULTS

- 5.6.1. Figures 5-10, 5-11 and 5-12 below shows the VoC plot for 2040 DM AM, IP and PM scenario respectively.
- 5.6.2. The figures below show that the 2040 DS scenario is the most congested scenario across all the time periods. This is because the 2040 DS includes slightly higher number of sites (than the 2040 DM) which are only included in the 2040 DS scenario.
- 5.6.3. In a meeting it was agreed that the focus of the work will be on the DM scenarios; hence the 2040DS results are not summarised in detail.
- 5.6.4. The results are similar to the 2040 DM; the only difference being that some links have higher congestion where the DS developments are located.

Figure 5-10 - VoC plot for 2040 DS AM scenario



Figure 5-11 - VoC plot for 2040 DS IP scenario



Figure 5-12 - VoC plot for 2040 DS PM scenario



6 RESULTS SUMMARY AND RECOMMENDATION

- 6.1.1. Section 5 of this report tabulates the results from the various model runs. This section summarises the trends from the results which will be used to draw recommendation.
- 6.1.2. The figures below show the plot of VoC along with the location of the developments for the 2040 DS for the AM and PM time period.

Figure 6-1 – VoC plot and location of developments in 2040 DS for AM scenario

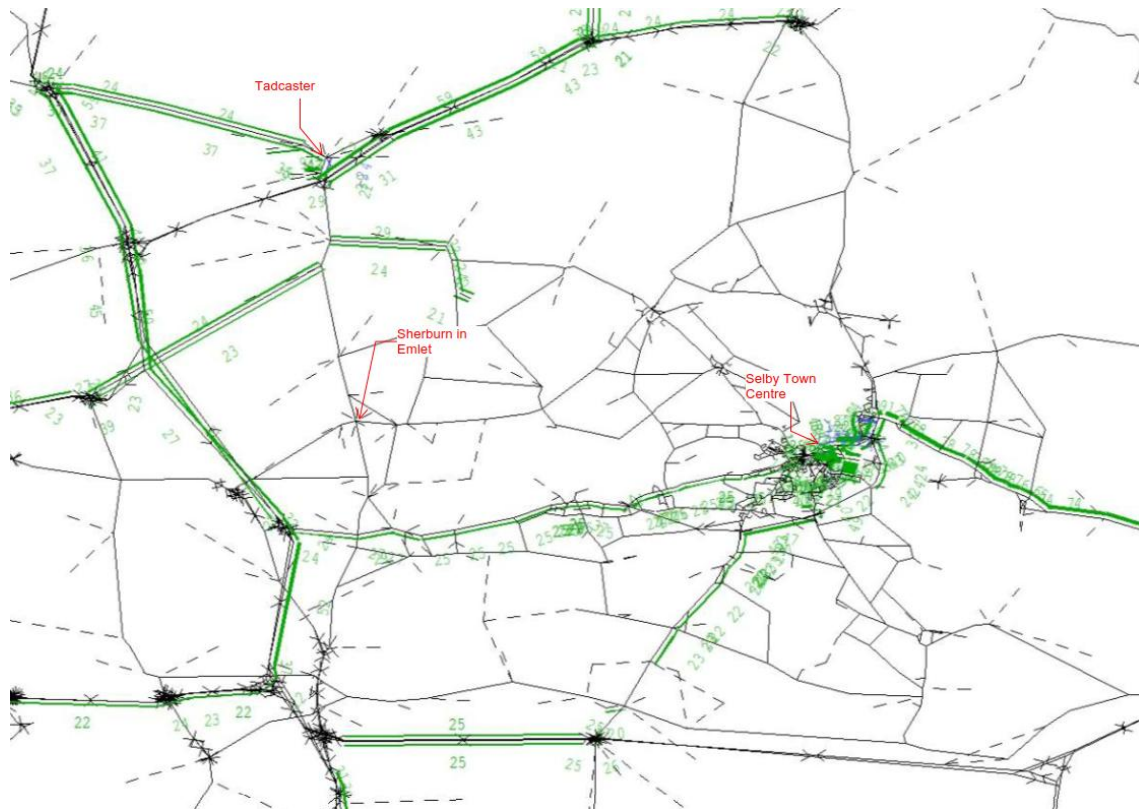


Figure 6-2 – VoC plot and location of developments in 2040 DS for PM scenario



- 6.1.3. From the above figure, it can be the highway network in following areas are predicted to operate in congested conditions in the 2040 DS scenario.
- ┆ A64 and A162 around Tadcaster;
 - ┆ B1222, A612 around Sherburn in Emllet;
 - ┆ A63, A612 around Monk Fyston;
 - ┆ A1264, A162 around Fairburn, Botherton;
 - ┆ A612, A645 Hilltop road (Weeland Road) around Ferrybridge and Knottingley;
 - ┆ A63 Hull Road around;
 - ┆ A19 around Eggborough, A19 leading to Eggborough;
 - ┆ A164 Rawcliffe Road leading to M62; and
 - ┆ A19 along Escrick.
- 6.1.4. Theoretically, 2040 DS scenario is the one which has the most congestion, hence 2040 DS has been used to identify the network sections which are predicted to operate in congested condition.
- 6.1.5. There is not no significant difference between the 2040 DM and 2040 DS models in the buffer area as shown in the figure below for the PM peak period.

Figure 6-3 – VoC plot and location of developments in 2040 DS for PM scenario

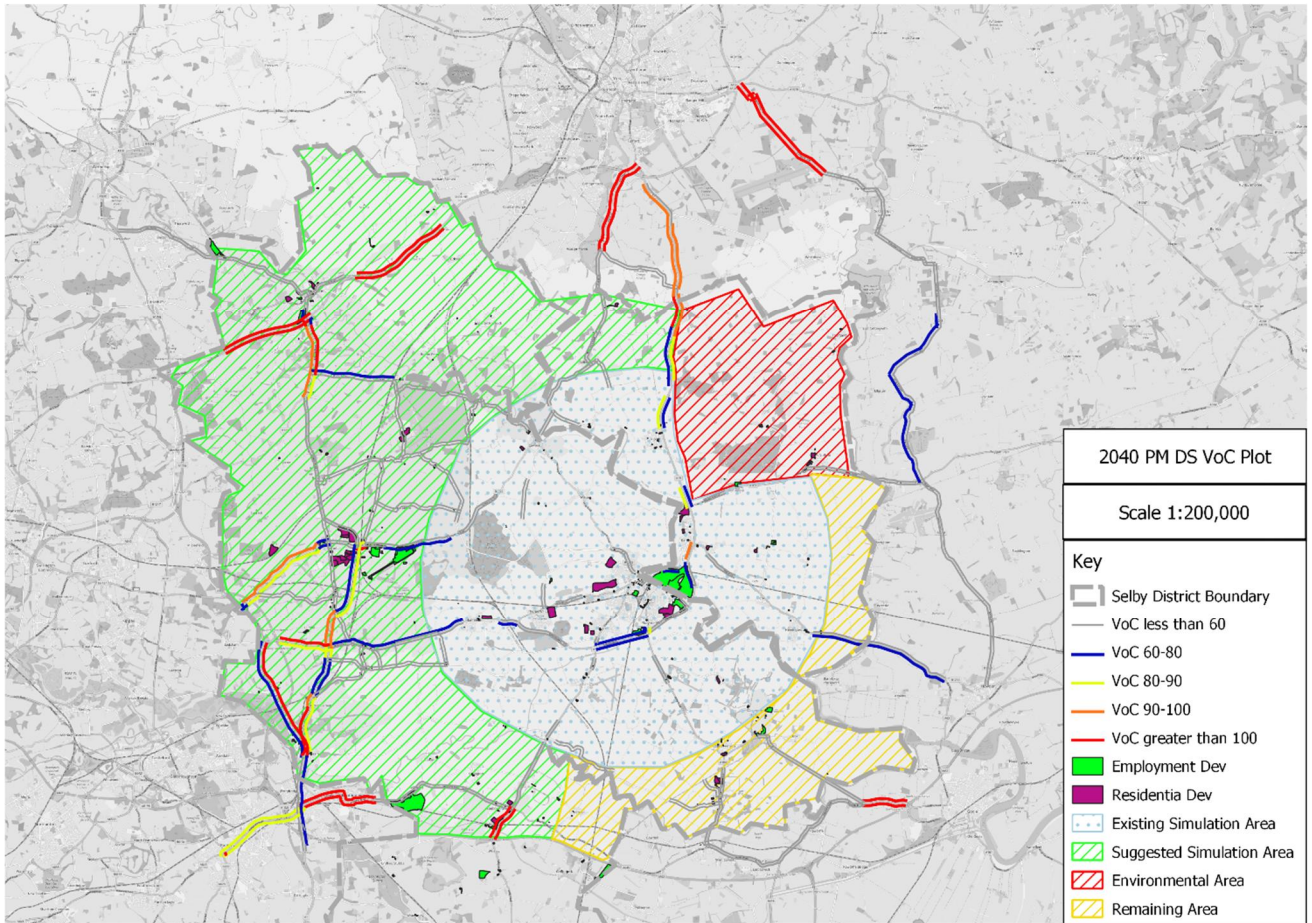


- 6.1.6. The above figure shows that main traffic flow difference between the 2040 DM and DS is around Selby Town centre and Tadcaster.
- 6.1.7. Selby Town centre does not show congested area (Figure 6-1 and 6-2) mainly because the focus of this exercise has been on the buffer area in order to identify the network which need to be coded as simulation network as part of stage 2 work.
- 6.1.8. As Selby town centre is modelled in detail this area does not require assessment as part of Stage 1 work. This area will be covered in the Stage 2 work for further analysis.

6.2 RECOMMENDATION

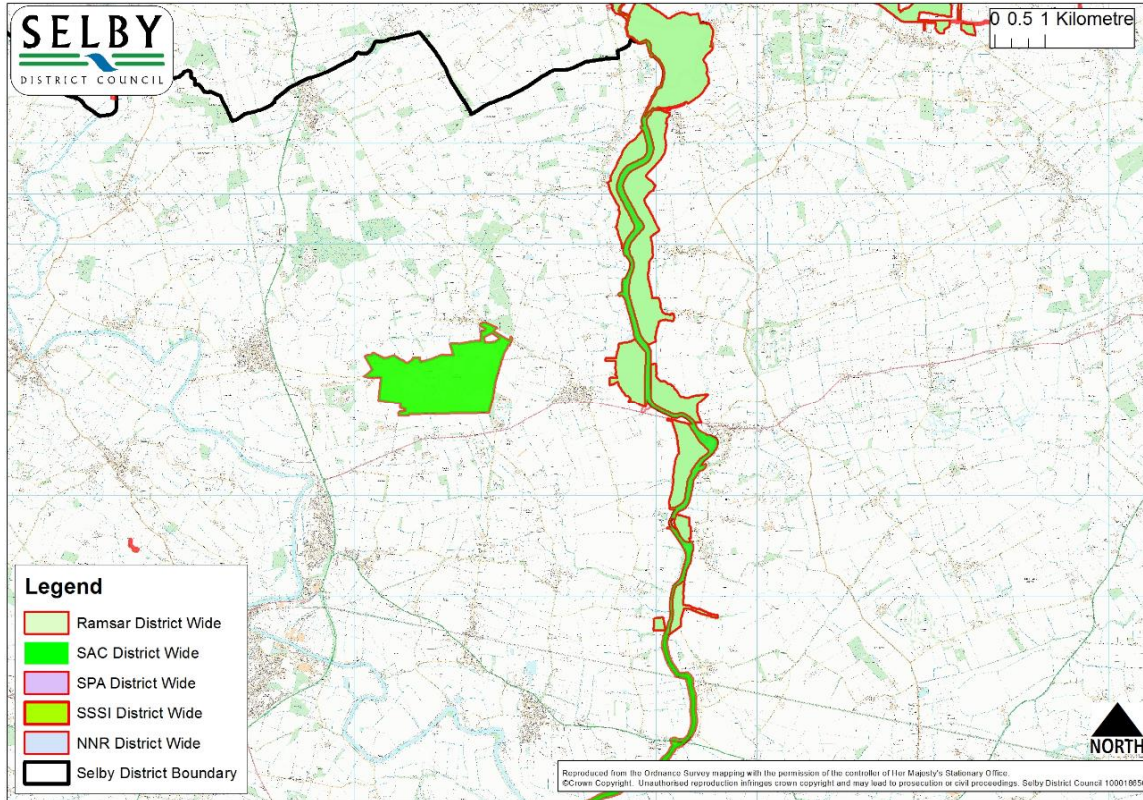
- 6.2.1. The results summary section highlighted the trends in traffic based on the modelling exercise.
- 6.2.2. The majority of the planned/ proposed developments in Selby district are located to the east of Selby Town around Tadcaster, Sherburn in Elmet, Selby Town centre, Knottingley, Eggborough and Rawcliffe as shown in Figure 6-1 and 6-2.
- 6.2.3. These areas coincide with the highway network under stress based on the model predictions.
- 6.2.4. Based on the modelling exercise, conservation areas, planned/ proposed major developments we recommend developing the full remaining district area as an extended simulation area.
- 6.2.5. Alternatively, as a minimum the area (shown in green) in the figure below as extended simulation area as part of Stage 2.

Figure 6-4 – Proposed area for development as part of Stage 2. (this figure is revised)



- 6.2.6. As part of previous work with SDC and NYCC WSP is aware that there are established air quality management areas in Selby Town centre (modelled as part of the Selby Town Model) and conservation areas around Skipwith Common and Lower Dervant Valley as shown in Figure 6-5. This area is highlighted in red in Figure 6-4.
- 6.2.7. The conservation area around Skipwith Common and Lower Dervant Valley are not included in the simulation area of the existing Selby model. There is an opportunity to develop these and other areas of interest as simulation as part of the Stage 2 exercise.
- 6.2.8. Similarly, the area highlighted in yellow in Figure 6-4 shows the area where currently as per the current understanding of the development log, only a small cluster of developments is identified and based on the network assessment, this is not identified as an area where the network is predicted to be under stress due to these developments.
- 6.2.9. If, during the consultation for Local Plan, more developments are identified (or proposed) or the nature of the developments is amended, this would result in a change in the current understanding of the network operation.
- 6.2.10. Hence, in order to future proof the model we recommend developing the whole district into a “detailed model area” so that a tool to undertake the strategic impact of development is available.

Figure 6-5 – Conservation area around Lower Dervant Valley.



6.2.11. As part of Stage two work, we intend to provide a Model Specification report and a review of available traffic data (like C2 web, DfT datasets) which will allow us not only to ascertain the available traffic data but also to refine the area proposed to be developed as simulation.

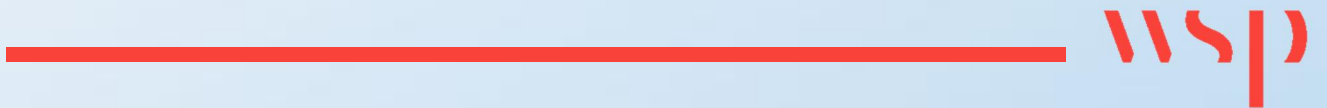
7 SUMMARY

- 7.1.1. North Yorkshire County Council (NYCC) along with Selby District Council (SDC) requested WSP to undertake an update of the existing Strategic Highway Model (SHM) for the Selby Town area to support the development of the Selby District Council's new Local Plan (SDLP).
- 7.1.2. The SDLP outlines the district's targets for employment and housing growth over the next 20 years, is currently in preparation by SDC.
- 7.1.3. The earlier SATURN model focused mainly on Selby Town area whereas the Selby District Local Plan covers the entire district necessitating wider model coverage to support the evidence base for the Local Plan at an Examination in Public. Hence NYCC and SDC have commissioned WSP to provide support for the new Local Plan for Selby.
- 7.1.4. An inception note was produced in February 2020 (included in Appendix A) wherein a methodology and approach was agreed with SDC and NYCC. The inception note was prepared based on the brief
- 7.1.5. Specifically, it was agreed to undertake the required modelling work in two stages, namely;
- i Stage 1: Identify locations where the network is constrained or is likely to become constrained within the Local Plan period – this work will be based on the existing Selby Traffic Model and will provide the transport evidence base for the Preferred Options Draft of the Local Plan.
 - i Stages 2 and 3: Detailed model build – potential 2021 Base year update and Future year model build (2040DM and 2040DS) – a more detailed model build will be required to provide the transport evidence base for the Draft Local Plan but the extent of the requirement for more detailed modelling will only become clear once the Preferred Options Draft has been prepared.
- 7.1.6. The objective / deliverable for Stage 1 is to undertake a high-level assessment to
- i identify areas within Selby District which are most likely to experience higher levels of congestion; and
 - i identify those potential development locations where the constraints of the highway network may prevent the development and, as such, they may not warrant further consideration as part of the Local Plan.
- 7.1.7. Initially Stage 1 work covered assessment for only the 2040 DM and DS scenarios. During a meeting which discussed the initial results, the scope was increased to produce the 2020DM and 2030DM scenarios.
- 7.1.8. This report summarises the work undertaken as part of the Stage 1 work summarising model run results for the following scenarios for the AM, IP and PM peak hours.
- i 2020DM;
 - i 2030DM;
 - i 2040DM; and
 - i 2040DS.
- 7.1.9. Based on the development information provided by SDC a modelling exercise was undertaken using the existing Selby Town centre model to identify the parts of the network which are predicted to operate in congested conditions with focus on the buffer area of the network within the Selby District boundary.

- 7.1.10. The majority of the proposed sites identified within the current version of the development log are located around Sherburn in Emlet, Tadcaster, Knottingley and Selby Town.
- 7.1.11. We understand that the sites currently included within the development log are subject to change based on the outcome of the consultation for the Local Plan Preferred Options draft planned to be held in January-February 2021.
- 7.1.12. The modelling exercise predicts that the network in the following area are likely to operate in congested conditions in the 2040 DS scenario.
- ┆ A64 and A162 around Tadcaster,
 - ┆ B1222, A612 around Sherburn in Emlet,
 - ┆ A63, A612 around Monk Fryston,
 - ┆ A1264, A162 around Fairburn, Botherton,
 - ┆ A612, A645 Hilltop road (Weeland Road) around Ferrybridge and Knottingley
 - ┆ A63 Hull Road around, and
 - ┆ A19 around Eggborough, A19 leading to Eggborough,
 - ┆ A164 Rawcliffe Road leading to M62 and
 - ┆ A19 along Escrick.
- 7.1.13. Based on the modelling exercise and to future proof the model, we recommend developing the full district area as a “detailed model area” (simulation area).
- 7.1.14. Alternatively, the area shown in green (in figure 6-4) could be developed as a “detailed model area) as a minimum which would cover most the developments identified within the current version of development log as part of the Stage 2 work.
- 7.1.15. The 2016 Selby town model focuses on the traffic movements within Selby town. Hence a cordon within the A63 Selby bypass was created as a control mechanism to calibrate and validate the traffic movements along the cordon.
- 7.1.16. As part of the Stage 2 model update, the traffic movements towards the periphery of the district (particularly on A19 leading towards York) will be modelled in more detail to replicate observed traffic movements.

Appendix A

SCOPING NOTE AND INCEPTION REPORT





North Yorkshire County Council

SELBY HIGHWAY TRAFFIC MODEL UPDATE

INCEPTION REPORT v01



North Yorkshire **County Council**

SELBY HIGHWAY TRAFFIC MODEL UPDATE
INCEPTION REPORT v01

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70067844

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DATE: FEBRUARY 2020

North Yorkshire **County Council**

SELBY HIGHWAY TRAFFIC MODEL UPDATE

INCEPTION REPORT v01

WSP

1st Floor, LS1 Headrow,
Unit 113 The Headrow
Leeds
LS1 5JW

Phone: +44 113 301 6273

WSP.com



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APPENDICES

APPENDIX A

PROJECT BRIEF FROM CLIENT

1. EXECUTIVE SUMMARY

North Yorkshire County Council (NYCC) along with Selby District Council (SDC) has requested WSP to undertake a scoping exercise towards updating the existing Strategic Highway Model (SHM) for the Selby Town area to support the development of the Selby District Local Plan

This inception report summarises the scope, specifications, key deliverables, programme, fees and invoicing for updating the Strategic model and also highlights the governance, quality assurance and proposed communication strategy.

This report also summarises the various scenarios to be modelled along with the methodology key assumptions and exclusions.

As part of the project brief, the key milestones identified by NYCC / SDC are:

- The Local Plan Preferred Options draft will be available for consultation January – February 2021. This will require reporting to Members in December 2020.
- The submission draft Local Plan will be available for consultation in January – February 2022 with reporting to Members in December 2021.

WSP proposes to undertake the work using a staged approach, details of which are summarised in this report.

This note outlines the assumptions, methodology and fees for **Stage 1** of the strategic modelling work for comment and approval by NYCC / SDC.

On completion of Stage 1 work, and when the sites to be included in the draft Local Plan are known, a more detailed scoping report will be produced which will present the assumptions, outline methodology and fees for Stages 2 and 3 of the strategic modelling and for the Infrastructure Delivery Plan and Viability Assessment components of the commission.

2. INTRODUCTION

2.1. CURRENT COMMISSION

North Yorkshire County Council (NYCC) along with Selby District Council (SDC) has requested WSP to undertake a scoping exercise towards updating the existing Strategic Highway Model (SHM) for the Selby Town area to support the development of the Selby DC Local Plan

NYCC has provided a document summarising the brief for the model update in December 2019. A copy of the brief is enclosed on Appendix A.

An inception meeting was held on 23rd January between NYCC, SDC and WSP to discuss the brief.

This note has been produced to summarise the discussion during the inception meeting and to set out and agree in principle the approach to be adopted for the project.

This note outlines a staged approach to the project, as discussed during the inception meeting, and presents the assumptions, outline methodology and fee proposal for undertaking Stage 1.

2.2. REPORT STRUCTURE

The content of the note is structured as below:

- Existing Model Summary;
- Current Commission Summary;
- Proposed Methodology;
- Deliverables and Programme;
- Governance and Quality Assurance;
- Fee proposal and Invoicing and
- Change of events.

3. EXISTING MODEL

3.1. BACKGROUND

NYCC and SDC commissioned WSP (previously Mouchel) to produce an updated traffic model for Selby reflective of 2016 travel demands and to test a future year Reference Forecast in line with the Local Plan period of 15 years.

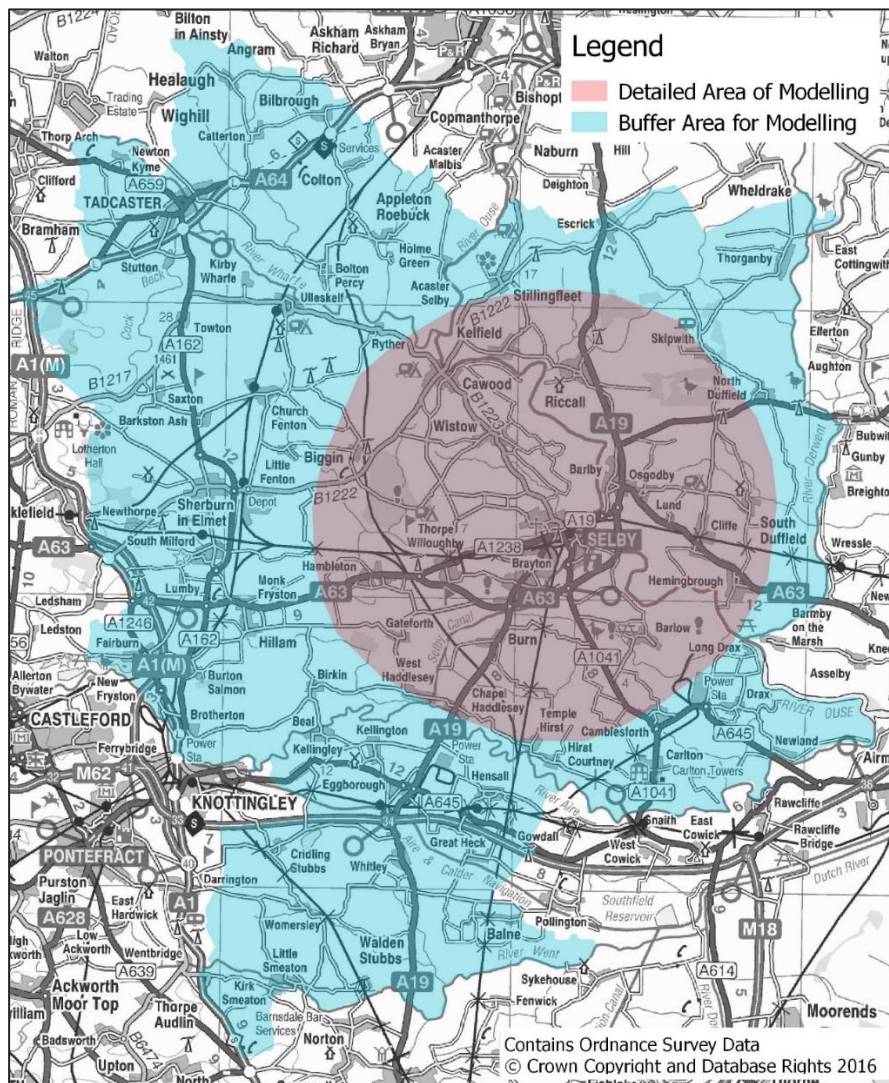
The model was developed to allow SDC to test the transport impacts of possible development sites and infrastructure improvements included in the Local Plan / PLAN Selby.

PLAN Selby is the Sites and Policies Local Plan which Selby District Council (SDC) has been developing to deliver the strategic vision outlined in the Core Strategy (adopted in 2013).

3.2. EXISTING TRAFFIC MODEL

Figure 3-1 below shows the extents of the simulation and buffer areas in the model.

Figure 3-1 - Study area for existing Selby town model



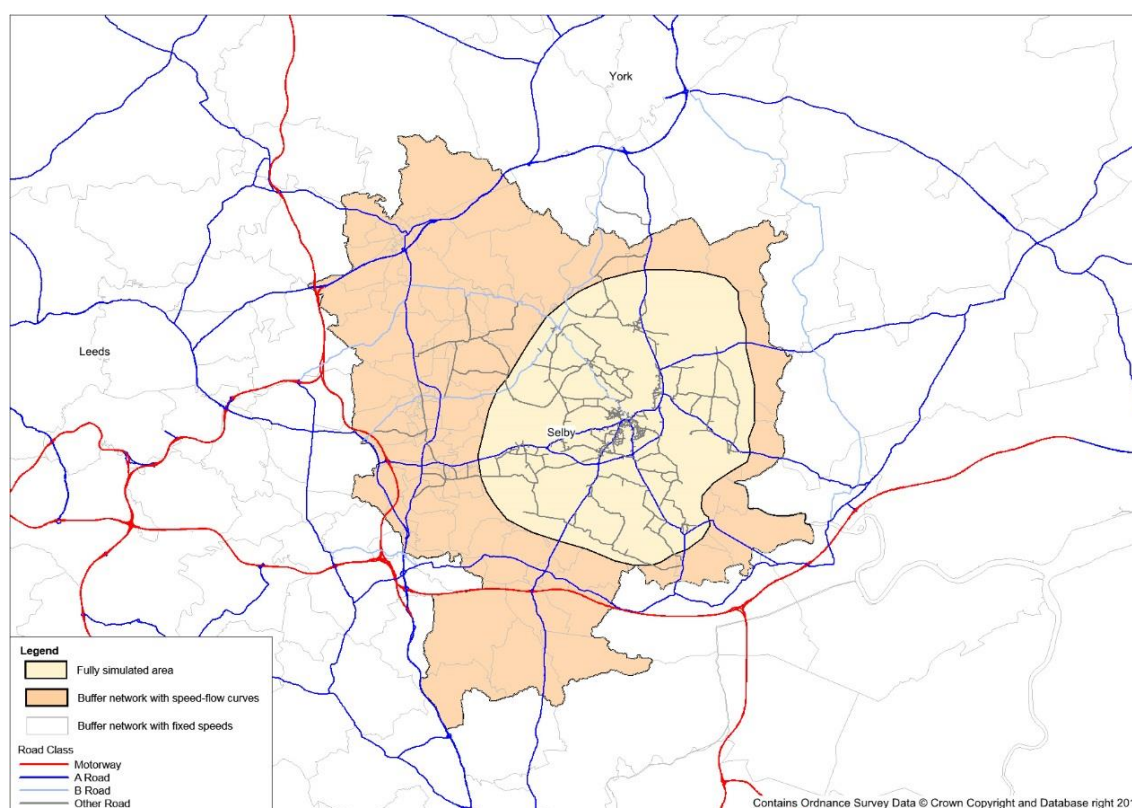
An area has been defined around Selby town centre extending to Cawood to the north west of the town and Hemingbrough to the south east. This is the area referred to as the ‘fully modelled area’ (FMA) in accordance with TAG Unit M3-1. It provides a sufficient area of detailed modelling to allow developments to be rigorously tested within and in proximity to Selby town centre.

The remainder of the district forms the ‘buffer area’ with skeletal coverage in the main but increased localised detail around secondary important population centres including Tadcaster and Sherburn-in-Elmet.

It should be noted that although the junctions in the ‘buffer area’ are not modelled in as much detail as in the FMA, the model accurately assesses route choice within this area

Figure 3-2 shows the network coverage in the SATURN model

Figure 3-2 - Hierarchical Network Structure



The model has been developed for the base year 2016 and represents three hours for an average weekday as below:

- AM Peak Hour (0800-0900);
- Inter-Peak Average hour of flows from (1000-1600); and
- PM Peak Hour (1700-1800).



As part of the previous commission the following model runs were produced by WSP using the Selby Strategic Model

- 2016 Base year model
- 2031 Future year model
- 2027 Future year models (a number of scenarios were tested as part of this commission focussing around changes in the Cross Hills Lane area north west of Selby town)

4. CURRENT COMMISSION SUMMARY

4.1. KEY REQUIREMENTS

Selby District Local Plan, which outlines the district's targets for employment and housing growth over the next 20 years, is in preparation by SDC.

The earlier SATURN model focused mainly on Selby Town area whereas the Selby District Local Plan covers the entire district implying that additional modelling will be required as part of the Evidence Base for the Local Plan at an Examination in Public.

Hence NYCC and SDC have contacted WSP to provide support for the new Local Plan for Selby outlining the following work;

- I. Strategic transport modelling to identify the impacts of growth on the levels of traffic and congestion, both with and without measures to mitigate it.
- II. An infrastructure delivery plan (IDP) to identify what infrastructure is needed to enable this growth to take place and set out how it will be delivered.
- III. A viability assessment of the local plan to confirm sites allocated in the plan are viable and deliverable. This will also help identify any funding gaps that will have to be bridged through securing other sources of funding.

The scope of work outlined within the brief is listed below

- i. Produce a strategic transport model to reduce, to an acceptable level, the risk of the outputs being open to legal challenge.
- ii. Use the transport model to:
 - a. establish the baseline position in relation to traffic movements
 - b. Model future years (principally 2040) with 'committed' development and infrastructure (i.e. the 'do minimum' case)
 - c. Model future years (principally 2040) with 'committed' development and 'required' infrastructure to mitigate the effects of development (this ultimately will be set out in the Infrastructure Delivery Plan) i.e. the 'do something' case.
- iii. Using work from the Selby DC Viability Study to identify the infrastructure funding gaps.

It is likely that the above will be iterative (requiring several iterations) because of:

- Site allocations may change following consultation (additional 'further sites consultation' yet to be confirmed)
- The affordability (effects on viability) of the 'required infrastructure' tested through the local plan site viability work.

It is proposed that the Local Plan will be developed in two stages namely;

- The Local Plan Preferred Options draft will be available for consultation January – February 2021. This will require reporting to Members in December 2020.
- The submission draft Local Plan will be available for consultation in January – February 2022 with reporting to Members in December 2021.

A copy of the project brief provided by NYCC/ SDC is included in Appendix A

5. PROPOSED METHODOLOGY

The discussion with SDC and NYCC during the inception meeting focussed on the strategic transport modelling component of the study requirements.

The modelling work is to be undertaken in stages as follows:

- **Stage 1: Identify locations where the network is constrained or is likely to become constrained within the Local Plan period – this work will be based on the existing Selby Traffic Model and will provide the transport evidence base for the Preferred Options Draft of the Local Plan.**
- **Stages 2 and 3: Detailed model build – 2021 Base year update and Future year model build (2040DM and 2040DS) – a more detailed model build will be required to provide the transport evidence base for the Draft Local Plan but the extent of the requirement for more detailed modelling will only become clear once the Preferred Options Draft has been prepared.**

The objective / deliverable for Stage 1 is to undertake a high-level assessment to

1. *identify areas within Selby District which are most likely to experience higher levels of congestion and*
2. *identify those potential development locations where the constraints of the highway network may prevent the development and, as such, they may not warrant further consideration as part of the Local Plan.*

During Stage 1 the focus will be on identifying sites for inclusion and to identify locations on the highway network where the network is stressed. For this stage it is proposed that the analysis of the likely impact of the development of those sites on the more important routes forming the highway network will be undertaken largely using the existing Selby Town model.

However, new traffic forecasts for 2040 will need to be developed to cover the full Local Plan period and the developments identified/ proposed in the draft Local Plan. This will enable WSP to identify the areas of the highway network that could potentially come under stress during the Plan period

Once the sites are decided upon, and to support the preparation of the draft Local Plan, some enhancements to Selby Town model will be required to expand the simulation areas of the model to include those sites likely to generate significant volumes of traffic and those areas of the highway network identified in Stage 1 that could potentially come under stress. This exercise will be undertaken as part of Stages 2 and 3

This inception note includes for the work envisaged in Stage 1 above.

A key requirement for Stage 1 is the identification of congestion hotspots which could influence the development sites included in the Local Plan.

For this purpose, Reference Forecast Future Year (RFFY) models will be developed for 2040 using the existing model.

We propose to develop two versions of the 2040 model as part of the Stage 1 assessment

1. 2040 Do -Minimum (DM)

A 2040 DM model will be developed where the travel demands for the model will be developed using the growth forecasts provided by TEMPro **together with** recent developments completed, committed developments and other developments deemed to be ‘near certain’ or ‘more than likely’. That is those developments that are certainties for inclusion in the Local Plan.

TEMPro is the industry standard tool provided by Department of Transport (DfT) for estimating traffic growth, which is required when assessing the traffic impact of a development on the local highway network. TEMPro can forecast the growth in trip origins and destinations up to 2051 for use in transport modelling taking into account various parameters like population, employment, housing, car ownership and their influence on trip making.

TEMPro uses the National Trip End Model (NTEM) to generate first order approximation of the effect on trip ends.

This approach allows adjustment of the TEMPro forecasts to allocate the growth to the areas where these developments are proposed.

2. 2040 Do-Something (DS)

Develop a 2040 DS model using the 2040 DM, where the travel demand from the “aspirational sites” identified as candidates for inclusion in the Preferred Options Draft of the Local Plan will be added to the 2040 DM demand to replicate the travel demand from these “aspirational sites” on the future year network.

We understand that currently there might be some uncertainty in the developments which fall in the above categories.

Assumed Reference Link capacity

The buffer network principally provides accurate route choice but does not model the buffer network in the same detail as the simulation area. Hence, we propose to use an assumed reference link capacity as a tool to measure the Volume over Capacity (VoC) to assess operation of the link.

The assumed reference link capacity of the major links can be calculated using DfT’s COBA software or DMRB guidance. WSP is currently investigating which will be the appropriate tool to use to establish the assumed reference capacities.

Additionally, at important junctions a comparison of the total junction volume can be undertaken (where possible) to identify the increase in forecast traffic between the 2040 RFFY DM and the DS is greater than 5%, which based on our experience is a reasonable parameter for high level assessment of potential impact on network operation.

The outputs from 2040 RFFY DM and DS models will be used to compare the VoC on the major roads in the buffer areas using the assumed reference capacity for respective road links to estimate the future year levels of congestion in the 2040 DM and DS scenarios.



This exercise will enable us to identify potential areas where the future highway network is predicted to come under stress due to the travel demands from the proposed developments.

Key assumptions / exclusions for Stage 1:

- SDC/ NYCC to provide development log summarising the committed developments and future year developments to be included within 2040DM and 2040DS scenarios. We understand that currently, as these developments are being confirmed as part of Local Plan Preferred Options draft, there might be some uncertainty in the developments which fall in the above categories.
- SDC/ NYCC to provide development details, like landuse, trip rates or trips, spreads of development, number of jobs a development is expected to generate.
- SDC / NYCC to provide information on committed infrastructure/ highway schemes to be included within the various scenarios if available.
- WSP has allowed for modelling requirements only. No design or identification of mitigation and local model development (like individual junction modelling) has been included for Stage 1 work.

6. DELIVERABLES AND PROGRAMME

Table 6-1 – Inception scoping report

No	Activities	Description	Proposed completion date
1	Inception Scoping Report	Summarise the proposed scope and fees (this document) to provide the model inception information. The outturn model may differ in detail but should follow the principles contained therein.	February 2020

Table 6-2 provides a summary of key activities, deliverables and milestone dates for **Stage 1** of model development based on the summary provided in Chapter 5 above.

Table 6-2 – Stage 1

No	Activities	Description	Proposed completion date
1-A	Development log	<ul style="list-style-type: none"> ▪ Review development log provided by SDC/ NYCC ▪ Agree and finalise development log for the future year scenarios (2040DM and 2040DS) 	March 2020
1-B	2040 DM scenario	Using the existing 2016 base year model for Selby Town, produce 2040 DM scenario which includes committed developments identified within the development log and is constrained to latest TEMpro.	April 2020
1-C	2040 DS scenario	<ul style="list-style-type: none"> ▪ Using the existing 2016 base year model for Selby Town, produce 2040 DS scenario which includes developments identified within the development log (<i>NOT</i> constrained to latest TEMpro) 	Mid May 2020
1-D	Analysis	Identification of those sections of the highway network likely to come under stress together with recommendations which development sites may be constrained by highway capacity	End of May 2020
1-E	Reporting	Report summarising the analysis and its findings	End of June 2020

Table 6-3 and **Table 6-4** below summarise in principle the likely activities to be undertaken as part of Stages 2 and 3 to provide an idea of the timescales required to deliver the more detailed modelling for the Draft Local Plan to the deadline of the December 2021 as requested by NYCC/ SDC in their brief.

More definitive programme will be provided as the details of the Stage 1 emerge and when the traffic surveys are commissioned.

Table 6-3 - Stage 2 -Likely activities and timescales for 2021 Base model update

No	Activities	Description	Proposed completion date
1-A	Detail survey specification	<p>Create and agree details survey specification for the base model update based on Stage 1 finding above.</p> <p>Liaise with Local authority (departments) and third parties (including North Yorkshire Police) to arrange the surveys.</p>	October – November 2020
1-B	Arrange surveys	<p>To satisfy the tight delivery time scale of December 2021, the surveys and survey contractor are required to be finalised by November 2020. We would need to undertake the surveys in March- April 2021.</p> <p>This should allow adequate time to liaise with North Yorkshire Police to arrange resources for the potential Road Side Interview surveys (RSI)</p>	November 2020
1-C	Revisit development log	We understand that the Local Plan Preferred Options draft will be available for consultation January – February 2021. Hence to incorporate the outcome of this consultation, we propose to revisit the development log created as part of Stage 1 work.	March 2021
1-D	Network Development	<p>Create the model highway network, carry out initial checks on routing, journey times etc and agreed with the client.</p> <p>This task can be undertaken in parallel during the consultation as it is largely an independent activity.</p> <p>Amendments to the network will be undertaken to incorporate the findings of the consultation</p>	January-April 2021
1-E	Survey Data Collection	<p>Undertake traffic surveys</p> <p>Checking of survey data and analysis</p>	<p>March – April 2021</p> <p>May-June 2021</p>
1-F	Matrix Development	<p>Develop a zoning structure and create the matrices for all agreed time periods and undertaken initial checks.</p> <p>This task can be undertaken in parallel during the consultation as it is largely an independent activity.</p> <p>Amendments to the matrix will be undertaken to incorporate the findings of the consultation</p>	February – June 2021
1-G	Assignment, validation and calibration	Assign, validate and calibrate the network along with checks to produce the Base year SATURN model	July - August 2021
1-H	Base Model - Local Model Validation Report (LMVR)	<p>This report describes the structure and creation of the base year model, providing validation statistics across the model.</p> <p>A summary report can be provided at the end of task 1-G, prior to the full report.</p>	October 2021

Table 6-4 - Stage 3 – Future year model build 2040 DM and 2040 DS

No	Stage name	Description	Indicative completion date
1	Development assumptions log	Use the agreed development assumptions (Stage 2, 1-C) to create the future year scenarios, agree on site access arrangements, infrastructure schemes etc.	August 2021
3	Network build	Code the site access for the agreed developments and other highway schemes using the Base year model to produce future year networks	September - October 2021
4	Matrix build and assignment	Create/ amend the base year matrices to include the development trips from the agreed developments. Produce a Future year models to represent the developments included in the development log.	September – October 2021
5	Report	Produce the traffic report based on the model run summarising Reference Forecast Future year 2040 model.	November-December 2021

7. GOVERNANCE AND QUALITY ASSURANCE

7.1. INTRODUCTION

This section describes how WSP's team would organise and manage project activities to ensure delivery of the agreed outputs.

7.2. PROJECT ORGANISATIONAL STRUCTURE

The following provides an overview of the key organisational structure for the project including NYCC as the client and SDC part funder and WSP as the consultant.

Client – NYCC – Emily Mellalieu

Client – SDC – Martin Grainger

WSP team

Project Director: Richard Crossley

Technical Advisor: Richard Crossley

WSP NYCC service Lead: Christopher Davies

Modelling Advisor: Paul Smith

Project Manager: Narendra Sadhale

Local Transport Planning Team

7.3. RISK MANAGEMENT

Risk identification is critical to all decision making and problem solving, it is the foundation upon which all subsequent assessment and management is performed.

A Risk Register will be prepared to ensure that the management of risk is explicit and clearly understood by all parties.

The risk register would identify the following:

- Risk category,
- Impact description,
- Probability of occurring and impact score;
- What mitigation strategy is being adopted;
- The risk management 'Actions' together with the 'Action Owners'; and
- Timescales for action.

Key project risks will be communicated as outlined below in the Communications Strategy.

There are risks around the quality of survey data collected, uncertainty log assumptions and the time required to calibrate and validate the model. While producing this report, WSP have endeavoured to account for these risks based on industry best practise.

7.4. COMMUNICATION STRATEGY

A communications plan is needed in order to define how communications are managed between WSP and the client. The project organisational structure highlights that the key communications linkage between NYCC, SDC and WSP will be via the following:

- Emily Mellalieu - NYCC Model Project Manager
- Narendra Sadhale (Narendra.sadhale@wsp.com; tel 0113 301 6273) WSP Project Manager
- Chris Davies (christopher.davies@wsp.com; tel – 0113 301 6263) - WSP Service Lead for Transport Planning

It is proposed that day to day communication takes place between the NYCC and WSP Project Manager, who will act as first point of contact. Regular dialogue on progress is proposed during the life cycle of the project. Monthly progress report / project meeting will aim to provide discussion of technical progress including key issues, programme, work to do, risks and budget.

Any issues which require escalation can be escalated through Christopher Davies.

It is proposed that all monthly progress reports and meeting minutes, technical meeting minutes, technical notes and project deliverables will be posted and stored onto WSP's Project Huddle site. Access to this project site will be granted to relevant people by the WSP Project Manager.

7.5. PROJECT MANAGEMENT AND CONTROLS

Work undertaken by the WSP's team in fulfilment of the project will be subject to WSP's Business Management System, which includes periodic internal and external audit.

The Management System provides detailed guidance for the management and delivery of projects including for:

- | | |
|--|---|
| <ul style="list-style-type: none"> ▪ Project Governance ▪ Project Start-up ▪ Communication ▪ Stakeholder Management ▪ Planning and Programme Management ▪ Risk Management ▪ Change Management | <ul style="list-style-type: none"> ▪ Financial Management ▪ Project Review ▪ Use of Partners ▪ Management of Re-work ▪ Lessons Learned ▪ Project Close-out ▪ Meeting Client Requirements |
|--|---|

8. FEE PROPOSAL AND INVOICING

In order to provide the client with a greater degree of certainty regarding fees it is proposed to use the fixed lump sum option within the contract incorporating the overarching NEC3 Framework Contract (NEC3 Professional Services Contract Option A – Priced Contract with Activity Schedule).

We propose a fee of £23,350 (+vat) to undertake Stage1 task ***only*** for the Selby District model update as outlined in this document and includes for activities summarised in Table 6-1 and Table 6-2 of this document and ***does not*** include any planning or preparation for Stages 2 and 3.

8.1. INVOICING

It is proposed to issue monthly invoices with fees linked to the activity schedule noted in Table 6-2 above.

9. CHANGE OF EVENTS

In the event to changes to the scope or additional work requests this will be raised with the client at the earliest opportunity for approval prior to commencement of activities.

Appendix A

PROJECT BRIEF FROM CLIENT



Selby DC Strategic Transport Model

Introduction

1. Selby DC Local Plan (the Plan) is currently in preparation. The Plan will set out the Districts targets for employment and housing growth and where this growth will take place over the next 20 years (to 2040) and beyond. The anticipated deadline for submission (for Examination in Public) being summer 2022. The production of evidence and information relating to strategic transport is a key part of this process and is necessary to ensure a 'sound' plan.

Background

2. There is no overall Selby DC's strategic transport model but data has been previously produced for Selby and Tadcaster. This is detailed in summary below.
3. To inform the preparation of the Site Allocations Local Plan both Selby and NYCC jointly commissioned the preparation of a strategic macrosimulation model for Selby Town and the surrounding area. This was commissioned via NYCC's framework consultant Mouchel (now WSP).
4. The model was prepared using SATURN, which is a well-established and understood package for modelling how vehicles use highway networks at the strategic level. The model was developed, calibrated and validated in line with best practice and with Department for Transport transport analysis guidance (WebTAG).
5. The study area of the model consisted of detailed and buffer areas of modelling:
 - The detailed area of modelling covers the area of Selby as well as the surrounding villages stretching north to Riccall, south to Chapel Haddlesey, west to Hambleton and east to Hemingbrough. Within the detailed area, the model allows for rigorous testing between areas or zones in the model.
 - The buffer area of modelling provides skeletal coverage in most areas, with localised detail around secondary important population centres and limited coverage of wider metropolitan areas.
6. Based on a desktop review of the network in Tadcaster, the following junctions were identified as having potential for congestion resulting from development in Tadcaster:
 - A659 Leeds Road/A162 signals
 - A659 York Road/Oxton Lane/Wighill Lane signals
 - A659 Leeds Road/Kirkgate priority junction
 - Wetherby Road/Station Road priority junction
 - A659 Leeds Road/Station Road/Garnet lane staggered priority junction
7. **The lack of an overall Strategic Transport model along with associated document would result in the local plan being successfully challenged at Examination in Public (EiP).**

8. With regard to transport infrastructure to support the new Local Plan for Selby DC the following work is considered necessary.
- I. Strategic transport modelling to identify the impacts of growth on the levels of traffic and congestion, both with and without measures to mitigate it.
 - II. An infrastructure delivery plan (IDP) to identify what infrastructure is needed to enable this growth to take place and set out how it will be delivered.
 - III. A viability assessment of the local plan to confirm sites allocated in the plan are viable and deliverable. This will also help identify any funding gaps that will have to be bridged through securing other sources of funding.

The study outlined below relates to (I.) but is interlinked with II and III.

Scope of Proposed Work

9. It will be necessary to elicit from a suitable consultancy services provider the extent (and, where possible, the cost) of the work required to address the points below.
- i. Produce a strategic transport model to reduce, to an acceptable level, the risk of the outputs being open to legal challenge.
 - ii. Use the transport model to:
 - a. establish the baseline position in relation to traffic movements
 - b. Model future years (principally 2040) with 'committed' development and infrastructure (i.e. the 'do minimum' case)
 - c. Model future years (principally 2040) with 'committed' development and 'required' infrastructure to mitigate the effects of development (this ultimately will be set out in the Infrastructure Delivery Plan) i.e. the 'do something' case.
 - iii. Using work from the Selby DC Viability Study to identify the infrastructure funding gaps.
10. It is likely that the above will be iterative (requiring several iterations) because of:
- Site allocations may change following consultation (additional 'further sites consultation' yet to be confirmed)
 - The affordability (affects on viability) of the 'required infrastructure' tested through the local plan site viability work.

Timescales

11. It is important that this work is commissioned early in 2020. This is to enable the work to establish a baseline to be developed before the middle of 2020 and subsequently the proposed allocation to be modelled.
12. The Local Plan Preferred Options draft will be available for consultation January – February 2021. This will require reporting to Members in December 2020. The modelling of draft sites must be completed to feed into that process.

13. The submission draft Local Plan will be available for consultation in January – February 2022 with reporting to Members in December 2021. Further modelling will need to be completed to support the plan at that stage. In addition this will need to be captured in the IDP which will need to be completed in the same timeframe.

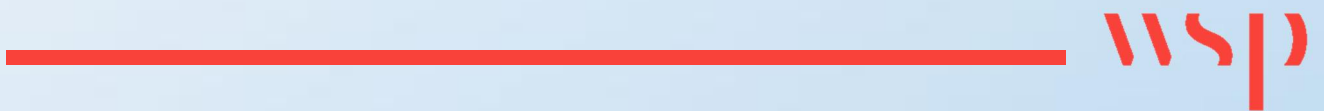


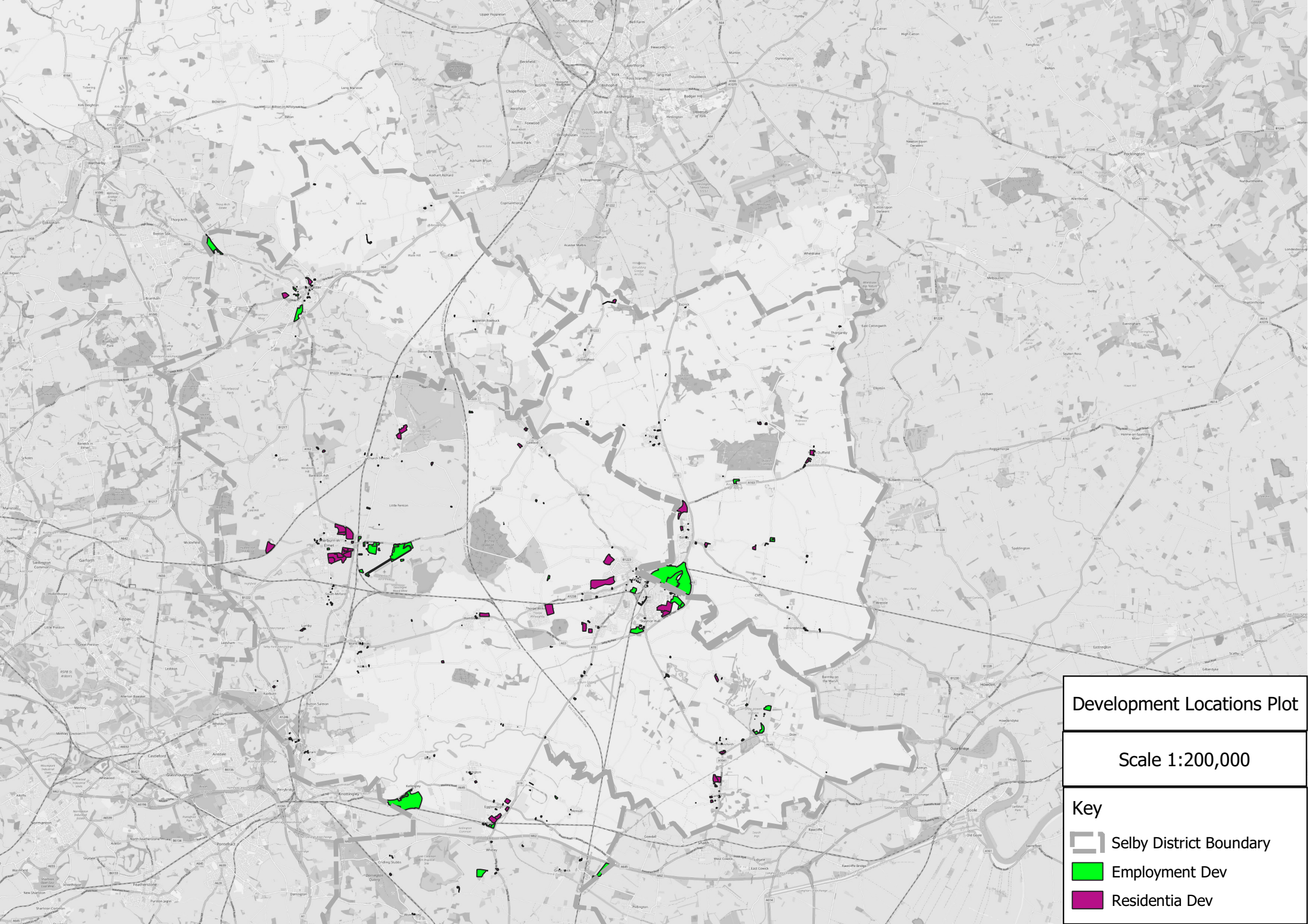
1st Floor, LS1 Headrow,
Unit 113 The Headrow
Leeds
LS1 5JW

wsp.com

Appendix B

DEVELOPMENT INFORMATION








Development Locations Plot

Scale 1:200,000

Key

-  Selby District Boundary
-  Employment Dev
-  Residential Dev

Appendix C

GROWTH FACTORS AND PPM/PPK
VALUES



2020 AM Adjusted Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.0593	1.0532	1.0606	1.0514	1.0793	1.0773
North East	1.0522	1.0522	1.05	1.05	1.0567	1.0567
North West	1.0439	1.0439	1.0438	1.0438	1.0541	1.0541
South East	1.0458	1.0473	1.0427	1.0448	1.0647	1.0644
South West	1.0416	1.0416	1.0391	1.0391	1.0555	1.0555
Humberside	1.0428	1.0433	1.0391	1.04	1.051	1.0515
North Yorkshire	1.0345	1.0364	1.0315	1.0335	1.0403	1.0407
Selby	1.0022	1.0078	0.9963	1.0049	1.0051	1.0094
South Yorkshire	1.05	1.05	1.0489	1.0489	1.0564	1.0564
West Yorkshire	1.0668	1.0658	1.0649	1.0638	1.062	1.0617

2020 IP Adjusted Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.0534	1.053	1.0516	1.0523	1.0758	1.0765
North East	1.0473	1.0473	1.0411	1.0411	1.0552	1.0552
North West	1.0397	1.0397	1.0351	1.0351	1.0537	1.0537
South East	1.0449	1.0448	1.038	1.0376	1.0642	1.0641
South West	1.039	1.039	1.0331	1.0331	1.0539	1.0539
Humberside	1.0402	1.0402	1.034	1.0339	1.0506	1.0506
North Yorkshire	1.0327	1.0327	1.0279	1.0276	1.0392	1.0392
Selby	1.0036	1.0032	0.9967	0.9955	1.0057	1.0057
South Yorkshire	1.0457	1.0457	1.0409	1.0409	1.0563	1.0563
West Yorkshire	1.0616	1.0616	1.0577	1.0579	1.0587	1.0588

2020 PM Adjusted Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.0522	1.0567	1.0489	1.0577	1.0709	1.0705
North East	1.0492	1.0492	1.0442	1.0442	1.0519	1.0519
North West	1.041	1.041	1.0381	1.0381	1.0491	1.0491
South East	1.046	1.0445	1.0404	1.0383	1.0566	1.0571
South West	1.0403	1.0403	1.0343	1.0343	1.0481	1.0481
Humberside	1.0415	1.0411	1.0358	1.035	1.0458	1.0457
North Yorkshire	1.035	1.0335	1.0297	1.0277	1.036	1.0359
Selby	1.0061	1.0016	1.0005	0.9927	1.0029	1.0018
South Yorkshire	1.0474	1.0474	1.0436	1.0436	1.0528	1.0528
West Yorkshire	1.0635	1.0642	1.0596	1.0606	1.0595	1.0595

2020 AM TEMPro Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.0593	1.0532	1.0605	1.0513	1.0793	1.0773
North East	1.0522	1.0522	1.0499	1.0499	1.0566	1.0566
North West	1.0438	1.0438	1.0437	1.0437	1.0541	1.0541
South East	1.0458	1.0472	1.0426	1.0448	1.0647	1.0643
South West	1.0415	1.0415	1.0391	1.0391	1.0555	1.0555
Humberside	1.0428	1.0433	1.039	1.0399	1.0509	1.0514
North Yorkshire	1.0344	1.0363	1.0314	1.0335	1.0403	1.0407
Selby	1.0397	1.0356	1.036	1.0328	1.0439	1.0408
South Yorkshire	1.0499	1.0499	1.0488	1.0488	1.0564	1.0564
West Yorkshire	1.0668	1.0658	1.0648	1.0638	1.0619	1.0616

2020 IP TEMPro Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.0534	1.053	1.0516	1.0523	1.0758	1.0764
North East	1.0473	1.0473	1.041	1.041	1.0551	1.0551
North West	1.0396	1.0396	1.035	1.035	1.0537	1.0537
South East	1.0449	1.0448	1.0379	1.0376	1.0642	1.0641
South West	1.0389	1.0389	1.033	1.033	1.0538	1.0538
Humberside	1.0401	1.0401	1.034	1.0338	1.0506	1.0505
North Yorkshire	1.0327	1.0327	1.0278	1.0276	1.0392	1.0391
Selby	1.0343	1.0336	1.0294	1.03	1.041	1.0417
South Yorkshire	1.0456	1.0456	1.0408	1.0408	1.0562	1.0562
West Yorkshire	1.0616	1.0616	1.0577	1.0578	1.0587	1.0587

2020 PM TEMPro Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.0522	1.0567	1.0488	1.0577	1.0708	1.0704
North East	1.0491	1.0491	1.0441	1.0441	1.0518	1.0518
North West	1.0409	1.0409	1.0381	1.0381	1.049	1.049
South East	1.046	1.0444	1.0403	1.0383	1.0565	1.057
South West	1.0402	1.0402	1.0343	1.0343	1.048	1.048
Humberside	1.0414	1.041	1.0357	1.035	1.0457	1.0456
North Yorkshire	1.035	1.0335	1.0296	1.0276	1.036	1.0358
Selby	1.0349	1.0377	1.0289	1.0326	1.0373	1.0396
South Yorkshire	1.0474	1.0474	1.0436	1.0436	1.0527	1.0527
West Yorkshire	1.0634	1.0642	1.0595	1.0605	1.0594	1.0594

2030 AM Adjusted Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.1372	1.1157	1.1414	1.1123	1.2225	1.2168
North East	1.1291	1.1291	1.1231	1.1231	1.1427	1.1427
North West	1.1126	1.1126	1.1108	1.1108	1.1365	1.1365
South East	1.1066	1.1122	1.0998	1.1065	1.1837	1.1827
South West	1.1029	1.1029	1.0972	1.0972	1.1557	1.1557
Humberside	1.1156	1.1158	1.1075	1.1084	1.1353	1.1365
North Yorkshire	1.0922	1.0994	1.0829	1.0911	1.1054	1.1072
Selby	1.0082	0.9761	1.0039	0.9689	1.015	0.9909
South Yorkshire	1.1238	1.1238	1.1203	1.1203	1.154	1.154
West Yorkshire	1.1504	1.1473	1.1481	1.1447	1.1716	1.1706

2030 IP Adjusted Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.1207	1.1188	1.1195	1.1228	1.2214	1.2242
North East	1.1183	1.1183	1.1042	1.1042	1.1428	1.1428
North West	1.1031	1.1031	1.0922	1.0922	1.1388	1.1388
South East	1.1076	1.1079	1.0923	1.0912	1.1901	1.1895
South West	1.098	1.098	1.0849	1.0849	1.1573	1.1573
Humberside	1.1082	1.1082	1.0939	1.0937	1.1365	1.1365
North Yorkshire	1.089	1.0891	1.0757	1.0744	1.1044	1.1041
Selby	0.979	0.9772	0.974	0.9792	1.0015	1.0047
South Yorkshire	1.1148	1.1148	1.1033	1.1033	1.1587	1.1587
West Yorkshire	1.1393	1.1393	1.1299	1.1304	1.1756	1.1757

2030 PM Adjusted Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.116	1.13	1.1068	1.1354	1.1984	1.1957
North East	1.1226	1.1226	1.1104	1.1104	1.1329	1.1329
North West	1.1062	1.1062	1.0986	1.0986	1.1264	1.1264
South East	1.1096	1.1051	1.0968	1.0903	1.1616	1.1632
South West	1.1004	1.1004	1.0869	1.0869	1.1374	1.1374
Humberside	1.1114	1.1111	1.0978	1.0971	1.124	1.1237
North Yorkshire	1.0948	1.0894	1.0815	1.0735	1.0965	1.0957
Selby	0.9764	0.9998	0.9623	0.9977	1.1087	1.1168
South Yorkshire	1.1184	1.1184	1.1086	1.1086	1.1443	1.1443
West Yorkshire	1.1424	1.1447	1.1339	1.1372	1.1644	1.1647

2030 AM TEMPro Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.1371	1.1157	1.1414	1.1123	1.2225	1.2168
North East	1.129	1.129	1.123	1.123	1.1427	1.1427
North West	1.1126	1.1126	1.1108	1.1108	1.1365	1.1365
South East	1.1066	1.1122	1.0998	1.1064	1.1837	1.1827
South West	1.1029	1.1029	1.0972	1.0972	1.1556	1.1556
Humberside	1.1155	1.1157	1.1075	1.1084	1.1353	1.1364
North Yorkshire	1.0922	1.0994	1.0828	1.0911	1.1054	1.1071
Selby	1.1202	1.0993	1.1119	1.091	1.1261	1.1103
South Yorkshire	1.1237	1.1237	1.1203	1.1203	1.1539	1.1539
West Yorkshire	1.1503	1.1473	1.1481	1.1447	1.1716	1.1705

2030 IP TEMPro Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.1206	1.1187	1.1194	1.1227	1.2213	1.2242
North East	1.1182	1.1182	1.1042	1.1042	1.1427	1.1427
North West	1.1031	1.1031	1.0922	1.0922	1.1387	1.1387
South East	1.1076	1.1079	1.0923	1.0911	1.1901	1.1895
South West	1.098	1.098	1.0849	1.0849	1.1573	1.1573
Humberside	1.1082	1.1082	1.0938	1.0936	1.1364	1.1365
North Yorkshire	1.089	1.089	1.0756	1.0744	1.1043	1.104
Selby	1.0981	1.0965	1.0891	1.0921	1.1162	1.1189
South Yorkshire	1.1147	1.1147	1.1033	1.1033	1.1586	1.1586
West Yorkshire	1.1393	1.1392	1.1299	1.1304	1.1755	1.1756

2030 PM TEMPro Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.116	1.13	1.1068	1.1354	1.1984	1.1957
North East	1.1226	1.1226	1.1104	1.1104	1.1329	1.1329
North West	1.1062	1.1062	1.0985	1.0985	1.1264	1.1264
South East	1.1096	1.105	1.0967	1.0902	1.1616	1.1632
South West	1.1003	1.1003	1.0868	1.0868	1.1374	1.1374
Humberside	1.1113	1.1111	1.0977	1.097	1.124	1.1237
North Yorkshire	1.0948	1.0894	1.0814	1.0734	1.0965	1.0957
Selby	1.098	1.1129	1.0826	1.1046	1.1087	1.1168
South Yorkshire	1.1184	1.1184	1.1086	1.1086	1.1443	1.1443
West Yorkshire	1.1423	1.1446	1.1339	1.1371	1.1644	1.1647

2040 AM Adjusted Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.2158	1.1807	1.2202	1.1742	1.3504	1.3371
North East	1.2096	1.2096	1.2004	1.2004	1.2273	1.2273
North West	1.1816	1.1816	1.1773	1.1773	1.2178	1.2178
South East	1.165	1.174	1.1541	1.1645	1.2835	1.2831
South West	1.1622	1.1622	1.1537	1.1537	1.2421	1.2421
Humberside	1.1864	1.1866	1.1737	1.1749	1.2141	1.2157
North Yorkshire	1.1356	1.1461	1.1206	1.1331	1.1687	1.172
Selby	1.0582	0.9828	1.0585	0.9721	1.0872	1.0284
South Yorkshire	1.1986	1.1986	1.192	1.192	1.2456	1.2456
West Yorkshire	1.2296	1.2251	1.2247	1.2197	1.2762	1.2744

2040 IP Adjusted Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.1882	1.1852	1.186	1.1912	1.4408	1.4232
North East	1.1922	1.1922	1.1695	1.1695	1.2628	1.2628
North West	1.1666	1.1666	1.1488	1.1488	1.2629	1.2629
South East	1.1666	1.167	1.1424	1.1406	1.368	1.3654
South West	1.1545	1.1545	1.1346	1.1346	1.2947	1.2947
Humberside	1.1743	1.1743	1.1514	1.1511	1.2703	1.2707
North Yorkshire	1.1306	1.1306	1.109	1.1069	1.2134	1.2214
Selby	0.9952	0.9924	0.9934	1.0071	1.0576	1.0642
South Yorkshire	1.1842	1.1842	1.1653	1.1653	1.2912	1.2912
West Yorkshire	1.2123	1.2122	1.1961	1.1969	1.3573	1.3543

2040 PM Adjusted Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.1812	1.2038	1.1653	1.2107	1.3092	1.3068
North East	1.1992	1.1992	1.1795	1.1795	1.2126	1.2126
North West	1.1715	1.1715	1.1581	1.1581	1.2019	1.2019
South East	1.17	1.1627	1.149	1.1387	1.25	1.252
South West	1.158	1.158	1.1375	1.1375	1.2155	1.2155
Humberside	1.1795	1.1791	1.1573	1.1564	1.1965	1.1961
North Yorkshire	1.139	1.1309	1.1175	1.1053	1.1538	1.1521
Selby	0.9861	1.042	0.9631	1.0496	1.0401	1.0689
South Yorkshire	1.1899	1.1899	1.1733	1.1733	1.23	1.23
West Yorkshire	1.2169	1.2202	1.202	1.2068	1.2623	1.2628

2040 AM TEMPro Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.2158	1.1807	1.2202	1.1742	1.3504	1.3371
North East	1.2096	1.2096	1.2004	1.2004	1.2273	1.2273
North West	1.1816	1.1816	1.1773	1.1773	1.2178	1.2178
South East	1.165	1.174	1.1541	1.1645	1.2835	1.2831
South West	1.1622	1.1622	1.1537	1.1537	1.2421	1.2421
Humberside	1.1864	1.1866	1.1737	1.1749	1.2141	1.2157
North Yorkshire	1.1356	1.1461	1.1206	1.1331	1.1687	1.172
Selby	1.1799	1.1454	1.1686	1.1323	1.2067	1.1786
South Yorkshire	1.1986	1.1986	1.192	1.192	1.2456	1.2456
West Yorkshire	1.2296	1.2251	1.2247	1.2197	1.2762	1.2744

2040 IP TEMPro Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.1882	1.1852	1.186	1.1912	1.4408	1.4232
North East	1.1922	1.1922	1.1695	1.1695	1.2628	1.2628
North West	1.1666	1.1666	1.1488	1.1488	1.2629	1.2629
South East	1.1666	1.167	1.1424	1.1406	1.368	1.3654
South West	1.1545	1.1545	1.1346	1.1346	1.2947	1.2947
Humberside	1.1743	1.1743	1.1514	1.1511	1.2703	1.2707
North Yorkshire	1.1306	1.1306	1.109	1.1069	1.2134	1.2214
Selby	1.1441	1.1421	1.1306	1.1364	1.2745	1.2149
South Yorkshire	1.1842	1.1842	1.1653	1.1653	1.2912	1.2912
West Yorkshire	1.2123	1.2122	1.1961	1.1969	1.3573	1.3543

2040 PM TEMPro Factors	Business		Commuting		Other	
	Origin	Destination	Origin	Destination	Origin	Destination
London	1.1812	1.2038	1.1653	1.2107	1.3092	1.3068
North East	1.1992	1.1992	1.1795	1.1795	1.2126	1.2126
North West	1.1715	1.1715	1.1581	1.1581	1.2019	1.2019
South East	1.17	1.1627	1.149	1.1387	1.25	1.252
South West	1.158	1.158	1.1375	1.1375	1.2155	1.2155
Humberside	1.1795	1.1791	1.1573	1.1564	1.1965	1.1961
North Yorkshire	1.139	1.1309	1.1175	1.1053	1.1538	1.1521
Selby	1.1434	1.1687	1.1188	1.1573	1.1757	1.1906
South Yorkshire	1.1899	1.1899	1.1733	1.1733	1.23	1.23
West Yorkshire	1.2169	1.2202	1.202	1.2068	1.2623	1.2628

2020

User Class	AM		IP		PM	
	PPM	PPK	PPM	PPK	PPM	PPK
Business	31.29	11.47	32.07	11.26	31.74	11.34
Commuting	20.99	5.41	21.33	5.34	21.06	5.37
Other	14.48	5.41	15.42	5.34	15.16	5.37
LGV	22.68	13.53	22.68	13.52	22.68	13.52
HGV	51.95	35.36	51.95	34.6	51.95	34.88

2030

User Class	AM		IP		PM	
	PPM	PPK	PPM	PPK	PPM	PPK
Business	36.17	10.01	37.07	9.81	36.7	9.89
Commuting	24.26	4.51	24.65	4.45	24.34	4.47
Other	16.74	4.51	17.83	4.45	17.53	4.47
LGV	26.22	13.07	26.22	13.06	26.22	13.05
HGV	60.05	37.5	60.05	36.7	60.05	37

2040

User Class	AM		IP		PM	
	PPM	PPK	PPM	PPK	PPM	PPK
Business	43.79	9.08	44.87	8.89	44.42	8.96
Commuting	29.37	4.03	29.84	3.98	29.47	4
Other	20.26	4.03	21.58	3.98	21.58	4
LGV	31.73	12.63	31.73	12.61	31.73	12.61
HGV	72.69	38.56	72.69	37.74	72.69	38.05

based on WebTag databook, May 2020 release

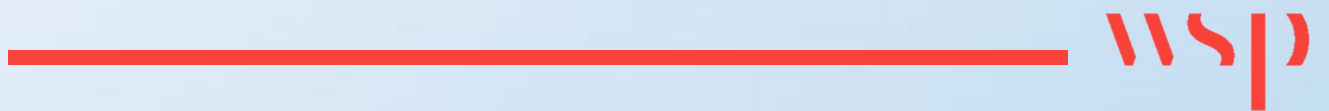
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	Origin	Destination	Origin	Destination
London	1.09	1.09	0.98	0.98
North East	1.08	1.08	0.99	0.99
North West	1.08	1.08	0.99	0.99
South East	1.08	1.08	1.01	1.01
South West	1.07	1.07	0.99	0.99
Yorkshire & The Humber	1.08	1.08	0.99	0.99

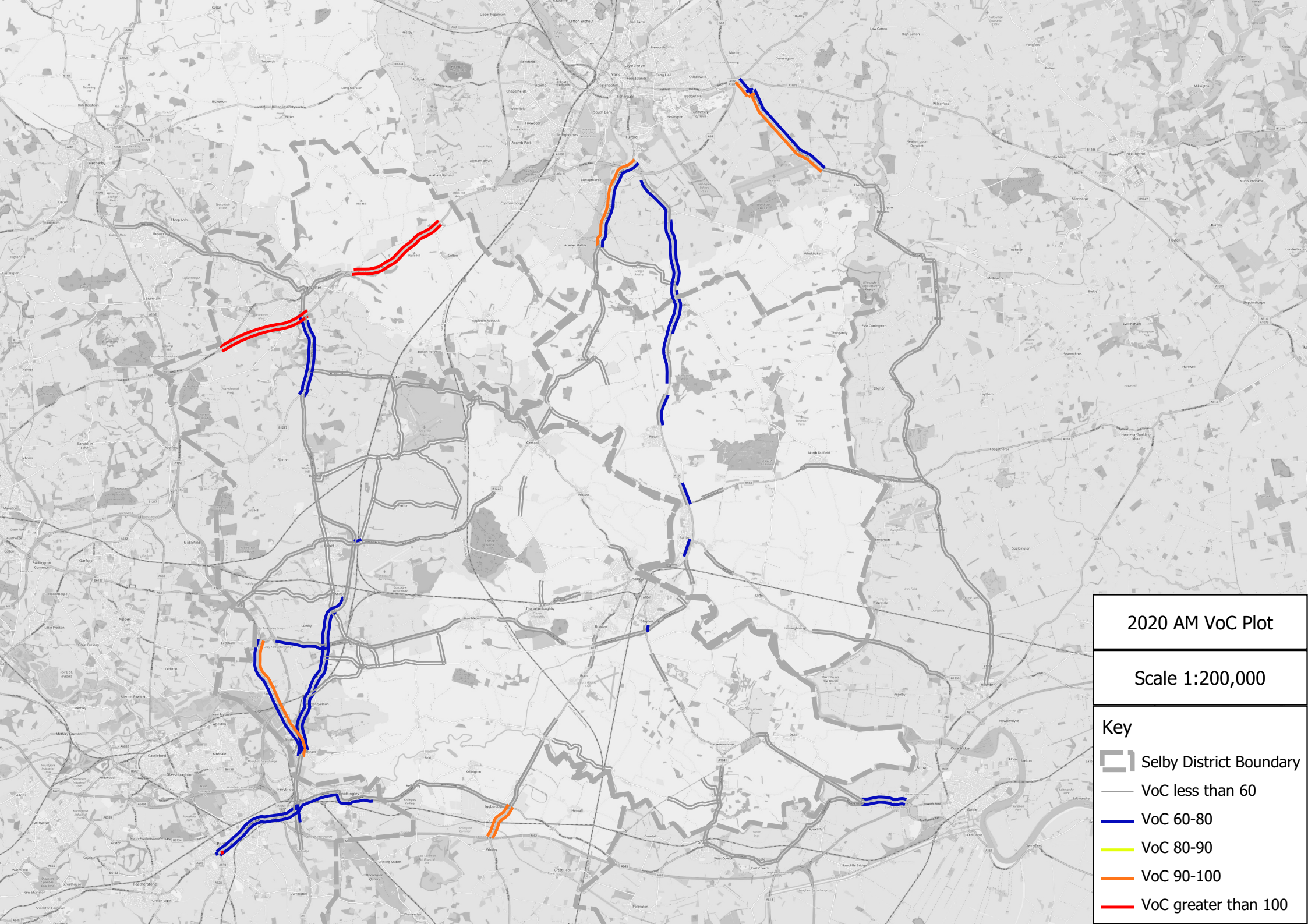
2030 RTF Factors	LGV		HGV	
	Origin	Destination	Origin	Destination
London	1.25	1.25	0.99	0.99
North East	1.21	1.21	0.98	0.98
North West	1.19	1.19	0.99	0.99
South East	1.21	1.21	1.05	1.05
South West	1.19	1.19	0.99	0.99
Yorkshire & The Humber	1.21	1.21	1.00	1.00

2040 RTF Factors	LGV		HGV	
	Origin	Destination	Origin	Destination
London	1.41	1.41	1.02	1.02
North East	1.37	1.37	1.00	1.00
North West	1.35	1.35	1.02	1.02
South East	1.37	1.37	1.12	1.12
South West	1.34	1.34	1.01	1.01
Yorkshire & The Humber	1.37	1.37	1.03	1.03

Appendix D

VOC PLOTS









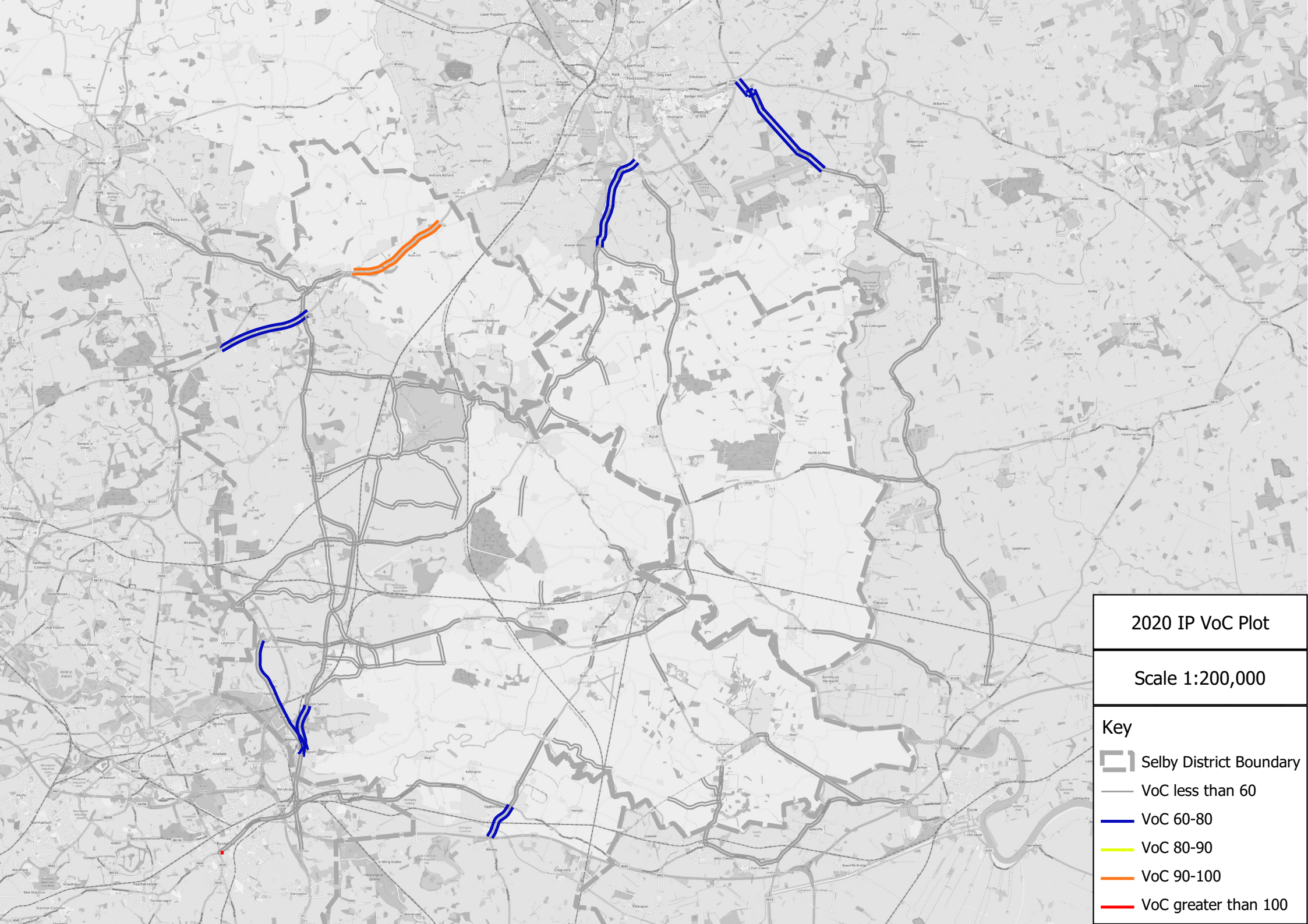


2020 AM VoC Plot

Scale 1:200,000

Key







-  Selby District Boundary
-  VoC less than 60
-  VoC 60-80
-  VoC 80-90
-  VoC 90-100
-  VoC greater than 100

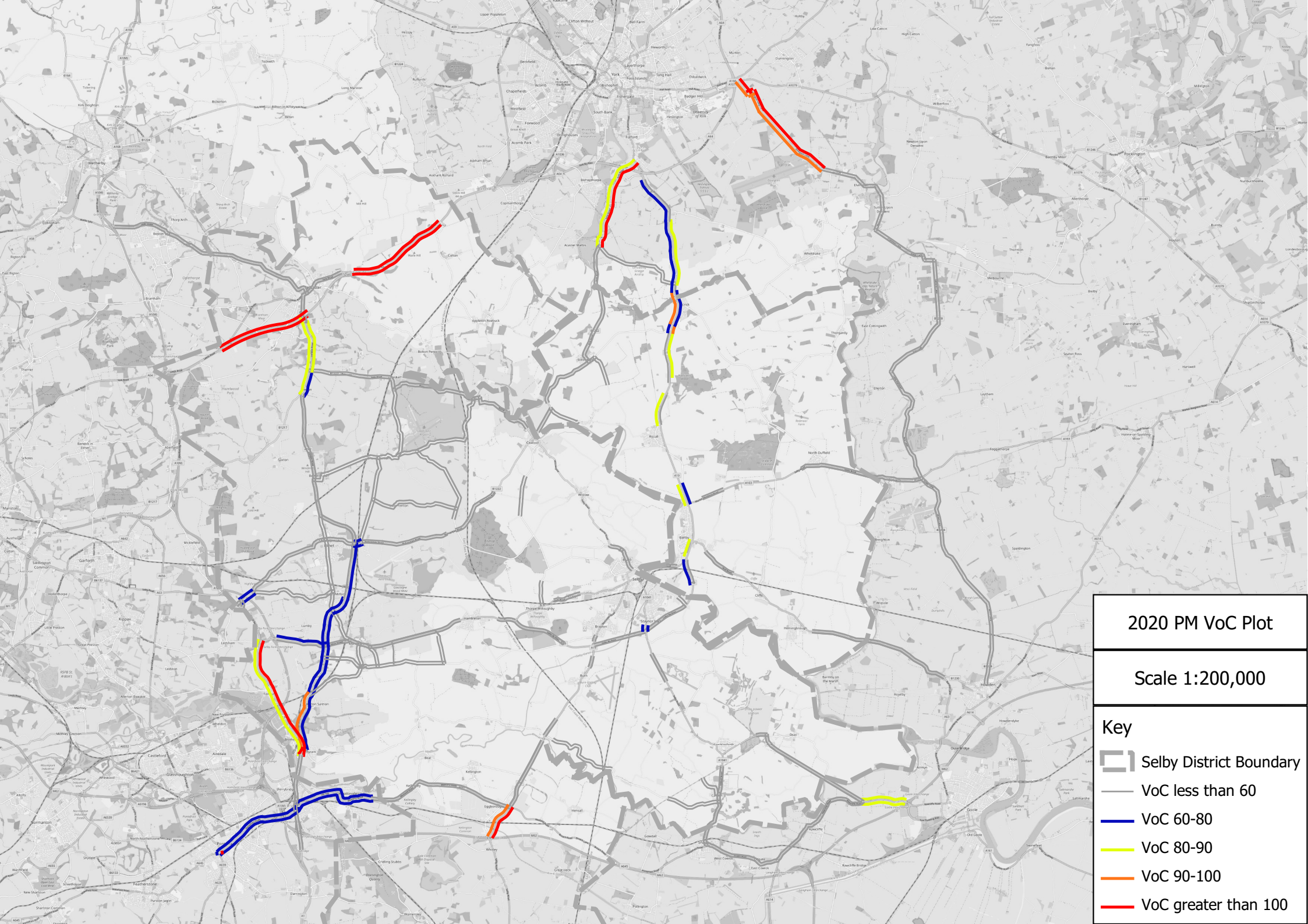


2020 IP VoC Plot

Scale 1:200,000

Key







-  Selby District Boundary
-  VoC less than 60
-  VoC 60-80
-  VoC 80-90
-  VoC 90-100
-  VoC greater than 100

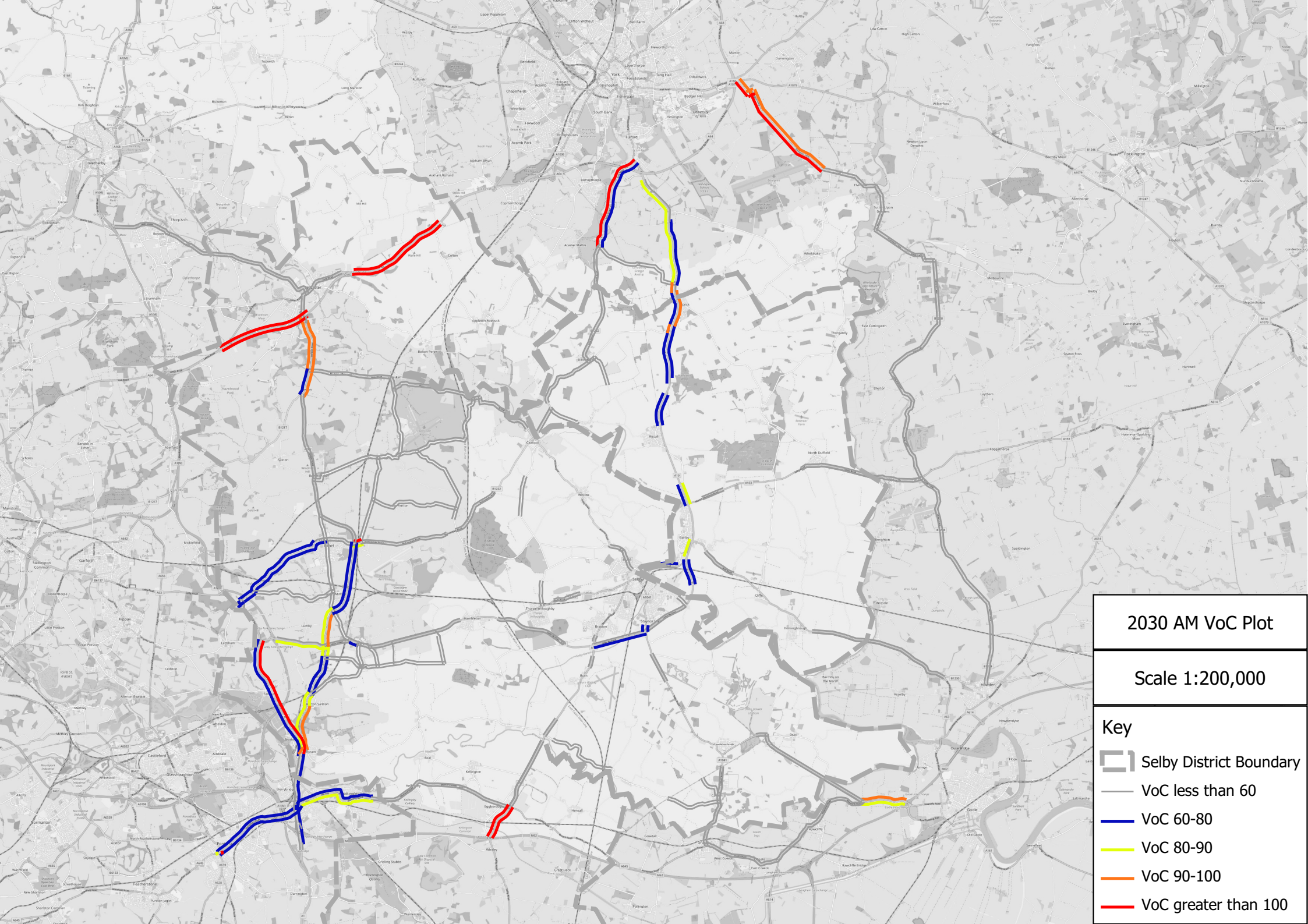


2020 PM VoC Plot

Scale 1:200,000

Key







-  Selby District Boundary
-  VoC less than 60
-  VoC 60-80
-  VoC 80-90
-  VoC 90-100
-  VoC greater than 100

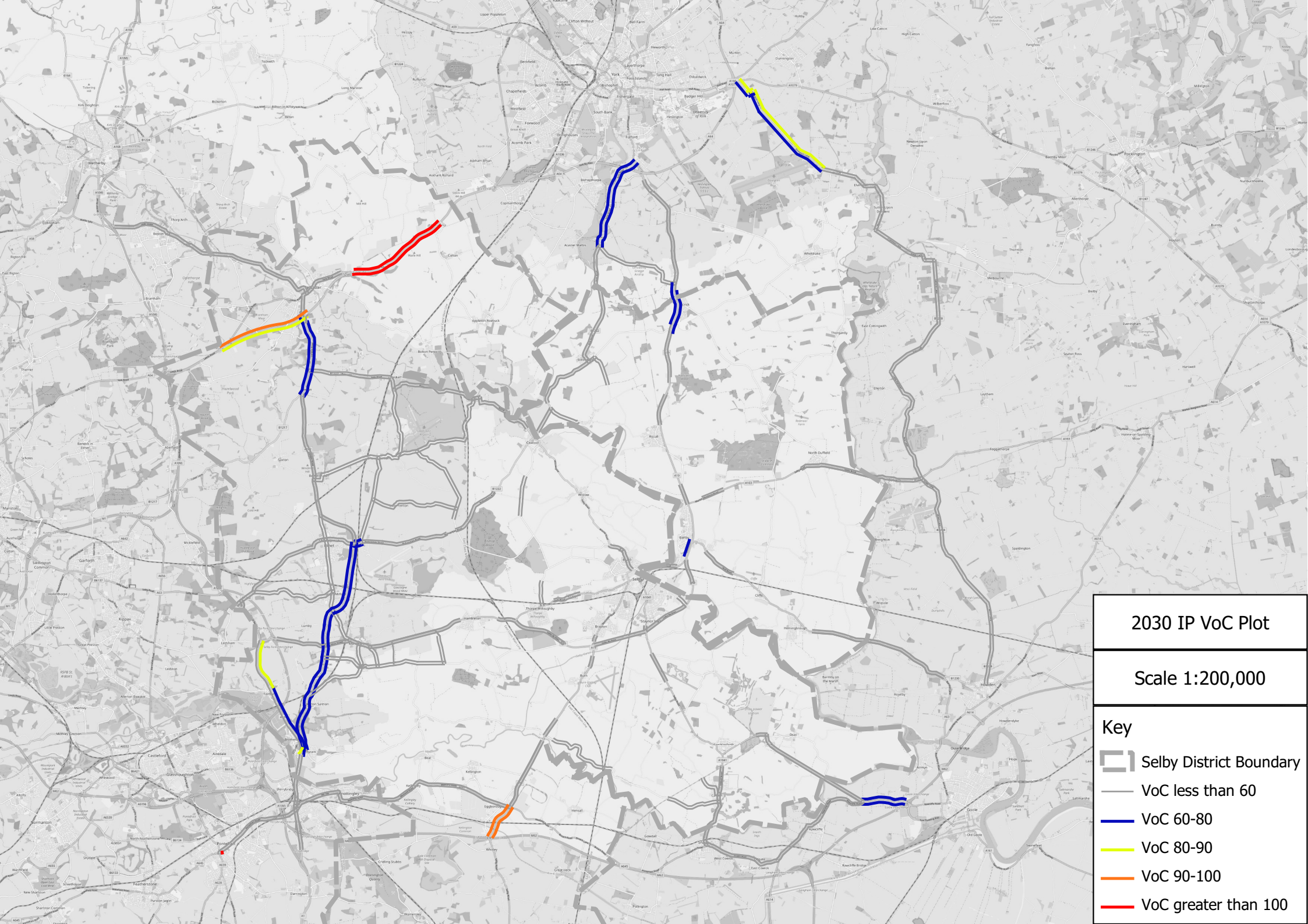


2030 AM VoC Plot

Scale 1:200,000

Key







-  Selby District Boundary
-  VoC less than 60
-  VoC 60-80
-  VoC 80-90
-  VoC 90-100
-  VoC greater than 100



2030 IP VoC Plot

Scale 1:200,000

Key







-  Selby District Boundary
-  VoC less than 60
-  VoC 60-80
-  VoC 80-90
-  VoC 90-100
-  VoC greater than 100

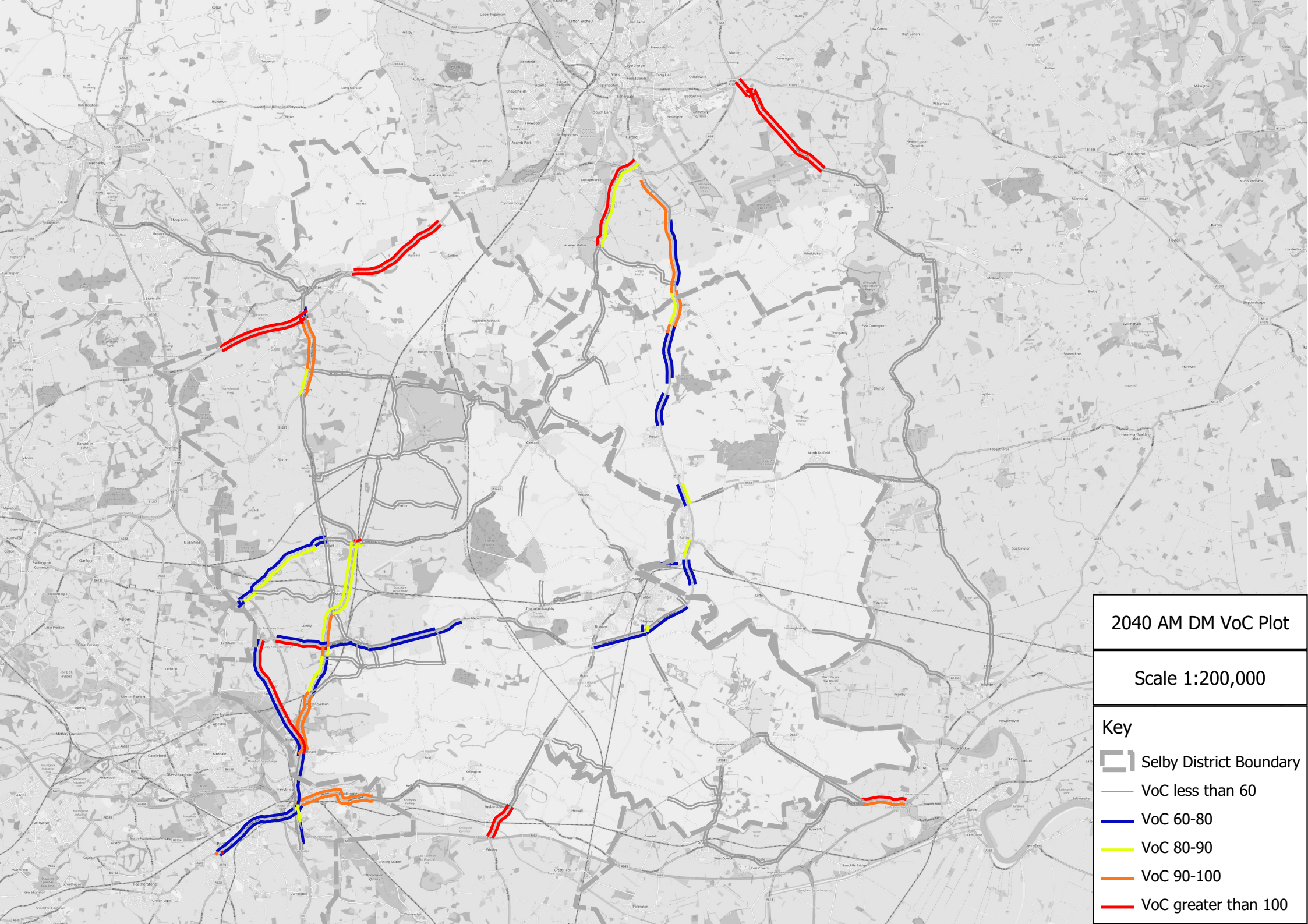


2030 PM VoC Plot

Scale 1:200,000







Key

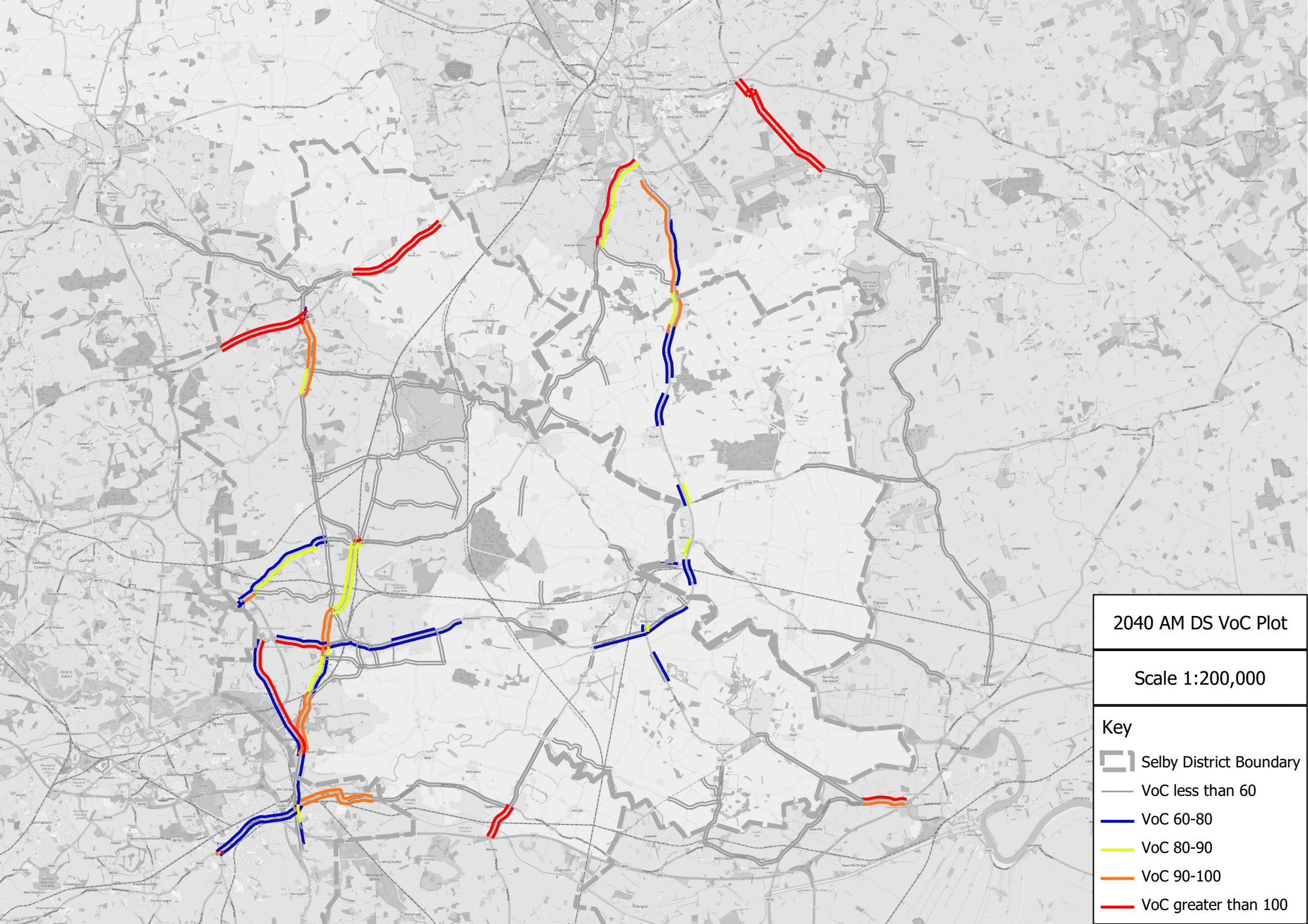
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-  VoC less than 60
-  VoC 60-80
-  VoC 80-90
-  VoC 90-100
-  VoC greater than 100



2040 AM DM VoC Plot







Scale 1:200,000

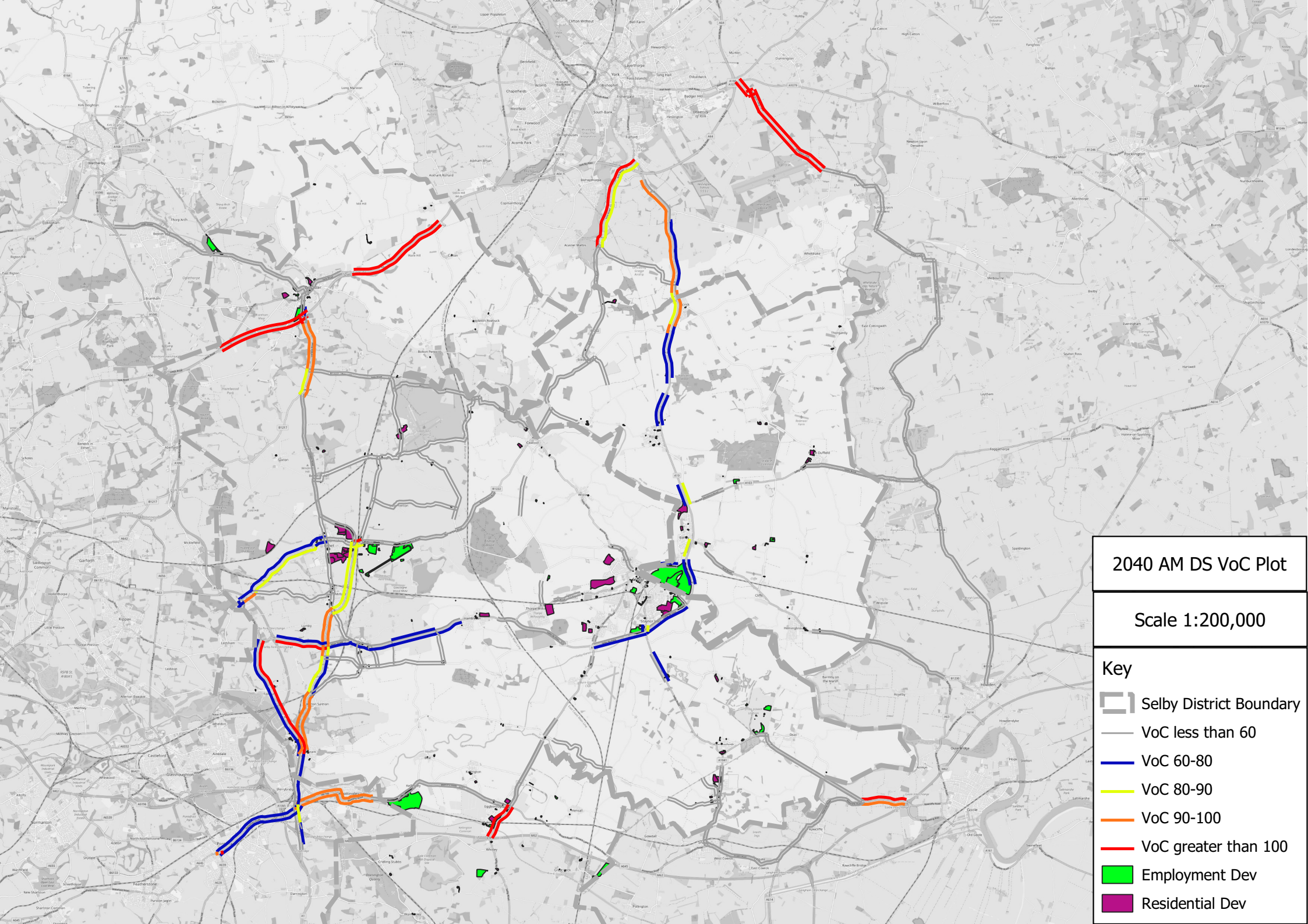
- Key**
-  Selby District Boundary
 -  VoC less than 60
 -  VoC 60-80
 -  VoC 80-90
 -  VoC 90-100
 -  VoC greater than 100



2040 AM DS VoC Plot

Scale 1:200,000









- Key
-  Selby District Boundary
 -  VoC less than 60
 -  VoC 60-80
 -  VoC 80-90
 -  VoC 90-100
 -  VoC greater than 100



2040 AM DS VoC Plot

Scale 1:200,000

Key







-  Selby District Boundary
-  VoC less than 60
-  VoC 60-80
-  VoC 80-90
-  VoC 90-100
-  VoC greater than 100
-  Employment Dev
-  Residential Dev

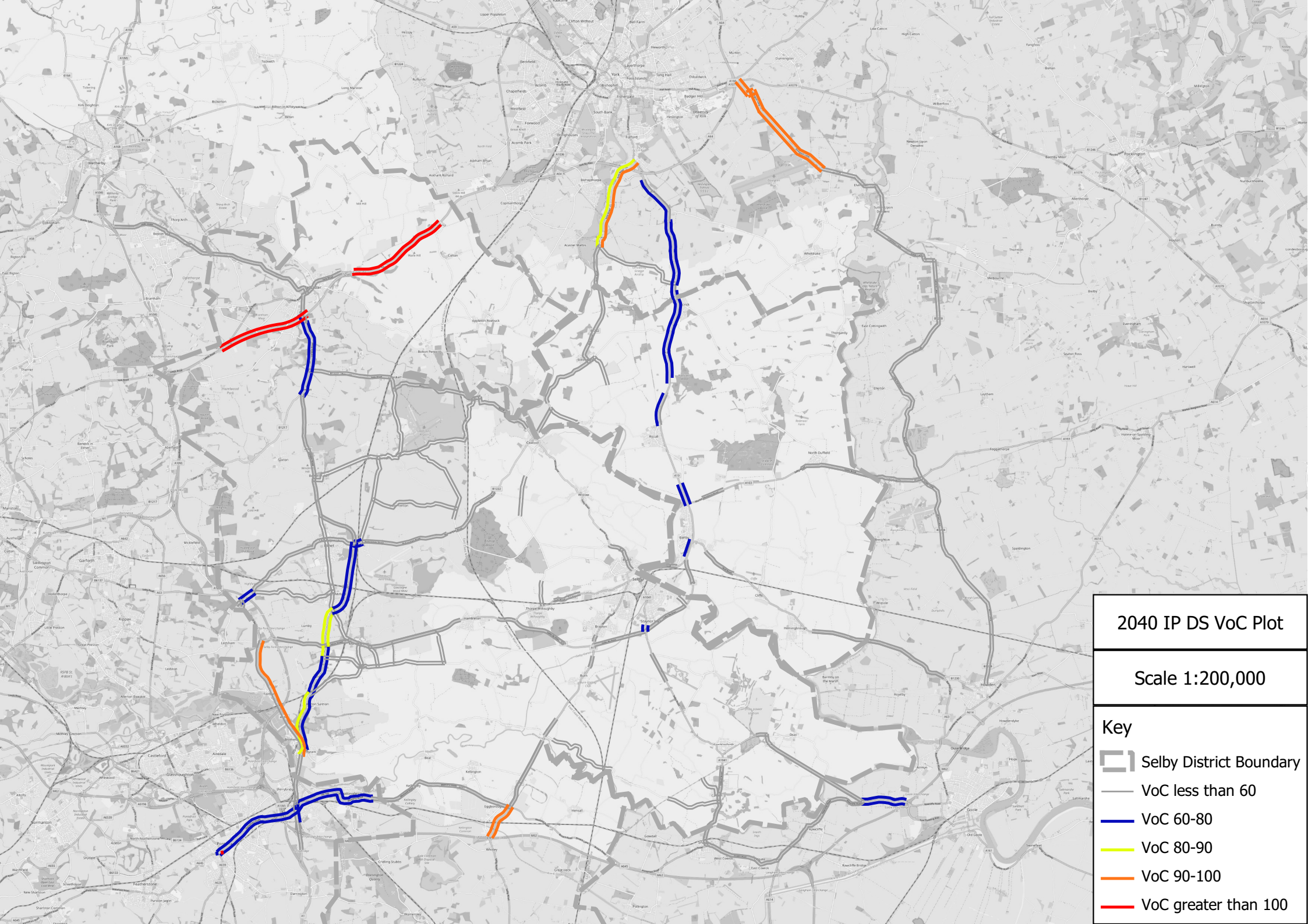


2040 IP DM VoC Plot

Scale 1:200,000







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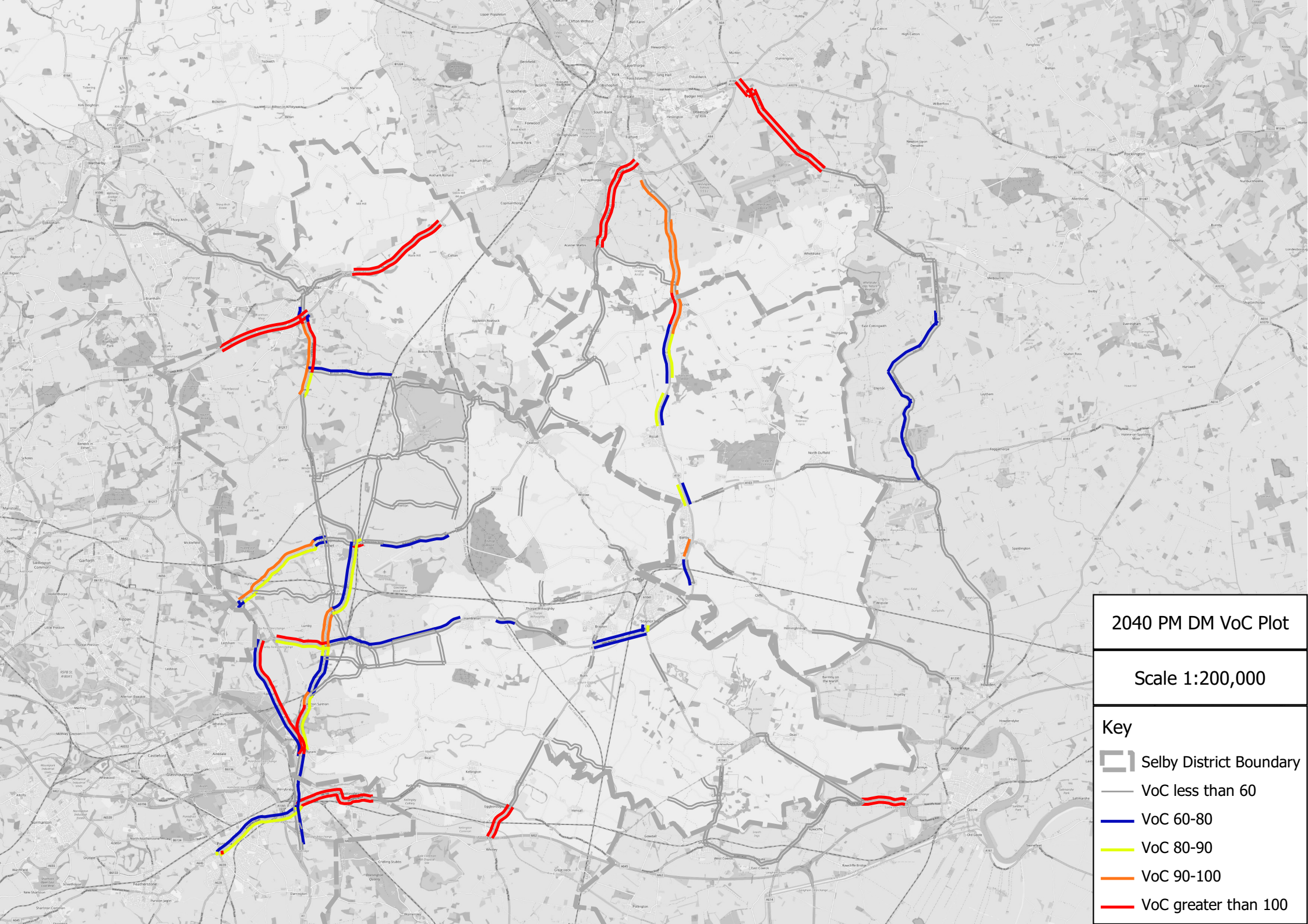
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-  VoC less than 60
-  VoC 60-80
-  VoC 80-90
-  VoC 90-100
-  VoC greater than 100



2040 IP DS VoC Plot







Scale 1:200,000

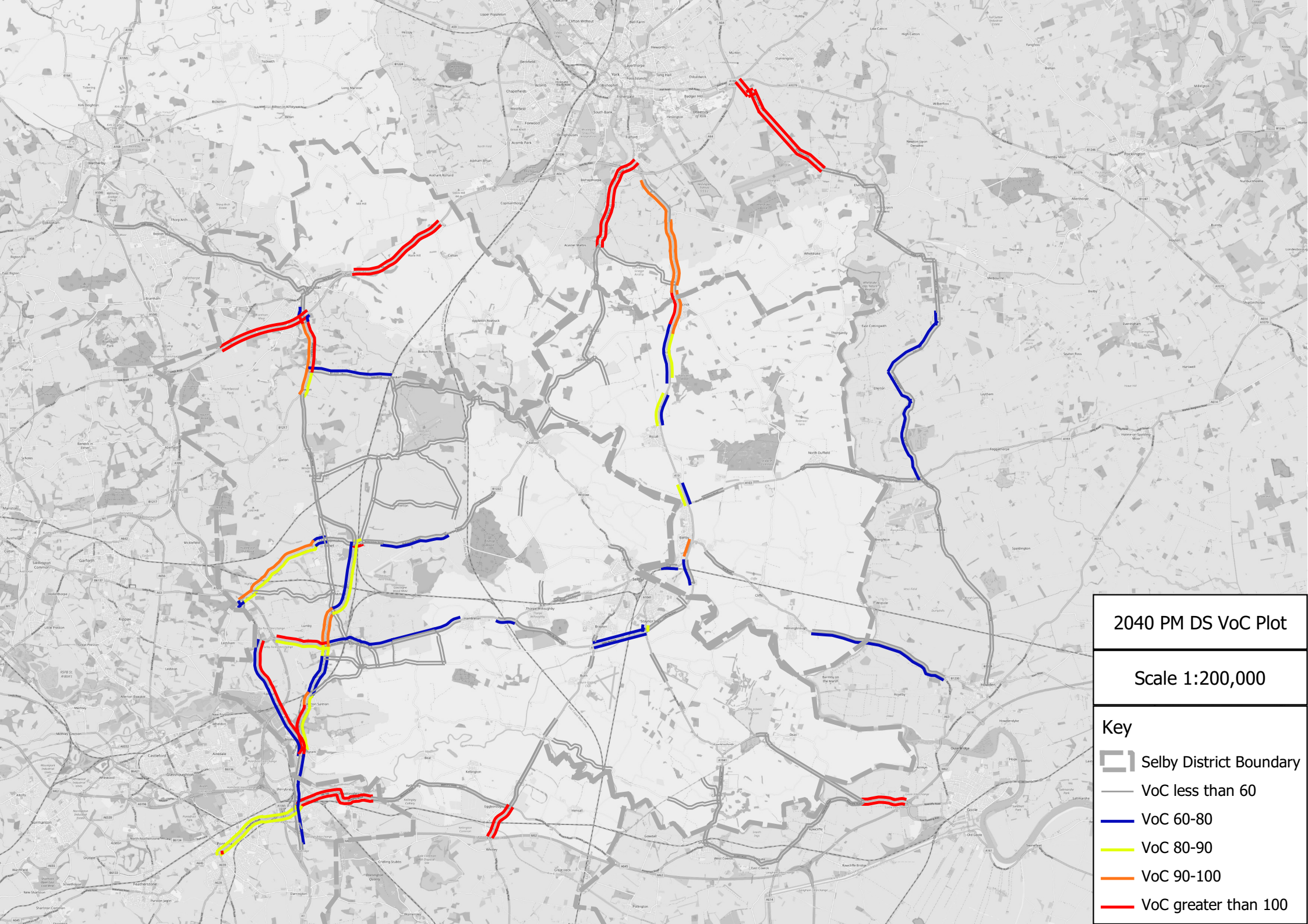
- Key**
-  Selby District Boundary
 -  VoC less than 60
 -  VoC 60-80
 -  VoC 80-90
 -  VoC 90-100
 -  VoC greater than 100



2040 PM DM VoC Plot

Scale 1:200,000







- Key**
-  Selby District Boundary
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 -  VoC 60-80
 -  VoC 80-90
 -  VoC 90-100
 -  VoC greater than 100

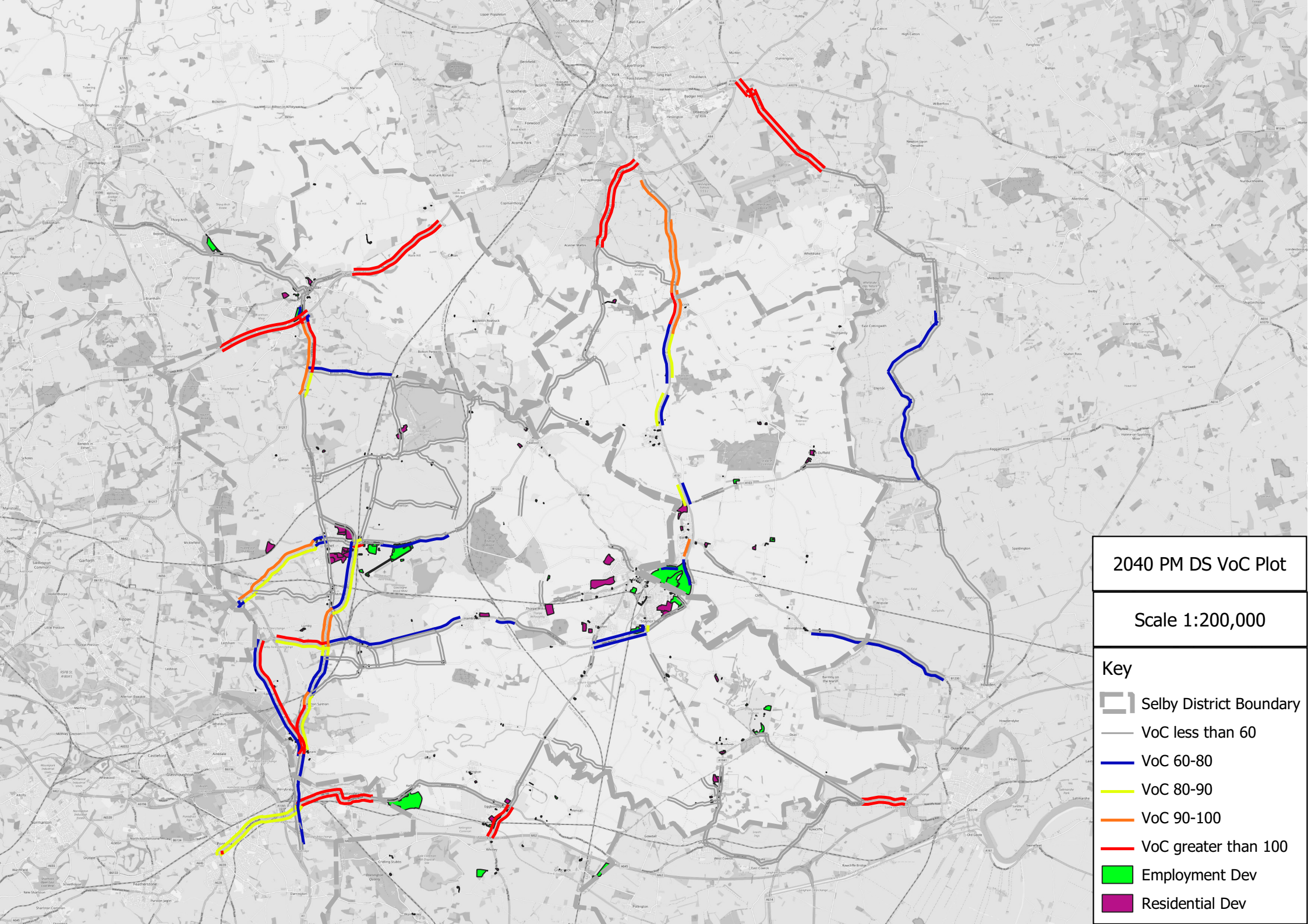


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Key

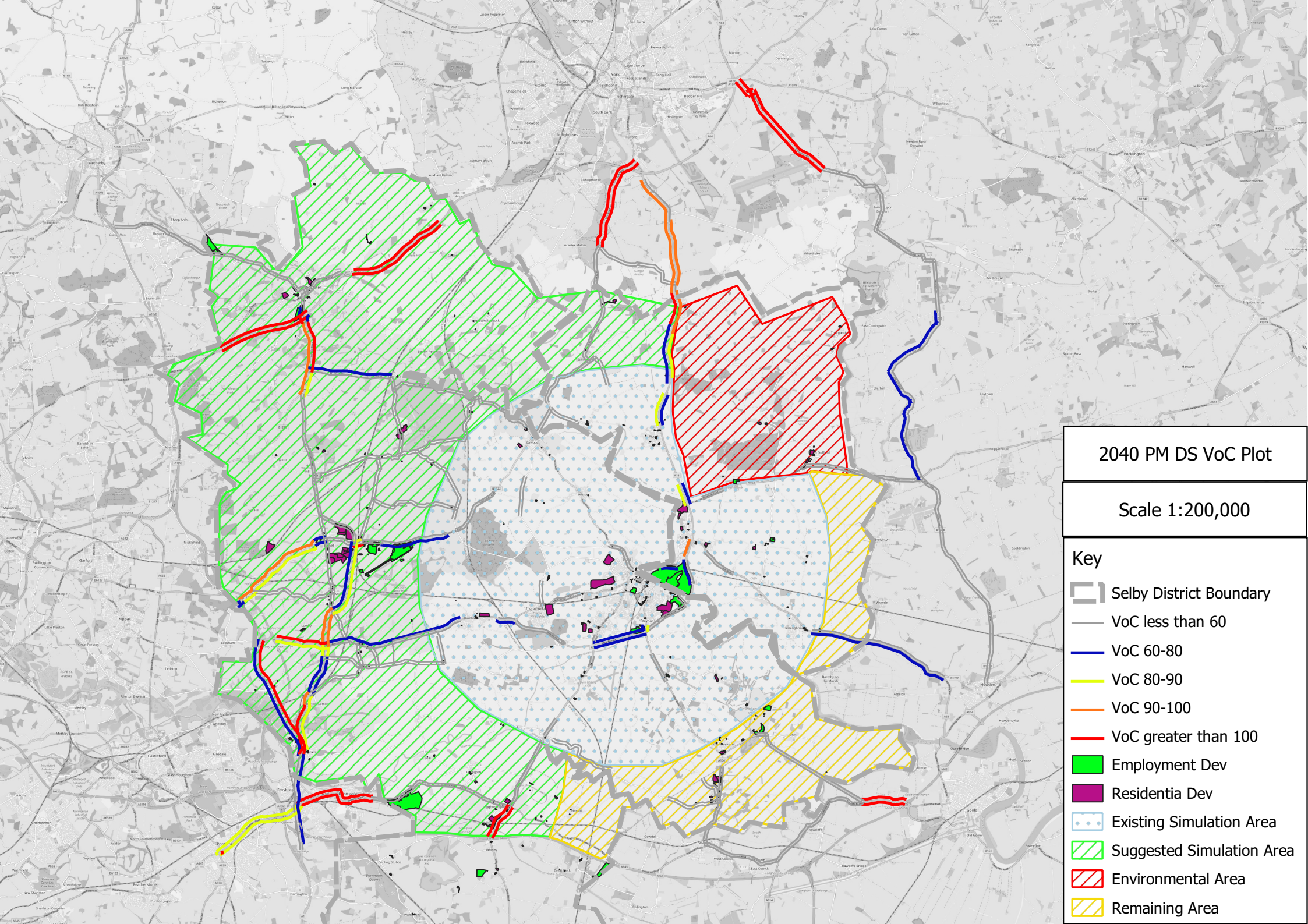
-  Selby District Boundary
-  VoC less than 60
-  VoC 60-80
-  VoC 80-90
-  VoC 90-100
-  VoC greater than 100



2040 PM DS VoC Plot

Scale 1:200,000













- Key**
-  Selby District Boundary
 -  VoC less than 60
 -  VoC 60-80
 -  VoC 80-90
 -  VoC 90-100
 -  VoC greater than 100
 -  Employment Dev
 -  Residential Dev



2040 PM DS VoC Plot

Scale 1:200,000

Key

-  Selby District Boundary
-  VoC less than 60
-  VoC 60-80
-  VoC 80-90
-  VoC 90-100
-  VoC greater than 100
-  Employment Dev
-  Residentia Dev
-  Existing Simulation Area
-  Suggested Simulation Area
-  Environmental Area
-  Remaining Area



Three White Rose Office Park
Millshaw Park Lane
Leeds
LS11 0DL

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