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AGENDA

LOCAL PLAN PANEL MEETING

Date: Thursday, 8 October 2020
Time: 7.00pm
Venue: Virtual Meeting Via Skype*

Membership:

Councillors Mike Baldock (Chairman), Monique Bonney (Vice-Chairman), Alastair Gould, James Hunt, Carole Jackson, Elliott Jayes, Peter Marchington, Benjamin Martin, Richard Palmer, Eddie Thomas and Ghlin Whelan.

Quorum = 3

Pages

Information for the Public
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1. Apologies for Absence and Confirmation of Substitutes

2. Minutes

   To approve the Minutes of the Meeting held on 3 September 2020 (Minute Nos. 65 - 70) as a correct record.

3. Declarations of Interest

   Councillors should not act or take decisions in order to gain financial or other material benefits for themselves or their spouse, civil partner or person with whom they are living with as a spouse or civil partner. They must declare and resolve any interests and relationships.

   The Chairman will ask Members if they have any interests to declare in respect of items on this agenda, under the following headings:

   (a) Disclosable Pecuniary Interests (DPI) under the Localism Act 2011. The nature as well as the existence of any such interest must be declared. After declaring a DPI, the Member must leave the meeting and not take part in the discussion or vote. This applies even if there is provision for public speaking.

   (b) Disclosable Non Pecuniary (DNPI) under the Code of Conduct adopted by the Council in May 2012. The nature as well as the existence of any such interest must be declared. After declaring a DNPI interest, the Member may stay, speak and vote on the matter.

   (c) Where it is possible that a fair-minded and informed observer, having considered the facts would conclude that there was a real possibility that the Member might be predetermined or biased the Member should declare their predetermination or bias and then leave the room while that item is considered.

   Advice to Members: If any Councillor has any doubt about the existence or nature of any DPI or DNPI which he/she may have in any item on this agenda, he/she should seek advice from the Monitoring Officer, the Head of Legal or from other Solicitors in Legal Services as early as possible, and in advance of the Meeting.

Part A Reports for Recommendation to Cabinet

4. Air Quality Evidence — 5 - 128

5. Biodiversity Baseline Study - Report to-follow

Issued on Tuesday, 29 September 2020

The reports included in Part I of this agenda can be made available in **alternative formats**. For further information about this service, or to arrange for special facilities to be provided at the meeting, **please contact DEMOCRATIC SERVICES on 01795 417330**. To find out more about the work of the Cabinet, please visit www.swale.gov.uk

Chief Executive, Swale Borough Council,
Swale House, East Street, Sittingbourne, Kent, ME10 3HT

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Local Plan Panel Meeting	
Meeting Date	8th October 2020
Report Title	Air Quality Modelling for the Swale Local Plan Review
Cabinet Member	Cllr Mike Baldock, Cabinet Member for Planning
SMT Lead	James Freeman
Head of Service	James Freeman
Lead Officer	Anna Stonor
Key Decision	No
Classification	Open
Recommendations	It is recommended that Members note the content of the draft Air Quality Modelling Report and Technical Note and recommend to the Cabinet that it be finalised and published and used as part of the evidence base for the Local Plan Review.

1 Purpose of Report and Executive Summary

1.1 As part of the Local Plan Review (LPR), air quality modelling of the impacts of the emerging local plan has been undertaken.

1.2 The air quality modelling for the Swale Local Plan Review has been carried out by Sweco's Air Quality Technical Team, led by Jennifer Simpson. Jennifer has over 25 years' experience in air quality and is the co-chair of the Environmental Protection Scotland (EPS) Air Quality Expert Advisory Group (AQEAG). The team are currently supporting a number of local authorities across the UK in assessing air quality within their areas through measurement; air quality dispersion modelling and assisting the development of Air Quality Action Plans and Clean Air Plans. As such the team at Sweco are well placed to support Swale Borough Council in assessing the air quality impacts of the Local Plan Review.

1.3 The Sweco Transport Team have been working with Kent County Council and Swale Borough Council over several years in developing the Swale Highway Model. The air quality modelling is carried out by a separate team within Sweco. However, transport and air quality are intertwined issues and the air quality and transport teams have worked closely together to deliver this report.

1.4 The Air quality modelling DRAFT report is attached as Appendix I. The technical elements of the report are included in a Technical Note. Once finalised both parts of the report will be published and made available on the Council's website (https://www.swale.gov.uk/the-emerging-local-plan/).

2 Background

2.1 Air Quality is an issue of significant concern to residents, businesses and the Council within Swale. There are currently 5 declared Air Quality Management Areas within the borough at: Newington High Street; Ospringe Street, Faversham; East Street, Sittingbourne; St Paul's Street, Sittingbourne; and London Road, Teynham. All of these have been declared for exceedances relating to nitrogen dioxide (NO_2). An AQMA at Keycol Hill is soon to be declared for exceedances of NO_2 and the AQMA at St Paul's Street is to be amended to include exceedance of Particulate Matter (PM_{10}).

2.2 Paragraph 180 of the NPPF states that 'Planning policies and decisions should … ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development'. Paragraph 181 adds that 'Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.'

2.3 Planning Practice Guidance states that 'It is important that the potential impact of new development on air quality is taken into account where the national assessment indicates that relevant limits have been exceeded or are near the limit, or where the need for emissions reductions has been identified.' Later it states 'consideration of air quality issues at the plan-making stage can ensure a strategic approach to air quality and help secure net improvements in overall air quality where possible'. The PPG also makes clear that 'air quality is also an important consideration in habitats assessment (HRA), strategic environmental assessment and sustainability appraisal which can be used to shape an appropriate strategy, including through establishing the 'baseline', appropriate objectives for the assessment of impacts and proposed monitoring'. Sweco have liaised with the Council's HRA consultants, Aecom, during this study and have included receptors requested by those consultants which will assist the HRA process.

2.4 The air quality modelling study has been carried out in close co-operation with the Council's Environmental Health team.

2.5 The main source of air pollution in Swale is vehicle emissions. As such the air quality modelling which has been undertaken is based on the transport modelling undertaken by Sweco and reported to Local Plan Panel in June 2020. Details of the transport modelling can be found in the background papers listed at the end of this report.

2.6 Section 2 of Appendix I outlines the background to the study and the approach taken to the modelling. As with the transport modelling this study looked at two main scenarios of growth to 2037 (the end date of the Local Plan Review):

- 776 dwellings per annum plus employment sites to 2037
- 1054 dwellings per annum plus employment sites to 2037

2.7 To understand the impacts of the local plan review on air quality the model:

- Chose 2017 as the baseline year as this was the base date of the transport model
- In line with the transport model, the air quality model produced results for the following:
  - 2017 base year
  - 2027 reference case (projection to 2027 as if LPR development was not happening)
  - 2037 forecast year reference case (projection to 2037 as if LPR development was not happening)
  - 2037 forecast year for 776 dwellings per annum plus employment
  - 2037 forecast year for 1054 dwellings per annum plus employment
- Also modelled results for 2019 in order to compare results with measurements taken for that year.
- Examined the impact on NO_2 and PM_{10} (bearing in mind that in 2017 there were 85 locations measuring NO_2 and only 1 measuring PM_{10})
- Carried out Dispersion Modelling – a computer simulation which predicts the dispersion of emissions from a variety of sources in the atmosphere
- Examined road layout and geometry, including road width, street canyon height and road elevation as well as flow, volume and speed of traffic
- Used air quality background data as provided by Defra
- Examined impact at 155 sensitive receptors which included residential properties and schools. To determine worst case, the receptors closest to the road network were chosen as they would have the greatest exposure to the change in road traffic emissions as a result of the Local Plan Review being in place
- Was verified by comparing modelled results against local monitoring data

2.8 Overall, the model demonstrates that levels of NO_2 are forecast to reduce between 2017 and 2027 and again by 2037. This follows a national trend and is mainly due to the assumption that emissions will fall as newer vehicles are introduced to the fleet at a renewal rate forecast by the Department for Transport. The two local plan scenarios (776 and 1054 dwellings per annum) do increase emissions slightly (from the reference case), but overall emissions remain well below exceedance levels for both scenarios. Full details, including mapping, are available in Appendix I and the Technical Note.

2.9 Modelling also demonstrated that there were no exceedances of PM_{10} for any of the scenarios modelled. Further conclusions on PM_{10}s are drawn out in the report.

4 Alternative Options

4.1 Both the NPPF and Planning Practice Guidance make it clear that the air quality impacts of a local plan should be assessed. As such there is no reasonable alternative to carrying out a study such as this.

5 Consultation Undertaken or Proposed

5.1 No external consultation has been undertaken or is proposed as this is a technical piece of evidence based on data extracted from the Swale transport model, Swale's own air quality evidence and national datasets.

6 Implications

Issue	Implications
Corporate Plan	The proposals would align with: Priority 1: Building the right homes in the right places and supporting quality jobs for all. Priority 2: Investing in our environment and responding positively to global challenges.
Financial, Resource and Property	None identified at this stage – the work has been carried out within the Planning Policy budget.
Legal, Statutory and Procurement	None identified at this stage.
Crime and Disorder	None identified at this stage.
Environment and Sustainability	The new Local Plan will be subject to a Sustainability Appraisal.
Health and Wellbeing	None identified at this stage.
Risk Management and Health and Safety	None identified at this stage.
Equality and Diversity	None identified at this stage.
Privacy and Data Protection	None identified at this stage.

7 Appendices

7.1 The following documents are to be published with this report and form part of the report:

- Appendix I: Sweco UK Limited – Air quality modelling DRAFT report, September 2020 and Technical Note

8 Background Papers

8.1 The Air quality modelling report has been prepared using the data from the Swale Borough Local Plan Review: Transport Modelling Evidence, also prepared by Sweco and reported to Local Plan Panel on 11th June 2020

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Swale Borough Council

DRAFT Air quality modelling report

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Swale Local Development Plan

Air quality modelling

28/09/2020

Project Reference: 65201817

Document Reference: [Draft issue 1

Revision: [1]

Prepared For: Swale Borough Council

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Status / Revisions

Rev.	Date	Reason for issue	Prepared		Reviewed		Approved	
[1]	250920	Draft	JS	280920	AS/ CL	280920	[XX]	[00.00.00]
[2]	[00.00.00]	[Text]	[XX]	[00.00.00]	[XX]	[00.00.00]	[XX]	[00.00.00]
[3]	[00.00.00]	[Text]	[XX]	[00.00.00]	[XX]	[00.00.00]	[XX]	[00.00.00]

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Appendices

1 Introduction

Sweco has been commissioned by Swale Borough Council to undertake air quality dispersion modelling to assess the impact from the Councils new Local Plan (LP)

Air quality is an issue of concern in Swale to residents and the Council alike. This report has been prepared to help understand the air quality implications of the local plan. As part of the evidence base for the local plan it will help inform the choices the local plan should make.

2 Background

The air quality assessment is based on the traffic modelling undertaken by Sweco. The traffic modelling assessment and this study has considered two options for the LP. Both have been assessed in terms of the impact on local air quality. Full details of the two options are provided in this section.

2.1 LP 776-build option

This LP option considered the build option based on the introduction of additional housing and new employment sites at a build our rate of 776 per annum between 2022 and 2037. The allocations per site are detailed as provided by Kent County Council (KCC) and Swale Borough Council (SBC). This LP option considered the total new housing and employment up to the year 2037. Full details are presented in Table 2:1 and Table 2:2 below.

Table 2:1 776 Scenario Additional Housing

Ref	Description	Area	Additional Houses 2022- 2037
1	Duchy Fav SHLAA 18/226	Faversham	2,000
2	Duchy Fav SHLAA 18/226	Faversham	500
3	Sittingbourne Town Centre – various sites	Sittingbourne	750
4	Windfall		1,080
5	Selling/Neames Forstal	Faversham	100
6	Park Homes	Isle of Sheppey and Sittingbourne	150
7	Lamberhurst Farm SHLAA 18/154	Faversham	80
Total in planning period			**4,660**

Table 2:2 776 Scenario Additional Employment

Ref	Area	Additional Employment (sqm)* 2022-2037
1	Duchy Fav	300
2	Duchy Fav	2,500
3	Waterham, Fav	24,000
4	West Frognal Lane	42,000
5	Lamberhurst Farm	15,000
6	Sittingbourne Industrial estate (various sites on Eurolink)	15,000
7	Bobbing site reallocation	30,000
8	Wallend Farm Sheppey	10,000
Total in planning period		**138,800**

*It has been agreed previously that all employments sites will be B1:B2:B8 33%:33%:34% except Wallend Farm B1:B8 10%:90%

2.2 LP build option 1054

The second LP build option is known as the 1054 option. This LP option considered the build option based on the introduction of additional housing and new employment sites at a build our rate of 1054 per annum between 2022 and 2037. The allocations per site are detailed as provided by Kent County Council (KCC) and Swale Borough Council (SBC. This option considered the total new housing and employment up to the year 2037. Full details are presented in Table 2:3 and Table 2:4 below.

Table 2:3 1054 Scenario Additional Housing

Ref	Description	Area	Additional Houses 2022- 2037
1	Duchy Fav SHLAA 18/226	Faversham	2000
2	Duchy Fav SHALL 18/226	Faversham	500
3	Queenborough and Rushenden – SHLAA 18/113	Isle of Sheppey	670

Ref	Description	Area	Additional Houses 2022- 2037
4	Sittingbourne Town Centre (various sites)	Sittingbourne centre	800
5	East Lady Dane, Fav, SHLAA 18/091	Faversham	1100
6	West Frognal La Teynham SHLAA 18/183	Sittingbourne	295
7	South A2 Teynham SHLAA 18/055	Sittingbourne	320
8	Bredgar, SHLAA 18/084	Sittingbourne	250
9	Sheppey/Brownfield (various sites)	Isle of Sheppey	500
10	Windfall		1080
11	Selling/Neames Forstal	Faversham	200
12	Park Homes	Isle of Sheppey and Sittingbourne	500
13	Lamberhurst Farm, SHLAA 18/154	Faversham	300
14	Villages	south of M2, including Bredgar, Milstead, Eastling, Sheldwich, Selling, Boughton, Upchurch, Iwade and Newington	300
15	Lynstead	Sittingbourne	50
	Total plan period		**8865**

Table 2:4 1054 Scenario Additional Employment

Ref	Area	Additional Employment (sqm)* 2022-2037
1	Duchy Fav	300
2	Duchy Fav	2500
3	Waterham, Fav	24000

Ref	Area	Additional Employment (sqm)* 2022-2037
4	West Frognal Lane	42000
5	Lamberhurst Farm	15000
6	Sittingbourne Industrial estate	15000
7	Bobbing site reallocation	30000
8	Wallend Farm Sheppey	9570
	Total plan period	**138370**

*It has been agreed that all employments sites will be B1:B2:B8 33%:33%:34% except Wallend Farm B1:B8 10%:90%

Full details of how these data were used within the traffic model can be found within the traffic modelling report prepared for this package of work.

3 Legislation and Policy

3.1 Legislation

Air quality is an issue of potential significance at international, national and local levels. While there are undoubtedly important ramifications for global and national air quality from a wide range of developments, as recognised by numerous international conventions and European Directives, the primary focus of this assessment is to understand the current pollutant concentrations across the Swale area.

3.1.1 Environment Act 1995

Part IV of the Environment Act 1995 places a duty on the Secretary of State for the Environment to develop, implement and maintain an Air Quality Strategy with the aim of reducing atmospheric emissions and improving air quality. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland provides the framework for ensuring the air quality limit values are complied with based on a combination of international, national and local measures to reduce emissions and improve air quality. This includes the statutory duty, also under Part IV of the Environment Act 1995, where local authorities must review and assess air quality in their areas on an annual basis. This review and assessment process in known as Local Air Quality Management (LAQM).

The focus on local air quality is reflected in the air quality objectives (AQOs) set out in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland[1,2]. The strategy presents measures to control and improve the quality of air in the UK and reflects the increasing understanding of the potential health risks associated with poor air quality and the benefits that can be gained from its improvements.

Local Authorities are required to declare an Air Quality Management Area (AQMA) where it is likely that these objectives will not be achieved and to prepare an Action Plan to set out proposed measures to be taken to achieve the air quality objectives.

Swale Borough Council has completed the review and assessment of air quality within their area since the introduction of the Environment Act in 1995 and the LAQM regime. This process has allowed them to understand the pollutants of concern within the Council area. They have determined through the review and assessment process that only Nitrogen Dioxide (NO_2) and Particulate Matter (PM_{10}) remain pollutants of concern that require to be monitored and assessed now and in the future.

Therefore, the relevant objectives for pollutants considered in this study are presented in Table 3:1.

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[1] https://www.gov.uk/government/publications/the-air-quality-strategy-for-england-scotland-wales-and-northern-ireland-volume-1
[2] https://www.legislation.gov.uk/ssi/2010/204/pdfs/ssi_20100204_en.pdf

TABLE 3:1:AIR QUALITY STANDARDS (AQS) FOR THE PROTECTION OF HUMAN HEALTH

Pollutant	Air Quality Standards (µg/m^3)	Measured as
Nitrogen Dioxide (NO_2)	40	Annual Mean
	200	One hour mean, not to be exceeded more than 18 times per year (equivalent to the 99.79th percentile of hourly means)
Particulate Matter (PM_{10})	40	Annual Mean
	50	24 hour mean, not to be exceeded more than 35 times a year (equivalent to the 98.08th percentile of 24-hour means)

The LAQM process has identified the need for five air quality management areas (AQMAs) as a result of exceedances of the annual mean NO_2 objective. Full details of the 5 AQMAs are provided below:

- AQMA 1: Newington, (A2 /High St) - declared in 2009;
- AQMA 2: Ospringe Street, Faversham (A2/Ospringe) - declared in June 2011 and revised (as AQMA 6) to the Mount in May 2016;
- AQMA 3: East Street, Sittingbourne (A2/Canterbury Road) - declared January 2013;
- AQMA 4: St Paul's Street, Milton, Sittingbourne (B2006) - declared January 2013, and
- AQMA 5: Teynham (A2 /London Rd) - declared December 2015.

3.2 Sensitive Locations

The locations where objectives apply are defined in the Air Quality Strategy (AQS) as locations outside buildings or other natural or man-made structures above or below ground where members of the public are regularly present and might reasonably be expected to be exposed over the relevant averaging period of the objectives. Typically, these include residential properties, hospitals and schools for the longer averaging periods (i.e. annual mean) pollutant objectives. Table 3:2 provides a summary of where the AQS objectives should and should not apply.

3.3 Guidance

3.3.1 National Planning Policy Framework (NPPF) 2019

The latest guidance published in July 2018, the National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. It replaces Planning Policy Statement 23 : Planning and Pollution Control and NPPF 2012 which provided planning guidance for local authorities with regards to air quality.

At the heart of the NPPF is a presumption in favour of sustainable development.

It provides a framework within which locally prepared plans for housing and other development can be produced. It requires Local Plans to be consistent with the principles and policies set out in the Framework with the objective of contributing to the achievement of sustainable development.

Current planning law requires that application for planning permissions must be determined in accordance with the relevant development plan (i.e. Local Plan or Neighbourhood Plan). The NPPF should be considered in the preparation of development plans and therefore the policies set out within the Framework are a material consideration in planning decisions.

Under paragraph 103, it states that:

"The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be considered in both plan-making and decision-making."

Under paragraph 170(e), it states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, considering relevant information such as river basin management plans. "

Under paragraph 181, it states that:

"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, considering the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."

3.3.2 Local Air Quality Management Technical Guidance[3] 2016, Feb 18 v1 (LAQM.TG (16)

This technical guidance is the latest version provides and has been issued by Defra and the devolved administrations across the UK. It has been designed to support local authorities in carrying out their duties under the Environment Act 1995 and subsequent regulations. This

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[3] Part IV of the Environment Act 1995: Local Air Quality Management Technical Guidance TG (16) February 2018

document provides guidance and tools to support local authorities in the review and assessment of air quality and take action to improve air quality within their areas.

It provides technical guidance on monitoring and air quality dispersion modelling techniques and best practice in addition to techniques required for verification of modelling predictions

3.3.3 Local Air Quality Management Policy Guidance (LAQM PG16)

This policy guidance[4] provides guidance to help local authorities with their local air quality management duties in line with the Environment Act 1995. The guidance outlines the background and legislative framework to which the local authorities must work to; the principles behind reviews and assessments of air quality and the recommended steps; how local authorities should handle the designation of AQMAs; the development of local air quality strategies and the general principles behind air quality and land use planning.

TABLE 3:2: EXAMPLES OF WHERE THE AIR QUALITY OBJECTIVES SHOULD AND SHOULD NOT APPLY

Averaging Period	Pollutants	Objectives should apply at …	Objectives should not generally apply at …
Annual mean	NO_2, PM_{10},	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes etc.	Building facades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
8-hour and 24-hour Means	PM_{10}	All locations where the annual mean objective would apply, together with hotels and gardens of residential properties.	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.

[4] Part IV of the Environment Act 1995: Local Air Quality Management Policy Guidance PG (16) March 2016

Averaging Period	Pollutants	Objectives should apply at …	Objectives should not generally apply at …
1-hour Mean	NO_2	All locations where the annual mean, 24-hour mean and 8-hour mean apply plus: kerbside sites of busy shopping streets; parts of car parks, bus and railway stations, etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more; Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.

4 Road traffic data

4.1 Traffic Modelling

The Swale Highway Model (SHM) was developed by Sweco for 2017 (base year), 2027 and 2037 reference case (forecast years) to test the traffic impacts of both new developments and transport infrastructure across Swale. Following the Local Plan Option Test, which was delivered in May 2019, Sweco was appointed by Swale Borough Council (SBC) to use the model to support the assessment of the Local Plan with a set of new development assumptions and mitigation measures. The work also involved in a series of technical discussions with Kent County Council (KCC) for the key modelling assumptions such as trip rates, house allocation and future transport infrastructure. A detailed summary of this package of work can be found in the Swale Local Plan Model Rerun Summary Report.

4.2 Traffic and air quality modelling scenarios

The traffic model was fully validated on 2017 traffic data. The traffic model defines all roads in terms of road links which have a starting node and an end node. These data along with the traffic flow, vehicle spilt, and speed data have been extracted from the traffic model and provided to the air quality team. Ensuring the air quality model will replicate the flows.

The traffic model has been used to predict the impact on the AM peak (08:00 to 09:00) the interpeak (10:00 to 16:00) and the PM peak (17:00 to 18:00). Additional support was undertaken by the traffic modelling team to support this assessment to convert the peak flow data to daily flow data and to annual average daily traffic (AADT). Full details of this can be found in Appendix B.

The assessment of the air quality is in line with these scenarios considered in the traffic modelling assessment of the LP. These are listed below and described in detail in sections 4.11 to 4.15

- 2017 base year
- 2027 reference case (2027 RC)
- 2037 forecast year reference case (2037 RC)
- 2037 forecast year DM with LP fully built out (776 dwellings per annum scenario) (2037 DM 776)
- 2037 forecast year DM with LP fully built out (1054 dwellings per annum scenario) (2037 DM 1054)

4.2.1 <u>2017 base year</u>

The traffic model has been built based on the Swale Highway model. This model has been validated with the 2017 traffic flow data. This is an approved model for use in assessing road traffic movements in the Swale and Kent county Council area. This determined the base year for the air quality assessment too.

4.2.2 <u>2027 reference case</u>

The traffic modelling scenario considered a 2027 case. This was based on the 2017 base year. The model was updated with future predicted traffic data based on committed developments/ traffic schemes and run to consider the change in traffic flow and movements across swale in 2027 without the LP in place. This also assumed no road traffic mitigation had taken place.

4.2.3 2037 reference case

The traffic modelling scenario considered a 2037 case. This was also based on the 2017 base year. The model was updated with future developments and other committed traffic schemes that would be in place by 2037 and run to consider the change in traffic flow and movements across swale in 2037 without the LP in place. This also assumed that no road traffic mitigation had taken place

4.2.4 2037 DM with LP776

This scenario considers the additional traffic flows due to the full LP being in place in 2037. As a Do Minimum this means that no interventions have been put in place. Therefore, this would be a worst-case impact from the LP.

4.2.5 2037 DM with LP 1054

This scenario considers the additional traffic flows due to the full LP being in place in 2037 with an annual growth of 1054 to 2037. As a Do Minimum scenario (DM) this means that no interventions have been put in place. Therefore, this would be a worst-case impact from the LP.

4.2.6 2019

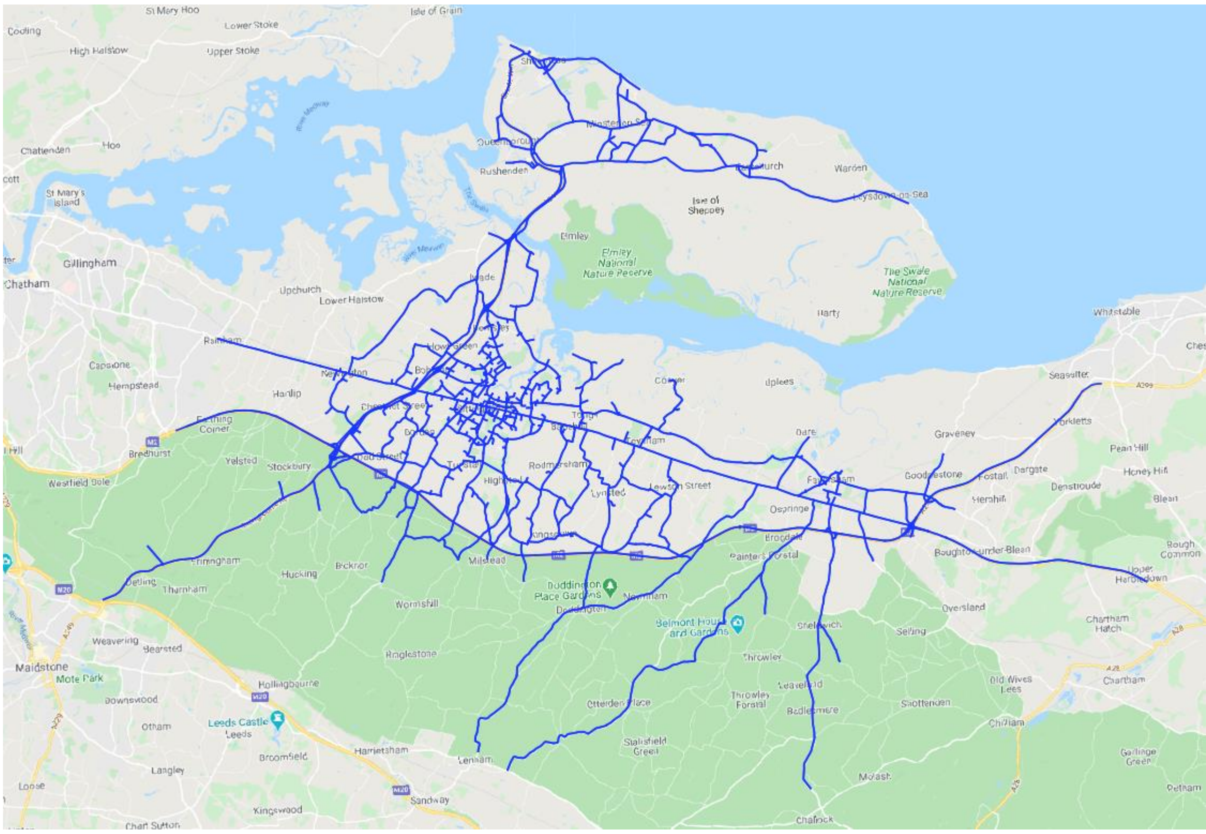
Given there has been some changes in local air quality in 2019 the air quality assessment has also considered 2019. This year hadn't been explicitly modelled by the transport team. This scenario has used the 2017 traffic data. Using the Department for Transport DfT growth factor the 2017 base traffic volume data were factored forward to 2019.

There are limitations in this method. This method assumes that the local growth in Swale will be the same as the national statistics and unlike a reference case developed in the traffic model, it doesn't take account of any committed developments that may have happened between 2017 and 2019. It also doesn't consider how the increase in volume would change traffic movements on the network. It simply assumes that all road links will have the same growth and assumes speeds on each link will remain the same as the 2017 base year.

A map showing the full extent of the road sources included within the model are presented in Diagram 4-1 and in Figure 1 of Appendix E.

SWECO

DIAGRAM 4-1: MODELLED ROAD LINKS INCLUDED IN MODEL



5 Baseline Air Quality

It is key that the assessment uses the same data as the base line traffic emissions in the assessment to follow LAQM TG (16). Therefore, in line with the traffic modelling the air quality modelling study has used 2017 measurement data for the baseline assessment. The measurement data discussed within this chapter has been used to verify the air quality model, full details on this are provided in the following chapters and Appendices.

5.1 What is NO_2

Nitrogen dioxide is a product of the combustion of fossil fuel. When the fuel is burned nitrogen and oxygen combine and form nitrogen oxide compounds mainly NO + NO_2 which together are known as NOx. NOx is emitted from the exhaust from road traffic vehicles but can be emitted from other combustion sources too. The chemical reactions between NO and NO_2 happens immediately on entering the atmosphere. A simplified version of these reactions which are happening simultaneously is provided below:

$$O_3 + NO \rightarrow NO_2 + O_2$$

$$NO_2 + \text{uv light} \rightarrow NO + O$$

$$O + O_2 \rightarrow O_3$$

5.2 What is PM_{10}

Particulate matter is also a product of combustion. Particulates are not made up of any one compound they are mainly carbon with other chemicals attached dependant on the combustion source, or if formed through chemical reactions in the atmosphere.

It should be noted that road traffic emissions of particulates not only come from the exhaust but also from brake and tyre wear and the resuspension of these particles. Particulate matter such as PM_{10}, $PM_{2.5}$, is defined as the fraction of particles with an aerodynamic diameter smaller than respectively 10 and 2.5 µm.

5.3 NO_2 monitoring data

In 2017 the Council operated a large automatic and non-automatic monitoring network across the borough. A map showing all monitoring locations in 2017 is presented in Diagram 5.1 and a larger map is also provided in Figure 1 in Appendix B.

DIAGRAM 5.1 SWALE MONITORING NETWORK

In 2017 the Council operated automatic monitoring stations at 3 locations along with 82 further locations where diffusion tubes are used to measure annual mean concentrations of NO_2. Full details of these sites are provided in

On review of the monitoring data up to 2017 annual mean concentrations appeared to be on an upward trend across many of the monitoring locations, this can be seen in Diagram 5-1.

However, at the time of undertaking this study 2019 measurement data were available. We have only considered the sites where the data are available from 2015 to look at the 5-year trend. This trend graph, presented in Diagram 5-2, suggests that at the majority of monitoring sites there have seen a downward trend in air quality concentrations since 2017.

5.4 PM_{10} monitoring data

In 2017 the Council operated one automatic monitor for PM_{10}. Full details of this site are presented in the Technical Appendix. A review of the monitoring data for PM_{10} has shown that annual mean concentrations are substantially below the air quality objectives since 2014.

TABLE 5:1 ANNUAL MEAN PM_{10} CONCENTRATIONS(µg/m^3) (2014 TO 2017)

Site ID	Site Type	PM_{10} Annual Mean Concentration (µg/m^3)			
		2014	2015	2016	2017
ZW3	Roadside	18	26	25	23

During 2018 the Council introduced a second PM_{10} analyser the however the first full year of data was 2019 therefore this site wasn't considered in the assessment of the baseline air quality. The monitoring data suggests that at site ZW3 particulates levels have decreased in 2019 to levels similar to 2016. ZW8 measurement data suggest that particulate concentrations are increasing. However, one year of data is not enough to identify if this is a trend at this location or a one off.

The measurement data for both sites remain well below the annual mean objective of 40 µg/m^3. The details of the monitoring from 2014 to 2019 are presented in Table 5:2.

TABLE 5:2 ANNUAL MEAN PM_{10} CONCENTATIONS(µg/m^3) (2014 TO 2019)

Site ID	Site Type	PM_{10} Annual Mean Concentration (µg/m^3) (3)					
		2014	2015	2016	2017	2018	2019
ZW3	Roadside	18	26	25	23	28	25
ZW8	Roadside					28*	31

DIAGRAM 5-1 TREND GRAPH OF ANNUAL MEAN NO_2 CONCENTRATIONS FROM 2015 TO 2017 (µg/m³)

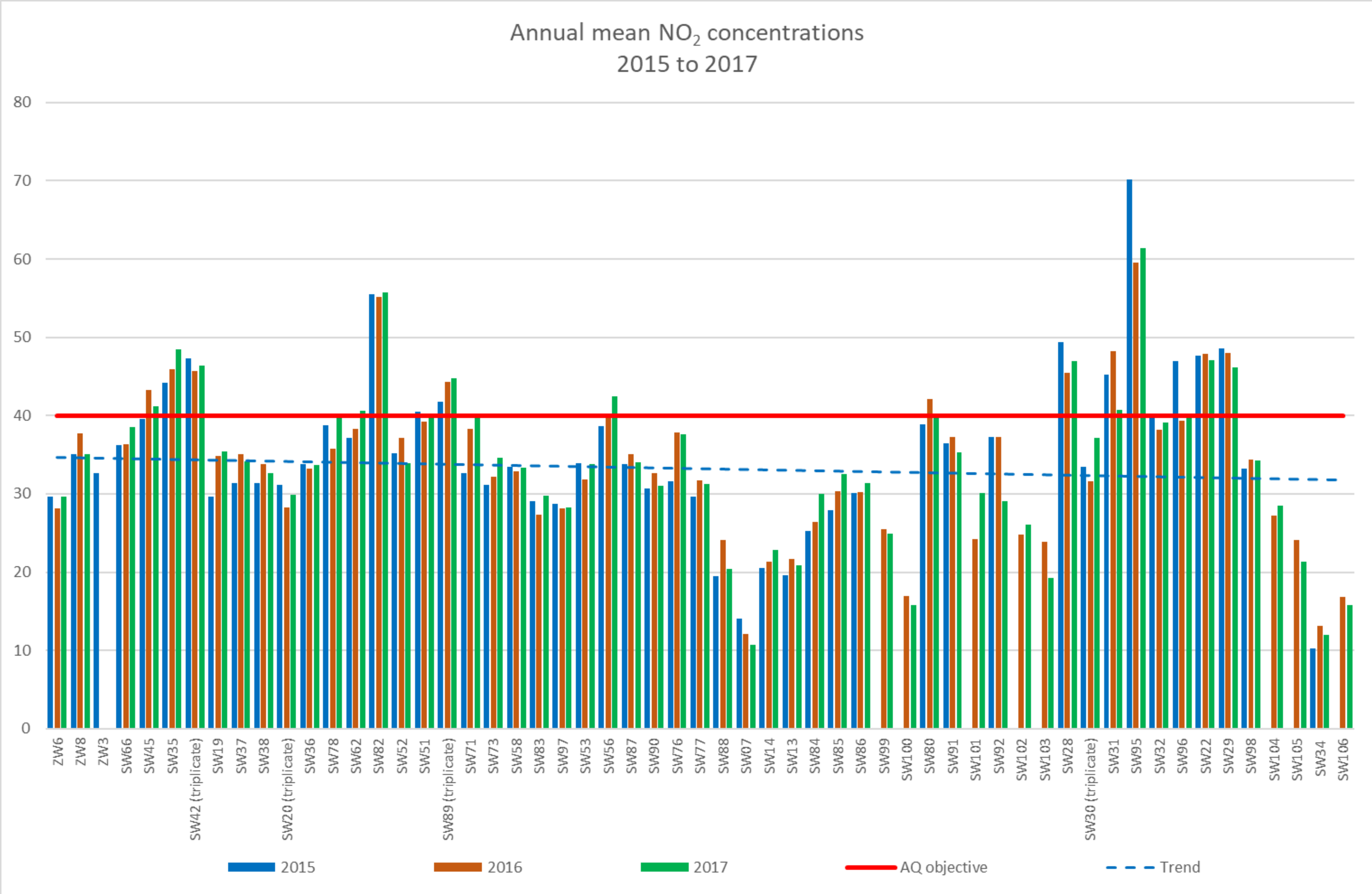
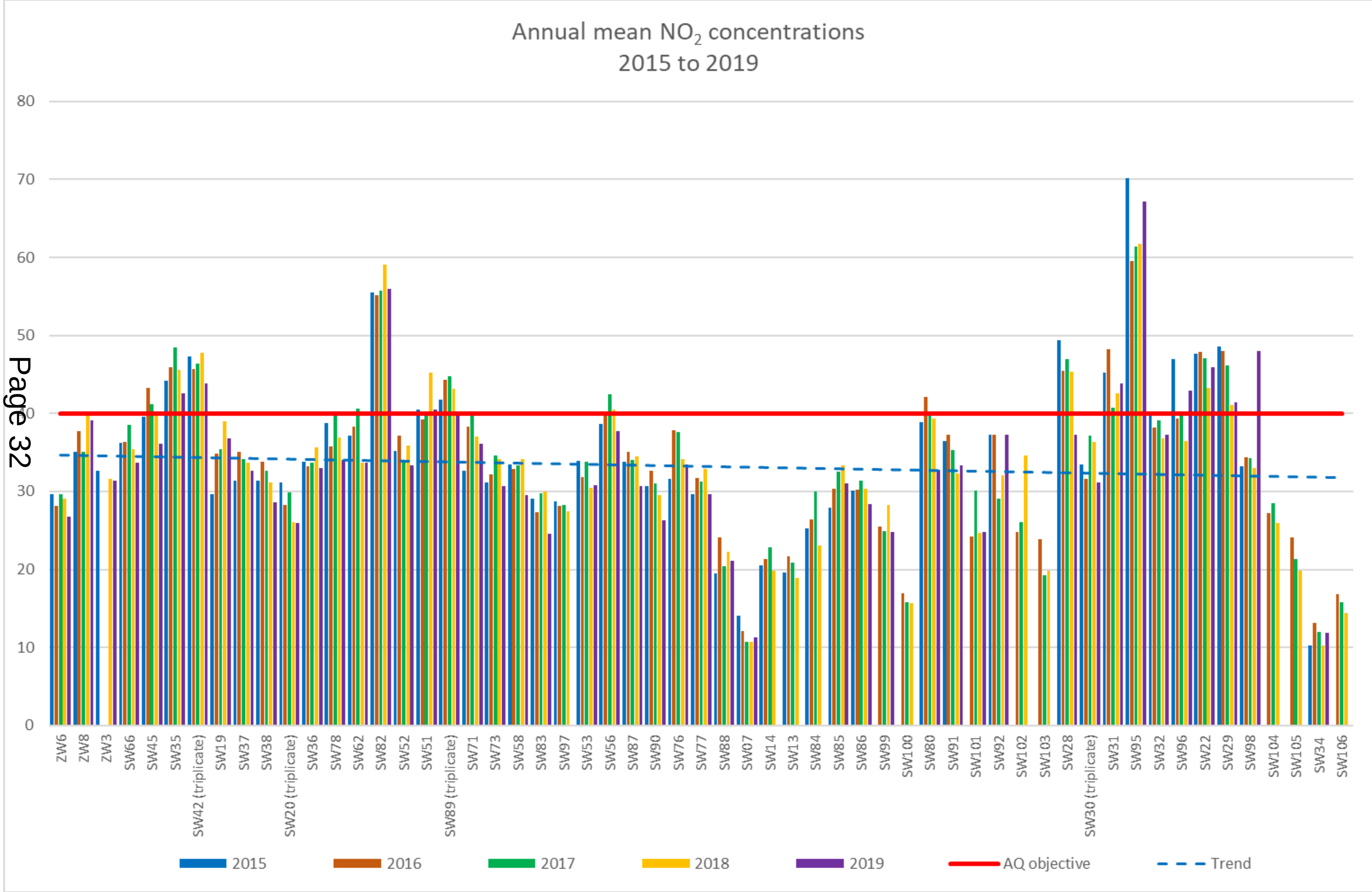


DIAGRAM 5-2 TREND GRAPH OF ANNUAL MEAN NO_2 CONCENTRATIONS FROM 2015 TO 2019($\mu g/m^3$)



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6 Dispersion modelling

To predict the change in air quality concentrations due to the LP the assessment has used dispersion modelling.

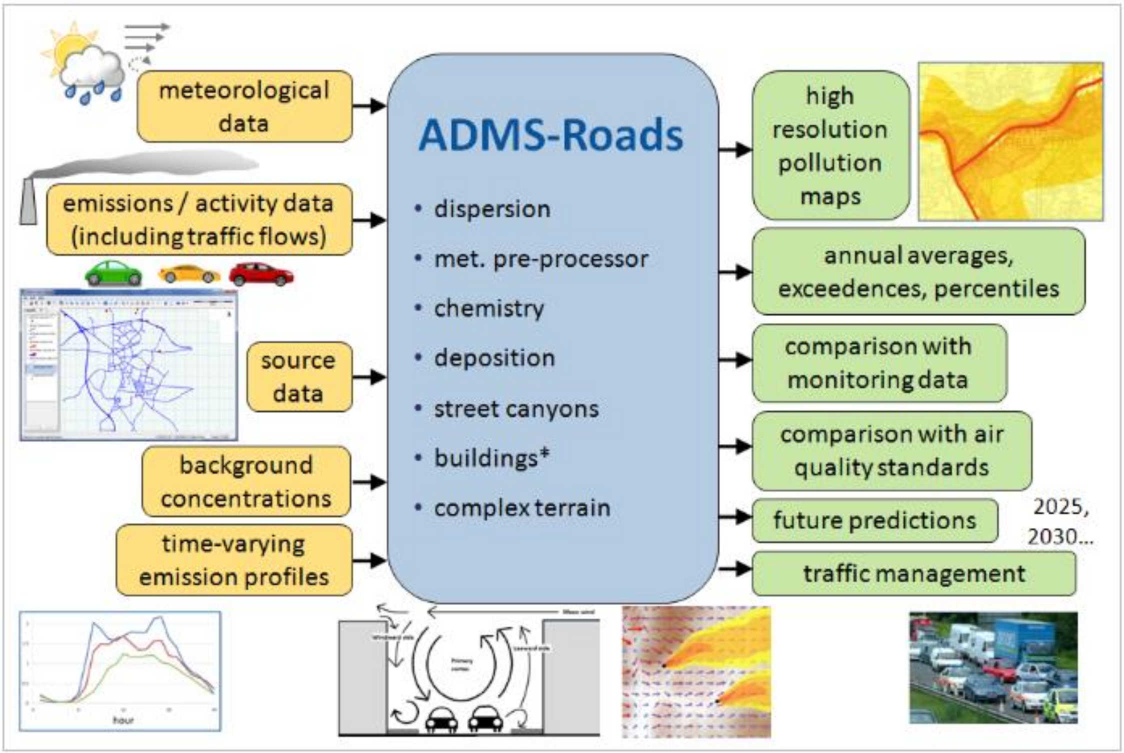
Dispersion modelling is a computer simulation which uses mathematical algorithms to predict the dispersion of emissions from various sources in the atmosphere. It uses a number of inputs to predict air quality pollutant concentrations at ground level.

The study has used the most up-to-date version of the Atmospheric Dispersion Modelling System ADMS-Roads Extra (ADMS Roads v5), developed by CERC.

Road traffic vehicles emit emissions of nitrogen oxides (NOx) which accounts for all nitrogen and oxygen compounds which can be formed in the combustion process. This combustion process also produces particulate matter (PM_{10} and $PM_{2.5}$) where 10 and 2.5 refer to the aerodynamic diameter of 10 µm and 2.5 µm respectively.

Full details of the dispersion modelling inputs have been provided in the Appendix B.

DIAGRAM 6-1: SUMMARY OF ADMS ROADS (REFERENCE CERC WEBSITE)



This diagram shows some of the possible inputs to and outputs from the model, and some of the modelling options available. * The buildings module is only available in ADMS-Roads Extra.

6.1 Street Parameters

One of the key inputs to the model is the road layout. As discussed in section 4 the air quality dispersion modelling and assessment is based on the Swale Highways model. This is a strategic model and forms part of the wider Kent County Council model.

The traffic data were extracted from the model in a GIS shapefile. Each road is split into a number of road links within the transport model. Each road link provides the traffic flow which includes the number of vehicles the vehicle spilt in terms of light goods and heavy good vehicles and the speed they are travelling at as a daily average (AADT).

The road alignment within the transport model does not follow the exact road alignment. It is an important step that each road link is exactly aligned to the road network so that when the model predicts concentrations at sensitive receptors the distance from the receptor to the road is accurate.

The alignment of the road links from the model required some adjustment to be geospatially correct and in line with the OS mastermap road network. The street parameters included in the model were road width, street canyon height and road elevation. The geometry of each road was determined through a combination of GIS mapping data and Google Earth. The geometry of each road was defined in terms of the kerb-to-kerb road width and, where appropriate, the height of any street canyons.

6.1.1 Limitations

As discussed in section 4 the air quality model has been built to replicate the traffic model. Due to the traffic road links being defined in the strategic traffic model we were unable to adjust the road links to account for:

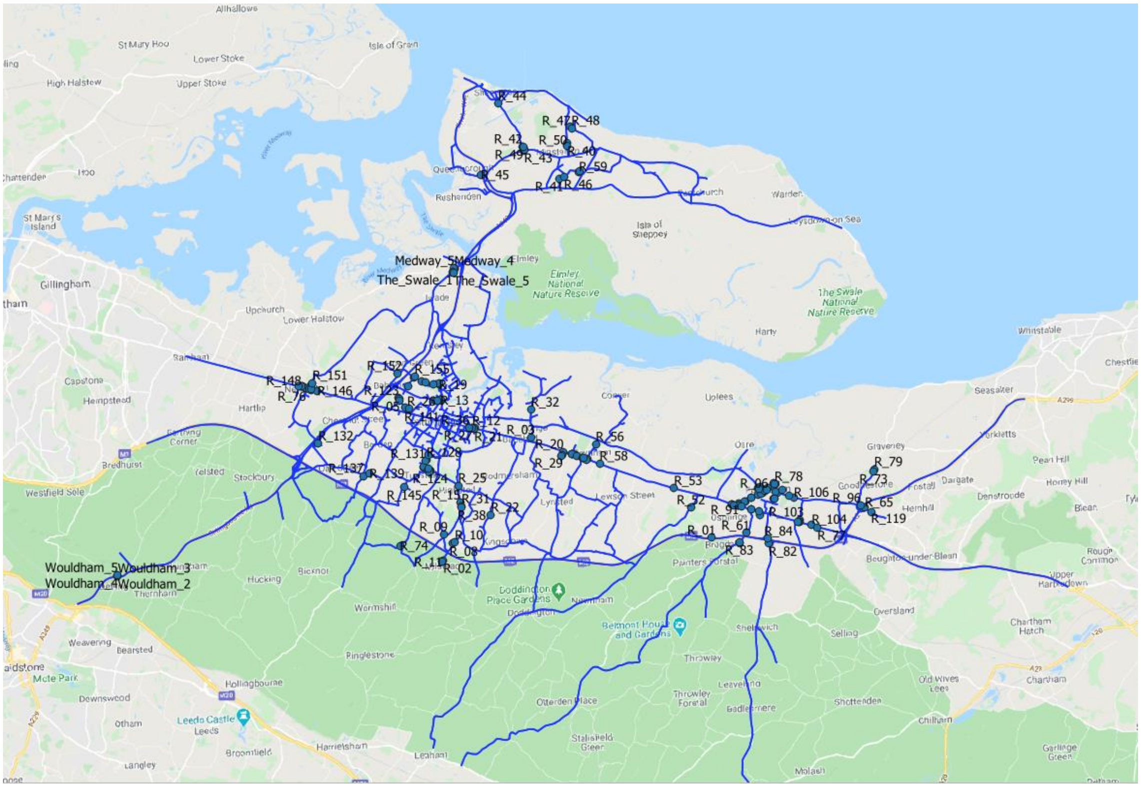
- the change in speed close to junctions
- change road links to accommodate changes in road width
- change road links to accommodate small sections of street canyon

A conservative approach was taken where possible. However, as the air quality model has gone through full model verification and as such any uncertainties in the model will have been accounted for in the verification process. Full details of the model verification are provided in the Technical Appendix.

6.2 Sensitive receptors

A degree of professional judgement was used when selecting the receptors. The total number of roads links considered in the model were in excess of 1500. A review of the change in traffic flows from the 2037 reference case and the 2037 LP scenarios traffic data was undertaken. This identified the road links that had no change in flow and where the greatest changes in flows would be. Based on this review a total of 155 specified receptors were selected. These were chosen to represent sensitive receptors closest to the road network. For each road link the closest sensitive receptor was chosen. These receptors were considered the most sensitive to changes in air quality concentrations, and subject to the highest road traffic emissions change. As well as these receptors the model also include receptors which represented the 2017 measurement locations. A full list of the receptors is provided in the Appendices A and B. A map showing the locations of the chosen receptors is shown in Diagram 6-2 and in Figure 1 of Appendix E.

DIAGRAM 6-2 SPECIFIED RECEPTORS

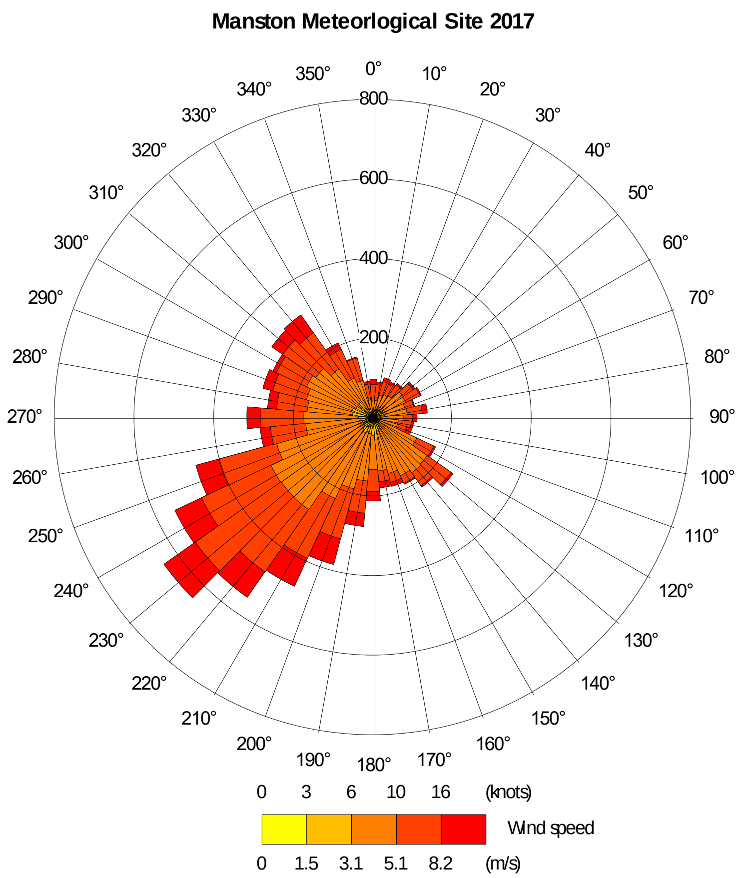


An Habitat regulation Assessment (HRA) is being undertaken separately. However, both packages of work are consistent a number of sensitive receptors have been included. These receptors have been placed along a transect at 10m intervals within each of the ecologically sensitive sites identified within 200m of the modelled road links. These data will be discussed in full within the HRA.

6.3 Meteorological data

ADMS-Roads uses hourly sequential meteorological data to calculate atmospheric dispersion. The meteorological data file contains several parameters including wind speed and direction, cloud cover and solar heat flux. The nearest site which records all required parameters is at Manston. Hourly sequential meteorological data for 2017 were used for the air quality modelling assessment. The wind rose for 2017 indicates that the prevailing wind direction is from the south west and is presented in Diagram 6-3.

DIAGRAM 6-3: MANSTON METEOROLOGICAL DATA 2017



7 Dispersion modelling results

7.1 Model verification

Model verification is the comparison of modelled results with available local monitoring data. This identifies how well the model is performing. LAQM.TG (16) recommends making the adjustment to the road contribution of the pollutant only.

Prior to model adjustment the model has been reviewed and refined where possible, to reduce uncertainties within the modelling. The model verification adjustment factor for annual mean NO_2 was 2.4 and 3.3 for PM_{10}. Full details of the modelling verification process have been provided within the Appendix C.

7.2 Modelling results

7.2.1 Annual mean NO_2 2017 Baseline results

The highest annual mean NO_2 concentration was predicted at sensitive receptor R_27, which is located in Canterbury Road, Sittingbourne with an annual mean of 49.3 µg/m^3. A total of 5 locations were predicted to be in excess of the air quality objective. The top ten highest concentrations are presented in Table 7:1. Full details of the modelling results for this scenario for all receptors can be found in Appendix D

TABLE 7:1 BASELINE NO_2 ANNUAL MEAN CONCENTRATIONS(µg/m^3)

Receptor Number	Street	Annual mean NO_2 (µg/m^3)
R_27	153 East Street, Sittingbourne, ME10 4BT	**49.3**
R_95	5 Ospringe Street, Faversham, ME13 8TJ	**47.1**
R_68	65 Ospringe Street, Faversham, ME13 8TW	**45.2**
R_84	125 Ashford Road, Faversham, ME13 8XW	**41.8**
R_01	Abbots Hill Cottages, Water Lane, Ospringe, ME13 0EP	**40.2**
R_16	3 Canterbury Road, Sittingbourne, ME10 4SG	38.8
R_34	14 St Pauls Street, Sittingbourne, ME10 2LA	38.0
R_98	10 Ospringe Street, Faversham, ME13 8TJ	37.7
R_75	49 George House, High Street, Newington, Sittingbourne, ME9 7JR	36.7
R_51	107 London Road, Teynham, Sittingbourne, ME9 9QL	35.9

7.2.2 Annual mean NO_2 2019

The highest annual mean NO_2 concentration was predicted at sensitive receptor R_27, which is located in Canterbury Road with an annual mean of 44.8 µg/m³. This reduction of approximately 4 µg/m³ appears to be in line with the drop in annual mean concentrations seen across many of the measurement's sites between 2017 and 2019. There were only 3 locations where the model predicted concentrations in excess of the annual mean NO_2 objective of 40 µg/m³ . The top ten highest concentrations are presented in Table 7:2.

Full details of the modelling results for this scenario for all receptors can be found in Appendix D

TABLE 7:2 2019 MODELLED NO_2 ANNUAL MEAN CONCENTRATIONS(µg/m³)

Receptor Number	Street	Annual mean NO_2 (µg/m³)
R_27	153 East Street, Sittingbourne, ME10 4BT	**44.8**
R_95	5 Ospringe Street, Faversham, ME13 8TJ	**42.1**
R_68	65 Ospringe Street, Faversham, ME13 8TW	**40.4**
R_84	125 Ashford Road, Faversham, ME13 8XW	37.7
R_01	Abbots Hill Cottages, Water Lane, Ospringe, ME13 0EP	36.3
R_16	3 Canterbury Road, Sittingbourne, ME10 4SG	35.2
R_34	14 St Pauls Street, Sittingbourne, ME10 2LA	34.4
R_98	10 Ospringe Street, Faversham, ME13 8TJ	33.7
R_75	49 George House, High Street, Newington, Sittingbourne, ME9 7JR	33.2
R_51	107 London Road, Teynham, Sittingbourne, ME9 9QL	32.6

7.2.3 Annual mean NO_2 Reference case 2027

There were no locations where the air quality objective was predicted to exceed in 2027. The highest concentration was predicted at R_27 and was 27.8 µg/m³. The top ten highest concentrations are presented in Table 7:3

Full details of the modelling results for this scenario for all receptors can be found in Appendix D

TABLE 7:3 2027MODELLED NO_2 ANNUAL MEAN CONCENTRATIONS (µg/m³)

Receptor Number	Street	Annual mean NO_2 (µg/m³)
R_27	153 East Street, Sittingbourne, ME10 4BT	27.8
R_95	5 Ospringe Street, Faversham, ME13 8TJ	26.8
R_68	65 Ospringe Street, Faversham, ME13 8TW	25.2
R_84	125 Ashford Road, Faversham, ME13 8XW	23.4
R_34	14 St Pauls Street, Sittingbourne, ME10 2LA	22.1
R_16	3 Canterbury Road, Sittingbourne, ME10 4SG	21.9
R_01	Abbots Hill Cottages, Water Lane, Ospringe, ME13 0EP	21.8
R_98	10 Ospringe Street, Faversham, ME13 8TJ	21.6
R_75	49 George House, High Street, Newington, Sittingbourne, ME9 7JR	20.2
R_17	4 Giles Young Court, High Street, Sittingbourne, ME10 2AS	20.1

7.2.4 Annual mean NO_2 Reference case 2037

There were no locations where the air quality objective was predicted to exceed in 2037. The highest concentration was predicted at R_27 and was 24.7 µg/m³. The top ten highest concentrations are presented in Table 7:4.

Full details of the modelling results for this scenario for all receptors can be found in Appendix D

TABLE 7:4 2037MODELLED NO_2 ANNUAL MEAN CONCENTRATIONS (µg/m³)

Receptor Number	Street	Annual mean NO_2 (µg/m³)
R_27	153 East Street, Sittingbourne, ME10 4BT	24.7
R_95	5 Ospringe Street, Faversham, ME13 8TJ	24.5
R_68	65 Ospringe Street, Faversham, ME13 8TW	22.8
R_84	125 Ashford Road, Faversham, ME13 8XW	20.8
R_34	14 St Pauls Street, Sittingbourne, ME10 2LA	20.1

Receptor Number	Street	Annual mean NO_2 (µg/m^3)
R_98	10 Ospringe Street, Faversham, ME13 8TJ	19.6
R_16	3 Canterbury Road, Sittingbourne, ME10 4SG	19.3
R_01	Abbots Hill Cottages, Water Lane, Ospringe, ME13 0EP	19.3
R_17	4 Giles Young Court, High Street, Sittingbourne, ME10 2AS	18.4
R_75	49 George House, High Street, Newington, Sittingbourne, ME9 7JR	18.3

7.2.5 Annual mean NO_2 Do minimum 2037 776

There were no locations where the air quality objective was predicted to exceed under the 2037 DM 776 case. The highest concentration was predicted at R_27 and was 25.9 µg/m^3. The top ten highest concentrations are presented in Table 7:5.

Full details of the modelling results for this scenario for all receptors can be found in Appendix D

TABLE 7:5 2037 776MODELLED NO_2 ANNUAL MEAN CONCENTRATIONS(µg/m^3)

Receptor Number	Street	Annual mean NO_2 (µg/m^3)
R_27	153 East Street, Sittingbourne, ME10 4BT	25.9
R_95	5 Ospringe Street, Faversham, ME13 8TJ	25.1
R_68	65 Ospringe Street, Faversham, ME13 8TW	23.0
R_84	125 Ashford Road, Faversham, ME13 8XW	20.8
R_98	10 Ospringe Street, Faversham, ME13 8TJ	20.2
R_34	14 St Pauls Street, Sittingbourne, ME10 2LA	19.8
R_16	3 Canterbury Road, Sittingbourne, ME10 4SG	19.5
R_01	Abbots Hill Cottages, Water Lane, Ospringe, ME13 0EP	19.3
R_51	107 London Road, Teynham, Sittingbourne, ME9 9QL	18.8
R_04	26 Court Street, Faversham, ME13 7AT	18.6

7.2.6 Annual mean NO_2 Do minimum 2037 1054

There were no locations where the air quality objective was predicted to exceed under the 2037 DM 1054 case. The highest concentration was predicted at R_27 and was 26.6 µg/m³. The top ten highest concentrations are presented in Table 7:5.

Full details of the modelling results for this scenario for all receptors can be found in Appendix D

TABLE 7:6 20337 1054 MODELLED NO_2 ANNUAL MEAN CONCENTRATIONS(µg/m³)

Receptor Number	Street	Annual mean NO_2 (µg/m³)
R_27	153 East Street, Sittingbourne, ME10 4BT	26.6
R_95	5 Ospringe Street, Faversham, ME13 8TJ	26.0
R_68	65 Ospringe Street, Faversham, ME13 8TW	23.6
R_84	125 Ashford Road, Faversham, ME13 8XW	21.0
R_98	10 Ospringe Street, Faversham, ME13 8TJ	20.9
R_34	14 St Pauls Street, Sittingbourne, ME10 2LA	19.8
R_16	3 Canterbury Road, Sittingbourne, ME10 4SG	19.6
R_01	Abbots Hill Cottages, Water Lane, Ospringe, ME13 0EP	19.3
R_04	26 Court Street, Faversham, ME13 7AT	19.1
R_51	107 London Road, Teynham, Sittingbourne, ME9 9QL	19.1

7.2.7 Annual mean PM_{10} all scenarios

The key pollutant of concern from the LP was NO_2 however PM_{10} was also considered due to concerns of increasing concentrations seen at automatic monitoring site ZW8.

The results of the modelling has indicated that there were no exceedances of the PM_{10} annual mean objective for any of the scenarios modelled. The baseline assessment indicated that the highest predicted concentration was 25 µg/m³ at receptor R_95, this is in line with the measurement data for 2017. Full details of all of the results for PM_{10} are provided in Appendix C

7.3 Impact assessment of LP options

The change in annual mean concentrations of NO_2 between the reference case in 2037 and with each LP build out option has been assessed. A summary of the ten receptors which saw the greatest impact and the greatest benefit are presented in Table 7:1 to Table 1:4.

Maps showing the percentage change between the reference case and the 2037 776 LP and 2037 1054 LP options are provided in Figures 2a to 2h and Figures 3a to 3h, respectively, in Appendix E

TABLE 7:1 SCENARIO 2037 776 LOCATIONS OF GREATEST IMPACT(µg/m³)

Receptor Number	Street	Change in annual mean NO_2 (µg/m³)
R_57	99 London Road, Teynham, Sittingbourne, ME9 9QL	1.6
R_99	118 Ospringe Road, Faversham, ME13 7LG	1.6
R_51	107 London Road, Teynham, Sittingbourne, ME9 9QL	1.6
R_54	65 London Road, Teynham, ME9 9QW	1.3
R_58	White Hall, London Road, Teynham, Sittingbourne, ME9 9QT	1.3
R_24	157 London Road, Teynham, Sittingbourne, ME9 9QJ	1.3
R_23	191 Fox Court, London Road, Teynham, Sittingbourne, ME9 9QJ	1.3
R_27	153 East Street, Sittingbourne, ME10 4BT	1.2
R_108	Corner Cottage, Canterbury Road, Faversham, ME13 8YL	1.0
R_14	191 London Road, Teynham, Sittingbourne, ME9 9QJ	1.0

TABLE 1:2 SCENARIO 2037 1054 LOCATIONS OF GREATEST IMPACT(µg/m³)

Receptor Number	Street	Change in annual mean NO_2 (µg/m³)
R_57	118 Ospringe Road, Faversham, ME13 7LG	1.9

Receptor Number	Street	Change in annual mean NO_2 (µg/m³)
R_51	5 Ospringe Street, Faversham, ME13 8TJ	1.9
R_27	2 South Road, Faversham, ME13 7LR	1.8
R_54	White Hall, London Road, Teynham, Sittingbourne, ME9 9QT	1.7
R_58	99 London Road, Teynham, Sittingbourne, ME9 9QL	1.6
R_95	65 London Road, Teynham, ME9 9QW	1.5
R_24	107 London Road, Teynham, Sittingbourne, ME9 9QL	1.5
R_99	153 East Street, Sittingbourne, ME10 4BT	1.5
R_24	157 London Road, Teynham, Sittingbourne, ME9 9QJ	1.5
R_23	191 Fox Court, London Road, Teynham, Sittingbourne, ME9 9QJ	1.5

TABLE 1:3 SCENARIO 2037 776 LOCATIONS OF GREATEST BENEFIT(µg/m³)

Receptor Number	Street	Change in annual mean NO_2 (µg/m³))
R_39	Halfway House, Halfway Road, Minster-On-Sea, ME12 3AU	-1.2
R_119	Fairbrook Bungalow, Staple Street, Hernhill, Faversham, ME13 9HZ	-0.8
R_43	2 Minster Road, Minster-On-Sea, ME12 3JD	-0.7
R_143	17 High Street, Newington, Sittingbourne, ME9 7JR	-0.6
R_59	11 Honeysuckle Drive, Minster-On-Sea, Sheerness, ME12 3RE	-0.5
R_60	1 Larch End, Minster-On-Sea, Sheerness, ME12 3FJ	-0.5

Receptor Number	Street	Change in annual mean NO_2 ($\mu g/m^3$))
R_149	24 London Road, Newington, Sittingbourne, ME9 7NR	-0.5
R_18	Activeplay Nurseries Ltd, 10-14 London House, High Street, Sittingbourne, ME10 2AB	-0.5
R_74	Bexon Manor, Hawks Hill Lane, Bredgar, Sittingbourne, ME9 8HE	-0.5
R_148	14 London Road, Newington, Sittingbourne, ME9 7NR	-0.4

TABLE 1:4 SCENARIO 2037 1054 LOCATIONS OF GREATEST BENEFIT($\mu g/m^3$)

Receptor Number	Street	Change in annual mean NO_2 ($\mu g/m^3$)
R_39	118 Ospringe Road, Faversham, ME13 7LG	-1.0
R_119	5 Ospringe Street, Faversham, ME13 8TJ	-0.7
R_43	2 South Road, Faversham, ME13 7LR	-0.6
R_59	White Hall, London Road, Teynham, Sittingbourne, ME9 9QT	-0.5
R_60	99 London Road, Teynham, Sittingbourne, ME9 9QL	-0.5
R_18	65 London Road, Teynham, ME9 9QW	-0.5
R_149	107 London Road, Teynham, Sittingbourne, ME9 9QL	-0.4
R_17	153 East Street, Sittingbourne, ME10 4BT	-0.4
R_74	157 London Road, Teynham, Sittingbourne, ME9 9QJ	-0.4
R_148	191 Fox Court, London Road, Teynham, Sittingbourne, ME9 9QJ	-0.3

8 Summary

The study has used dispersion modelling to assess the potential impact that the 776 and 1054 build out options would have on air quality when fully built out in 2037. The assessment has considered the baseline of 2017 for model verification purposes. Overall, the model performed well but overall, the model could be improved by model adjustment following the verification process. This adjustment was applied to all future scenarios too.

The results of the modelling indicate that air quality within Swale will improve between 2017and by 2027 and there will be no locations, in 2027, where there are exceedances of the NO_2 annual mean air quality objective.

In 2037 annual mean concentrations of NO_2 will see a further reduction, at receptor R_27 there is approximately a 3 ug/m^3 reduction. However, it should be noted that the concentrations predicted will be conservative due to the pollutant emissions factors being based on 2030 for 2037 traffic flows.

The results of both the 2037 776 DM and the 2037 1054 DM indicates that under both options there would be a mixture of both positive and negative impacts on air across most of the receptors considered in the assessment.

This may be as a result of the redistribution of traffic movements across the network as a result of the LP being in place.

A summary of the benefits and worsening across the 155 specified receptors under each LP option is provided in the table below.

While the analysis shown in Table 8:1 shows that under option776 and 1054 90 and116 receptors, respectively, would see a worsening 60 and 63 of these would be less than 1% of the air quality objective. In terms of impact a change in 1% of the air quality objective can be classified as insignificant.

While neither option results in any exceedances of the annual mean NO_2 air quality objective the 1054 option does see more locations with a worsening and the maximum change in annual mean NO_2 concentration of 1.9 µg/m^3

TABLE 8:1 SUMMARY OF IMPACT ACROSS ALL 155 RECEPTORS FOR ANNUAL MEAN NO_2

Description	2037 DM 776	2037 DM 1054
Number of receptors worsening	90	116
Maximum worsening	1.6 µg/m^3	1.9 µg/m^3
Greatest Worsening	R_57	R_57
Address	99 London Road, Teynham, Sittingbourne, ME9 9QL	99 London Road, Teynham, Sittingbourne, ME9 9QL

Description	2037 DM 776	2037 DM 1054
Number of receptors improving	53	38
Maximum reduction	-1.2 µg/m^3	-1.0 µg/m^3
Greatest improvement	R_39	R_39
Address	Halfway House, Halfway Road, Minster-On-Sea, ME12 3AU	Halfway House, Halfway Road, Minster-On-Sea, ME12 3AU
Number of receptors with no change	12	1
Highest concentration	R_27	R_27
Address	153 East Street, Sittingbourne, ME10 4BT	153 East Street, Sittingbourne, ME10 4BT
Number of receptors where impact is less than 1% of the Air Quality Objective	60	63

Appendix A – Local authority monitoring results

All data in this section have been obtained from the Council's latest Annual Status Report[5], full details of the QA/QC for three monitoring data can be found in this report

APPENDIX TABLE 1 DETAILS OF AUTOMATIC MONITORING SITES

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
ZW6	Newington 3	Roadside	585861	164817	NO_2	YES	Chemiluminescent	5	1.6	2.4
ZW8	St Paul's Street	Roadside	590264	164396	NO_2 PM_{10}	YES	Chemiluminescent & TEOM	9	2.5	3.2
ZW3	Ospringe Roadside (2)	Roadside	600360	160869	NO_2 PM_{10}	YES	Chemiluminescent & TEOM	0	1.7	2

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[5] https://services.swale.gov.uk/assets/Air-Quality/Air-Quality-Annual-Status-Report-21-July-2020.pdf

APPENDIX TABLE 2 DETAILS OF NON-AUTOMATIC MONITORING SITES

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
SW66	96/94High Street, Newington	Kerbside	586083	164745	NO_2	YES	0	1.2	NO	1.9
SW45	64 High Street, Newington	Kerbside	585992	164772	NO_2	YES	2.9	1.2	NO	2.3
SW35	60 High Street, Newington	Kerbside	585961	164779	NO_2	YES	0	1.4	NO	2.4
SW42	High Street, Opp Church Lane	Kerbside	585936	164788	NO_2	YES	0	1.3	NO	2.2
SW42	High Street, Opp Church Lane	Kerbside	585936	164788	NO_2	YES	0	1.3	NO	2.2
SW42	High Street, Opp Church Lane	Kerbside	585936	164788	NO_2	YES	0	1.3	NO	2.2
SW19	Newington Social Club	Kerbside	585918	164790	NO_2	YES	0	2.3	NO	2.4
SW37	32 High Street, Newington	Kerbside	585867	164801	NO_2	YES	4	1.7	NO	2.3

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube collocated with a Continuous Analyser?	Height (m)
SW38	15a High Street, Newington	Kerbside	585781	164834	NO_2	YES	1.6	2.4	NO	2
SW20	Newington Co Op	Kerbside	585846	164820	NO_2	YES	0	1.6	YES	2.3
SW20	Newington Co Op	Kerbside	585846	164820	NO_2	YES	0	1.6	YES	2.3
SW20	Newington Co Op	Kerbside	585846	164820	NO_2	YES	0	1.6	YES	2.3
SW36	49 High Street, Newington	Kerbside	585928	164798	NO_2	YES	1	3.1	NO	2.2
SW78	55057 High Street, Newington	Kerbside	585960	164787	NO_2	YES	0.9	2.2	NO	1.9
SW62	Key Street, Sittingbourne	Kerbside	588178	164235	NO_2	NO	15	1.9	NO	2.1
SW82	Conservative Club, St Pauls Street	Roadside	590228	164396	NO_2	YES	11.3	1.65	NO	2.3
SW82	Conservative Club, St Pauls Street	Roadside	590228	164396	NO_2	YES	11.3	1.65	NO	2.3

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
SW82	Conservative Club, St Pauls Street	Roadside	590228	164396	NO_2	YES	11.3	1.65	NO	2.3
SW52	20/22 St Pauls Street	Kerbside	590203	164409	NO_2	YES	0	3	NO	2.25
SW51	14/16 St Pauls Street	Kerbside	590235	164408	NO_2	YES	0.5	2	NO	2.2
SW89	St Pauls Air Quality Station	Kerbside	590264	164396	NO_2	YES	11.1	2.5	YES	3.1
SW89	St Pauls Air Quality Station	Kerbside	590264	164396	NO_2	YES	11.1	2.5	YES	3.1
SW89	St Pauls Air Quality Station	Kerbside	590264	164396	NO_2	YES	11.1	2.5	YES	3.1
SW71	o/s 8 Staple Close, Staplehurst Road, Sittingbourne	Roadside	590096	164455	NO_2	NO	4.4	3.8	NO	2.2
SW73	14 Chalkwell Road, Sittingbourne	Roadside	590122	164405	NO_2	NO	2.8	3	NO	2.2
SW58	Dover Street	Kerbside	560356	163748	NO_2	NO	0	2	NO	2

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
SW83	Pembury Court, Dover Street	Roadside	590375	163774	NO_2	NO	6.3	1.5	NO	2.05
SW97	Crown Quay Lane, Sittingbourne	Roadside	591007	163614	NO_2	NO	1.6	2.2	NO	2
SW53	114 East Street, Sittingbourne	Kerbside	590402	163465	NO_2	NO	0	5.1	NO	1.6
SW56	126 East Street, Sittingbourne	Kerbside	591451	163465	NO_2	YES	0	2.9	NO	1.85
SW56	126 East Street, Sittingbourne	Kerbside	591451	163465	NO_2	YES	0	2.9	NO	1.85
SW56	126 East Street, Sittingbourne	Kerbside	591451	163465	NO_2	YES	0	2.9	NO	1.85
SW87	Canterbury Road AQ Station	Roadside	591489	163472	NO_2	YES	0	4.8	YES	1.7
SW87	Canterbury Road AQ Station	Roadside	591489	163472	NO_2	YES	0	4.8	YES	1.7

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
SW87	Canterbury Road AQ Station	Roadside	591489	163472	NO_2	YES	0	4.8	NO	1.7
SW90	Junction of Canterbury Road Goodnestone Road	Roadside	591551	163456	NO_2	NO	2.9	1.8	NO	1.6
SW76	155 Canterbury Road, Sittingbourne	Roadside	592194	163306	NO_2	NO	3.5	1.7	NO	2.2
SW77	Kemsley Fields, Swale Way, Sittingbourne	Roadside	591035	166521	NO_2	NO	13.6	4.4	NO	2
SW88	Sonara Way, Sonara Fields, Sittingbourne	Urban Background	589320	165047	NO_2	NO	5.8	Unknown	NO	1.9
SW07	Capel Hill Farm, Harty	Rural	600745	169572	NO_2	NO	Unknown	Unknown	NO	3
SW14	Rushenden Road, QueenBorough	Kerbside	591170	172087	NO_2	NO	1.4	1.7	NO	3

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
SW13	Main Road, QueenBorough	Kerbside	591487	172048	NO_2	NO	1.4	3.8	NO	3
SW84	Sheerness College 1, Bridge Road, Sheerness	Roadside	591725	175045	NO_2	NO	N/A	3.5	NO	1.85
SW85	Sheerness College 2, Bridge Road, Sheerness	Roadside	591751	175009	NO_2	NO	N/A	2.3	NO	1.9
SW86	Swale Foyer, Bridge Road, Sheerness	Roadside	591723	175020	NO_2	NO	N/A	1.6	NO	2
SW99	A2 Frognal Lane, Teynham	Roadside	594790	162600	NO_2	NO	Unknown	2	NO	1.9
SW100	Frognal Lane, Teynham	Urban Background	594818	162647	NO_2	NO	4.7	1	NO	2.15
SW80	A2 Teynham, 107 London Road	Roadside	595160	162470	NO_2	YES	0.6	1.5	NO	1.8
SW91	Adj to 72 London Road, Teynham	Roadside	595451	162446	NO_2	NO	0	2.4	NO	1.75

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
SW101	A2 Lynsted Lane, Jct	Roadside	595131	162463	NO_2	NO	0	1.3	NO	1.85
SW92	FJ Williams, London Road	Roadside	595195	162446	NO_2	YES	1	3.1	NO	1.9
SW102	Michaels A2, Teynham	Roadside	595206	162457	NO_2	YES	0	2.6	NO	1.8
SW103	Station Road, Teynham	Roadside	595310	162439	NO_2	NO	9.1	1.7	NO	1.95
SW28	Mayors Arms, Ospringe	Kerbside	600223	160889	NO_2	YES	0	1.5	NO	2.4
SW30	ZW3 Ospringe Street	Kerbside	600358	160869	NO_2	YES	1.7	2.3	YES	1.9
SW30	ZW3 Ospringe Street	Kerbside	600358	160869	NO_2	YES	1.7	2.3	YES	1.9
SW30	ZW3 Ospringe Street	Kerbside	600358	160869	NO_2	YES	1.7	2.3	YES	1.9
SW31	Site 7, 4 Ospringe Street	Kerbside	600444	160848	NO_2	YES	0	1.5	NO	2.4
SW95	The Mount, London Road, Ospringe	Kerbside	600517	160825	NO_2	YES	N/A	1.6	NO	1.9

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) [(1)]	Distance to kerb of nearest road (m) [(2)]	Tube collocated with a Continuous Analyser?	Height (m)
SW32	11 Ospringe Street, Ospringe	Kerbside	600420	160845	NO_2	YES	0	2.3	NO	2
SW96	Maison Dieu, Ospringe Street	Kerbside	600358	160859	NO_2	YES	0	1.9	NO	1.9
SW22	35 Ospringe Street, Ospringe	Kerbside	600307	160863	NO_2	YES	0	2.7	NO	2
SW29	Opp Lions Yard, Ospringe Street	Kerbside	600274	160871	NO_2	YES	0	2.4	NO	2.07
SW98	Canterbury Road, Preston, Faversham	Kerbside	601818	160474	NO_2	NO	2	0.5	NO	1.9
SW104	260 The Street, Boughton	Roadside	605486	159536	NO_2	NO	0	1.7	NO	2
SW105	209 The Street, Boughton	Roadside	605522	159491	NO_2	NO	9	1.3	NO	1.9
SW34	Hernhill Village Hall, Hernhill	Rural	606624	161110	NO_2	NO	0	Unknown	NO	1.9

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
SW106	39/40 Priory Row, Davington	Urban Background	601116	162006	NO_2	NO	7.5	1.3	NO	1.9
SW107	110 Borden Lane, Sittingbourne	Roadside	589261	163338	NO_2	NO	11.7	1.8	NO	2.1
SW108	1 Oak House, Wises Lane	Roadside	588315	163039	NO_2	NO	0	1.3	NO	2.1
SW109	39 Wises Lane, Sittingbourne	Roadside	588433	163917	NO_2	NO	6.5	1.2	NO	2.1
SW110	2 Cherryfields, Sittingbourne	Roadside	588467	164123	NO_2	NO	4.1	1.9	NO	2.2
SW111	76A Key Street, Sittingbourne	Roadside	588432	164166	NO_2	NO	2.6	1.1	NO	2.2
SW112	56 Key Street, Sittingbourne	Roadside	588328	164188	NO_2	NO	5.5	2.1	NO	2.1
SW113	Squirrel Cottage, Keycol Hill	Roadside	587932	164276	NO_2	NO	3.2	3.8	NO	2.3

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube collocated with a Continuous Analyser?	Height (m)
SW114	2 Florence Cottages, Chestnut Street	Roadside	587669	163976	NO_2	NO	0	2.2	NO	2.2
SW115	Cherry Tree Cottage, Chestnut Street	Roadside	587548	163901	NO_2	NO	0	4.3	NO	2.6
SW116	Bankside, Chestnut Street	Roadside	587283	163755	NO_2	NO	6.1	1.6	NO	2.1
SW117	Land Adj Orchard, Canterbury Road, Faversham	Roadside	601629	160525	NO_2	NO	26.2	1	NO	1.9
SW118	Opp Fruit Stall, 9 Fox Hill, Bapchild	Roadside	592791	163168	NO_2	NO	31.5	5.1	NO	2
SW119	Flats, The Mount, Ospringe	Roadside	600568	160819	NO_2	YES	0	8	NO	

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
SW120	103 Ospringe Street, Ospringe, Faversham	Roadside	600456	160836	NO_2	YES	0	Unknown	NO	2

APPENDIX TABLE 3 ANNUAL MEAN NO_2 MONITORING RESULTS

Site ID	Site Type	Monitoring Type	Valid Data Capture for 2019 (%)	NO_2 Annual Mean Concentration (µg/m^3)				
				2015	2016	2017	2018	2019
ZW6	Roadside	Automatic	97.6	29.7	28.1	29.7	29.1	26.8
ZW8	Roadside	Automatic	98.6	35.1	37.7	35.1	39.7	39.1
ZW3	Roadside	Automatic	99.5	32.6	-	-	31.6	31.4
SW66	Kerbside	Diffusion Tube	100	36.2	36.3	38.5	35.4	33.7
SW45	Kerbside	Diffusion Tube	100	39.6	**43.3**	**41.2**	39.7	36.1
SW35	Kerbside	Diffusion Tube	100	**44.2**	**46.0**	**48.5**	**45.6**	**42.5**
SW42 (triplicate)	Kerbside	Diffusion Tube	100	**47.3**	**45.7**	**46.4**	**47.8**	**43.9**

Site ID	Site Type	Monitoring Type	Valid Data Capture for 2019 (%)	NO_2 Annual Mean Concentration (µg/m^3)				
				2015	2016	2017	2018	2019
SW19	Kerbside	Diffusion Tube	100	29.6	34.8	35.4	39.0	36.8
SW37	Kerbside	Diffusion Tube	92	31.4	35.1	34.2	33.7	32.6
SW38	Kerbside	Diffusion Tube	92	31.4	33.8	32.6	31.1	28.6
SW20 (triplicate)	Kerbside	Diffusion Tube	100	31.2	28.3	29.9	26.1	26
SW36	Kerbside	Diffusion Tube	100	33.8	33.3	33.7	35.7	32.9
SW78	Kerbside	Diffusion Tube	67	38.8	35.8	**40.2**	36.9	34.1
SW62	Kerbside	Diffusion Tube	100	37.2	38.3	**40.6**	33.7	33.7
SW82	Roadside	Diffusion Tube	100	**55.5**	**55.1**	**55.7**	**59.1**	**55.9**
SW129	Roadside	Diffusion Tube	33	-	-	-	-	29.3
SW52	Kerbside	Diffusion Tube	75	35.2	37.2	33.9	35.9	33.3
SW51	Kerbside	Diffusion Tube	100	**40.5**	39.2	39.6	**45.2**	**40.5**

Site ID	Site Type	Monitoring Type	Valid Data Capture for 2019 (%)	NO_2 Annual Mean Concentration (µg/m^3)				
				2015	2016	2017	2018	2019
SW89 (triplicate)	Kerbside	Diffusion Tube	100	**41.8**	**44.3**	**44.7**	**43.2**	**40.1**
SW71	Roadside	Diffusion Tube	100	32.7	38.3	**40.0**	37	36.1
SW73	Roadside	Diffusion Tube	100	31.1	32.2	34.6	34.1	30.7
SW58	Kerbside	Diffusion Tube	100	33.5	32.9	33.4	34.1	29.5
SW83	Roadside	Diffusion Tube	100	29.1	27.4	29.7	30	24.6
SW132	Roadside	Diffusion Tube	42	-	-	-	-	31.4
SW97	Roadside	Diffusion Tube	-	28.7	28.1	28.2	27.4	-
SW53	Kerbside	Diffusion Tube	100	33.9	31.9	33.8	30.4	30.8
SW56	Kerbside	Diffusion Tube	100	38.7	39.8	42.5	40.5	37.7
SW87	Roadside	Diffusion Tube	100	33.8	35.1	34.0	34.5	30.7
SW90	Roadside	Diffusion Tube	83	30.7	32.6	31.0	29.5	26.3

Site ID	Site Type	Monitoring Type	Valid Data Capture for 2019 (%)	NO_2 Annual Mean Concentration (µg/m^3)				
				2015	2016	2017	2018	2019
SW76	Roadside	Diffusion Tube	100	31.6	37.8	37.6	34.2	33.5
SW77	Roadside	Diffusion Tube	100	29.7	31.8	31.3	32.9	29.6
SW88	Urban Background	Diffusion Tube	83	19.5	24.1	20.4	22.2	21.1
SW07	Rural	Diffusion Tube	100	14.0	12.1	10.7	10.7	11.3
SW14	Kerbside	Diffusion Tube	-	20.5	21.3	22.8	19.8	-
SW13	Kerbside	Diffusion Tube	-	19.6	21.7	20.8	18.9	-
SW84	Roadside	Diffusion Tube	-	25.2	26.4	30.0	23.1	-
SW133	Roadside	Diffusion Tube	17	-	-	-	-	30.4
SW134	Roadside	Diffusion Tube	25	-	-	-	-	26.8
SW127	Roadside	Diffusion Tube	33	-	-	-	-	31.0
SW128	Roadside	Diffusion Tube	50	-	-	-	-	37.4

Site ID	Site Type	Monitoring Type	Valid Data Capture for 2019 (%)	NO_2 Annual Mean Concentration (µg/m^3)				
				2015	2016	2017	2018	2019
SW85	Roadside	Diffusion Tube	83	27.9	30.3	32.5	33.3	31.0
SW86	Roadside	Diffusion Tube	92	30.1	30.2	31.4	30.3	28.3
SW99	Roadside	Diffusion Tube	100	-	25.5	24.9	28.2	24.7
SW100	Urban Background	Diffusion Tube	-	-	16.9	15.8	15.7	-
SW80	Roadside	Diffusion Tube	83	38.9	**42.1**	39.9	39.3	32.8
SW91	Roadside	Diffusion Tube	100	36.4	37.3	35.3	32.3	33.4
SW101	Roadside	Diffusion Tube	100		24.2	30.1	24.7	22.4
SW92	Roadside	Diffusion Tube	100	37.3	37.3	29.1	32.1	31.9
SW102	Roadside	Diffusion Tube	-	-	24.8	26.0	34.6	-
SW103	Roadside	Diffusion Tube	-	-	23.9	19.3	19.8	-
SW28	Kerbside	Diffusion Tube	100	**49.4**	**45.5**	**47.0**	**45.4**	31.9

Site ID	Site Type	Monitoring Type	Valid Data Capture for 2019 (%)	NO_2 Annual Mean Concentration (µg/m^3)				
				2015	2016	2017	2018	2019
SW30 (triplicate)	Kerbside	Diffusion Tube	97	33.4	31.6	37.2	36.3	31.1
SW31	Kerbside	Diffusion Tube	100	**45.2**	**48.3**	**40.7**	**42.6**	37.9
SW95	Kerbside	Diffusion Tube	67	70.2	59.6	61.3	61.7	54.3
SW32	Kerbside	Diffusion Tube	100	**40.2**	38.2	39.1	36.8	36.9
SW96	Kerbside	Diffusion Tube	100	**47.0**	39.4	40.0	36.4	36.6
SW22	Kerbside	Diffusion Tube	92	**47.7**	**47.9**	**47.0**	**43.3**	**42.4**
SW29	Kerbside	Diffusion Tube	100	**48.6**	**48.0**	**46.2**	**41.1**	**40.9**
SW98	Kerbside	Diffusion Tube	92	33.2	34.4	34.3	33	33.5
SW104	Roadside	Diffusion Tube	-	-	27.3	28.4	26	-
SW105	Roadside	Diffusion Tube	-	-	24.1	21.3	19.8	-
SW34	Rural	Diffusion Tube	92	10.2	13.2	11.9	10.3	9.8

Site ID	Site Type	Monitoring Type	Valid Data Capture for 2019 (%)	NO_2 Annual Mean Concentration (µg/m^3)				
				2015	2016	2017	2018	2019
SW106	Urban Background	Diffusion Tube	-	-	16.8	15.8	14.4	-
SW107	Roadside	Diffusion Tube	92	-	-	-	18.3	17.4
SW108	Roadside	Diffusion Tube	83	-	-	-	15.8	13.5
SW109	Roadside	Diffusion Tube	100	-	-	-	17.8	15.5
SW110	Roadside	Diffusion Tube	100	-	-	-	21.5	18.7
SW111	Roadside	Diffusion Tube	100	-	-	-	40.9	38.2
SW112	Roadside	Diffusion Tube	100	-	-	-	35.4	33.4
SW113	Roadside	Diffusion Tube	100	-	-	-	69.3	74.5
SW114	Roadside	Diffusion Tube	100	-	-	-	22.6	20.9
SW115	Roadside	Diffusion Tube	100	-	-	-	24.2	21.6
SW116	Roadside	Diffusion Tube	100	-	-	-	23.5	21.5

Site ID	Site Type	Monitoring Type	Valid Data Capture for 2019 (%)	NO_2 Annual Mean Concentration (µg/m^3)				
				2015	2016	2017	2018	2019
SW117	Roadside	Diffusion Tube	100	-	-	-	35.3	28.5
SW118	Roadside	Diffusion Tube	83	-	-	-	20.2	21.3
SW119	Roadside	Diffusion Tube	100	-	-	-	27	24.7
SW120	Roadside	Diffusion Tube	100	-	-	-	**42.2**	39.9
SW121	Roadside	Diffusion Tube	100	-	-	-	-	**42.7**
SW122			100	-	-	-	-	21.2
SW123			100	-	-	-	-	27.3
SW124			100	-	-	-	-	**52.3**
SW130			50	-	-	-	-	**55.5**
SW131			50	-	-	-	-	**55.0**

Appendix B – Dispersion modelling inputs

Dispersion modelling requires a number of key inputs these are discussed in detail in this appendix.

Vehicle Emission Factors

The Emissions Factors Toolkit (EFT V9.0 May 2019 release) was used in this assessment, due to the base year of 2017 to calculate pollutant emission factors for each road link modelled. The basic fleet option was used.

Parameters such as traffic volume, speed and %HGV were entered into the EFT, and emissions rate in grams of pollutant/kilometre/second was generated for use in the dispersion model. In this version of the EFT, NOx and PM emission factors are taken from the European Environment Agency (EEA) COPERT 5 emission calculation tool. These emissions factors are widely used for calculating emissions from road traffic in Europe. Defra recognise these as the current official emission factors for road traffic sources when conducting local, regional and national scale dispersion modelling assessments.

For the assessment of the future years when the LP will be in place, we have used the same version of the EFT. Vehicle emission projections are based largely on the assumption that emissions from the fleet will fall as newer vehicles are introduced at a renewal rate forecast by the DfT. Any inaccuracy in the projections or the COPERT 5 emissions factors contained in the EFT will be unavoidably carried forward into this modelling assessment. Currently the EFT only considers emissions up to 2030 there are a number of unknown's post 2030. Therefore for 2037, 2030 emissions have been used as a worst case. It is thought that post 2030 emissions will reduce further due to policies to remove the fossil fuel fleet.

Background Data

Background pollutant maps provide estimates of background concentrations for specific pollutants. They are used to better understand the contribution of local sources to pollutant concentrations. Defra provides estimates of background pollution concentrations for NOx, NO_2 and PM_{10} across the UK for each 1km grid square. As the baseline year of assessment is 2017 the 2017 background maps were used for this assessment. They provide mapped pollutant concentrations for every year from 2017 to 2030. Background pollution maps have been obtained from Defra[6] for this assessment.

The Council also undertakes monitoring at both rural and urban background locations. Full details of this monitoring are provided in Appendix Table 4: Background monitoring data 2015 to 2017

[6] https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html

APPENDIX TABLE 4: BACKGROUND MONITORING DATA 2015 TO 2017

Site ID	X	Y	Site Type	NO_2 Annual Mean Concentration (µg/m^3)		
				2015	2016	2017
SW88	589320	165047	Urban Background	19.5	24.1	20.4
SW07	600745	169572	Rural	14.0	12.1	10.7
SW100	594818	162647	Urban Background	-	16.9	15.8
SW34	606624	161110	Rural	10.2	13.2	11.9
SW106	601116	162006	Urban Background	-	16.8	15.8

As part of the assessment a review was undertaken of a comparison with the measured background data with the background maps. The comparison indicated that the background maps were representative of the background concentrations within Swale, as presented in Appendix Table 5.

APPENDIX TABLE 5: COMPARISON OF MAPPED VERSUS MEASURED DATA

Monitoring Site	Type	Measured NO_2_2017	Defra Mapped NO_2 in 2017
SW07	Rural	10.7	9.72
SW88	Urban Background	20.4	16.1
SW34	Rural	11.9	13.09
SW100	Urban Background	15.8	11.32
SW106	Urban Background	15.8	11.75

The urban background sites are more than 60 m away from the main roads however, they are still located reasonably close to the local roads and therefore it was felt that by using those as background data for the whole study would overestimate the background concentrations and result in an underestimate of the road NOx contribution.

Given the results of the comparison of mapped data with measured data and the extent of the study area it was determined that the background mapped data for each 1km grid square across the study area would be used.

Treatment of modelled NOx road contribution

The model predicts annual mean concentrations of NOx this is called the Road NOx contribution. In order to determine the annual mean concentration of NO_2, it is necessary to convert the modelled Road NOx concentrations to annual mean NO_2 for comparison with the relevant objectives.

The Defra NOx/NO_2 spreadsheet tool was used to calculate NO_2 concentrations from the Road NOx concentrations predicted by ADMS-Roads, following verification This tool requires input of the background NOx, the modelled road contribution and it also takes accounts for the proportion of NOx released as primary NO_2. For Swale in 2017 with the “All Other Urban UK Traffic” option in the model, the NOx/NO2 model estimates that 27.8% of NOx is released as primary NO_2.

Surface Roughness and Meteorological Parameters

A surface roughness of 0.5m was used to represent the dispersion site. This represents parkland and open suburbia which was the most appropriate setting for the study area. The minimum Monin-Obukhov length (m) of 10m was selected, which is representative of small towns.

At the meteorological site, a surface roughness of 0.1m was used to represent the area surrounding the Manston metrological site.

Terrain

Following a review of the study area, it was considered appropriate to model the dispersion without terrain.

Specified Receptors

Receptor Name	Address	Type
R_01	Abbots Hill Cottages, Water Lane, Ospringe, ME13 0EP	Residential
R_02	The Punnets, Rawling Street, Milstead, Sittingbourne, ME9 0RX	Residential
R_03	Hempstead Farmhouse, Hempstead Lane, Tonge, Sittingbourne, ME9 9BH	Residential
R_04	26 Court Street, Faversham, ME13 7AT	Residential
R_05	4 Hilton Drive, Sittingbourne, ME10 1QG	Residential
R_06	24 South Road, Faversham, ME13 7LR	Residential
R_07	34 London Road, Teynham, Sittingbourne, ME9 9QN	Residential
R_08	Red Lion Inn, Rawling Street, Milstead, ME9 0RT	Residential
R_09	Clairvaux, Broadoak Road, Milstead, Sittingbourne, ME9 0RS	Residential
R_10	1 Lion Farm Cottage, Rawling Street, Milstead, Sittingbourne, ME9 0RU	Residential

Receptor Name	Address	Type
R_11	Little Trent, Rawling Street, Milstead, Sittingbourne, ME9 0RX	Residential
R_12	118, East Street, Sittingbourne, ME10 4RX	Residential
R_13	Bishop Court, High Street, Sittingbourne, ME10 2AF	Residential
R_14	191 London Road, Teynham, Sittingbourne, ME9 9QJ	Residential
R_15	Doralee, Highsted Valley, Rodmersham, Sittingbourne, ME9 0AD	Residential
R_16	3 Canterbury Road, Sittingbourne, ME10 4SG	Residential
R_17	4 Giles Young Court, High Street, Sittingbourne, ME10 2AS	Residential
R_18	Activeplay Nurseries Ltd, 10-14 London House, High Street, Sittingbourne, ME10 2AB	School
R_19	193 High Street, Sittingbourne, ME10 2BB	Residential
R_20	3 Claxfield Villas, London Road, Teynham, Sittingbourne, ME9 9PT	Residential
R_21	Canterbury Court, Canterbury Road, Sittingbourne, ME10 4JE	Residential
R_22	Bargains Hill House, Pitstock Road, Rodmersham, Sittingbourne, ME9 0QN	Residential
R_23	191 Fox Court, London Road, Teynham, Sittingbourne, ME9 9QJ	Residential
R_24	157 London Road, Teynham, Sittingbourne, ME9 9QJ	Residential
R_25	Kilnstock, Stockers Hill, Rodmersham, Sittingbourne, ME9 0PH	Residential
R_26	St Pauls Court, Periwinkle Close, Sittingbourne, ME10 2JU	Residential
R_27	153 East Street, Sittingbourne, ME10 4BT	Residential
R_28	164, London Road, Teynham, Sittingbourne, ME9 9QH	Residential
R_29	Claxfield Farm, Claxfield Road, Lynsted, Sittingbourne, ME9 9PX	Residential
R_30	1 North Street, Sittingbourne, ME10 2HW	Residential

Receptor Name	Address	Type
R_31	Kirklyn, Highsted Valley, Rodmersham, Sittingbourne, ME9 0AD	Residential
R_32	4 St. Giles Houses, Church Road, Tonge, Sittingbourne, ME9 9AR	Residential
R_33	118 London Road, Teynham, Sittingbourne, ME9 9QH	Residential
R_34	14 St Pauls Street, Sittingbourne, ME10 2LA	Residential
R_35	26 Vicarage Road, Sittingbourne, ME10 2BL	Residential
R_36	The Wheatsheaf, East Street, Sittingbourne, ME10 4RT	Residential
R_37	Claxfield Farm, London Road, Tonge, ME9 9PX	Residential
R_38	Waterside, Highsted Valley, Rodmersham, Sittingbourne, ME9 0AD	Residential
R_39	Halfway House, Halfway Road, Minster-On-Sea, ME12 3AU	Residential
R_40	64 The Broadway, Minster-On-Sea, Sheerness, ME12 2RT	Residential
R_41	16 Charlock Drive, Minster-On-Sea, Sheerness, ME12 3TD	Residential
R_42	47 Halfway Road, Minster-On-Sea, Sheerness, ME12 3AU	Residential
R_43	2 Minster Road, Minster-On-Sea, ME12 3JD	Residential
R_44	211 High Street, Sheerness, ME12 1UR	Residential
R_45	Queenborough County Primary School, Edward Road, Queenborough, ME11 5DF	School
R_46	1 Thistle Walk, Minster-On-Sea, Sheerness, ME12 3GP	Residential
R_47	170 Wards Hill Road, Minster-On-Sea, Sheerness, ME12 2JZ	Residential
R_48	Mwalimu, Wards Hill Road, Minster-On-Sea, Sheerness, ME12 2JZ	Residential
R_49	28 Halfway Road, Minster-On-Sea, Sheerness, ME12 3AU	Residential
R_50	45 The Broadway, Minster-On-Sea, Sheerness, ME12 2RT	Residential
R_51	107 London Road, Teynham, Sittingbourne, ME9 9QL	Residential

Receptor Name	Address	Type
R_52	1 Syndale Cottages, Faversham Road, Ospringe, Faversham, ME13 0RJ	Residential
R_53	Beacon Hill House, London Road, Norton, Faversham, ME13 0SX	Residential
R_54	65 London Road, Teynham, ME9 9QW	Residential
R_55	74 London Road, Teynham, Sittingbourne, ME9 9QN	Residential
R_56	75 Station Road, Teynham, Sittingbourne, ME9 9TH	Residential
R_57	99 London Road, Teynham, Sittingbourne, ME9 9QL	Residential
R_58	White Hall, London Road, Teynham, Sittingbourne, ME9 9QT	Residential
R_59	11 Honeysuckle Drive, Minster-On-Sea, Sheerness, ME12 3RE	Residential
R_60	1 Larch End, Minster-On-Sea, Sheerness, ME12 3FJ	Residential
R_61	Halke Cottage, Brogdale Road, Ospringe, Faversham, ME13 8YA	Residential
R_62	2 Queens Parade, East Street, Faversham, ME13 8AQ	Residential
R_63	46 South Road, Faversham, ME13 7LR	Residential
R_64	11 College House, Ospringe Street, Faversham, ME13 8TJ	Residential
R_65	Lavender Cottage, Staple Street, Hernhill, Faversham, ME13 9HY	Residential
R_66	Two Brewers Inn, Quay Lane, Faversham, ME13 7DE	Residential
R_67	45 South Road, Faversham, ME13 7LS	Residential
R_68	65 Ospringe Street, Faversham, ME13 8TW	Residential
R_69	Twinkle Toes Nursery, The Abbey School, London Road, Faversham, ME13 8RZ	School
R_70	10 Tanners Street, Faversham, ME13 7JL	Residential
R_71	11B The Almshouses, South Road, Faversham, ME13 7LU	Residential
R_72	39 The Almshouses, South Road, Faversham, ME13 7LU	Residential

Receptor Name	Address	Type
R_73	Four Horse Shoes, Head Hill Road, Graveney, ME13 9DE	Residential
R_74	Bexon Manor, Hawks Hill Lane, Bredgar, Sittingbourne, ME9 8HE	Residential
R_75	49 George House, High Street, Newington, Sittingbourne, ME9 7JR	Residential
R_76	2 High Street, Newington, Sittingbourne, ME9 7JP	Residential
R_77	3 Tinbridge Oast, London Road, Boughton Under Blean, Faversham, ME13 9LJ	Residential
R_78	25 Court Street, Faversham, ME13 7AT	Residential
R_79	2 Bridge Cottages Culmers, Seasalter Road, Graveney, Faversham, ME13 9DF	Residential
R_80	6 London Road, Newington, Sittingbourne, ME9 7NR	Residential
R_81	April Cottage, Brogdale Road, Ospringe, Faversham, ME13 8XU	Residential
R_82	130 Ashford Road, Faversham, ME13 8XL	Residential
R_83	2 Cedar Terrace, Brogdale Road, Ospringe, Faversham, ME13 8XX	Residential
R_84	125 Ashford Road, Faversham, ME13 8XW	Residential
R_85	9 Granville Close, Faversham, ME13 7RY	Residential
R_86	The Fish And Chip Shop Flat, Ospringe Road, Faversham, ME13 7LH	Residential
R_87	39 Court Street, Faversham, ME13 7AL	Residential
R_88	2 South Road, Faversham, ME13 7LR	Residential
R_89	9 Napleton Road, Faversham, ME13 7JR	Residential
R_90	50 Ospringe Street, Faversham, ME13 8TN	Residential
R_91	144 Ospringe Road, Faversham, ME13 7LH	Residential
R_92	44 Canute Road, Faversham, ME13 8SH	Residential

Receptor Name	Address	Type
R_93	33 Cambridge Road, Faversham, ME13 8RW	Residential
R_94	81 South Road, Faversham, ME13 7LX	Residential
R_95	5 Ospringe Street, Faversham, ME13 8TJ	Residential
R_96	Yaldings, Graveney Road, Faversham, ME13 9HT	Residential
R_97	19 Ospringe Road, Faversham, ME13 7LJ	Residential
R_98	10 Ospringe Street, Faversham, ME13 8TJ	Residential
R_99	118 Ospringe Road, Faversham, ME13 7LG	Residential
R_100	23 South Road, Faversham, ME13 7LR	Residential
R_101	14 Ospringe Road, Faversham, ME13 7LJ	Residential
R_102	45 Ospringe Street, Faversham, ME13 8TW	Residential
R_103	Clair De Lune, Love Lane, Faversham, ME13 8YJ	Residential
R_104	Tin Bridge Cottages, London Road, Faversham, ME13 8YN	Residential
R_105	32 Newton Road, Faversham, ME13 8DZ	Residential
R_106	47 Whitstable Road, Faversham, ME13 8BG	Residential
R_107	74 London Road, Faversham, ME13 8SN	Residential
R_108	Corner Cottage, Canterbury Road, Faversham, ME13 8YL	Residential
R_109	7 Orchard Cottages, Love Lane, Faversham, ME13 8YJ	Residential
R_110	Stile Cottages, Canterbury Road, Faversham, ME13 8XB	Residential
R_111	102 West Street, Faversham, ME13 7JB	Residential
R_112	St Mary Of Charity C Of E Primary School, Orchard Place, Faversham, ME13 8AP	School
R_113	64 Forge House, West Street, Faversham, ME13 7JQ	Residential
R_114	1 London Road, Faversham, ME13 8TA	Residential
R_115	23 Newton Road, Faversham, ME13 8DZ	Residential

Receptor Name	Address	Type
R_116	1 Stone Street, Faversham, ME13 8PT	Residential
R_117	3 The Mount, London Road, Faversham, ME13 8TH	Residential
R_118	30 Whitstable Road, Faversham, ME13 8BE	Residential
R_119	Fairbrook Bungalow, Staple Street, Hernhill, Faversham, ME13 9HZ	Residential
R_120	14 East Street, Faversham, ME13 8AD	Residential
R_121	Jacob Villas, South Road, Faversham, ME13 7JN	Residential
R_122	52 Tanners Street, Faversham, ME13 7JL	Residential
R_123	2 Clive Road, Sittingbourne, ME10 1QQ	Residential
R_124	33 Cranbrook Drive, Sittingbourne, ME10 1RE	Residential
R_125	105 Park Drive, Tunstall, Sittingbourne, ME10 1RL	Residential
R_126	36 Cranbrook Drive, Sittingbourne, ME10 1RE	Residential
R_127	97 Park Drive, Sittingbourne, ME10 1RD	Residential
R_128	51 Park Drive, Sittingbourne, ME10 1RD	Residential
R_129	35 Gadby Road, Sittingbourne, ME10 1TJ	Residential
R_130	43 Church Lane, Newington, Sittingbourne, ME9 7JT	Residential
R_131	56 Park Drive, Sittingbourne, ME10 1RD	Residential
R_132	Long Acre, Maidstone Road, Borden, Sittingbourne, ME9 7PY	Residential
R_133	19 Sonora Way, Sittingbourne, ME10 5SN	Residential
R_134	26 Cranbrook Drive, Sittingbourne, ME10 1RE	Residential
R_135	58 High Street, Newington, ME9 7JL	Residential
R_136	17 Norwood Walk West, Sittingbourne, ME10 1QF	Residential
R_137	Wents Cottages, Vigo Lane, Borden, Sittingbourne, ME9 8LE	Residential
R_138	Pond Cottages, Tunstall Road, Tunstall, Sittingbourne, ME10 1YQ	Residential

Receptor Name	Address	Type
R_139	Sutton Baron House, Sutton Baron Road, Borden, Sittingbourne, ME9 8LH	Residential
R_140	2 Chegworth Gardens, Sittingbourne, ME10 1RH	Residential
R_141	20 Gadby Road, Sittingbourne, ME10 1TF	Residential
R_142	2 Park Avenue, Sittingbourne, ME10 1QX	Residential
R_143	17 High Street, Newington, Sittingbourne, ME9 7JR	Residential
R_144	6 Charlotte Court, High Street, Newington, Sittingbourne, ME9 7FQ	Residential
R_145	The Barn, Grove End Farm, Bredgar Road, Tunstall, Sittingbourne, ME9 8DY	Residential
R_146	87 High Street, Newington, Sittingbourne, ME9 7JJ	Residential
R_147	57 High Street, Newington, ME9 7JJ	Residential
R_148	14 London Road, Newington, Sittingbourne, ME9 7NR	Residential
R_149	24 London Road, Newington, Sittingbourne, ME9 7NR	Residential
R_150	13 Quinton Road, Sittingbourne, ME10 2DB	Residential
R_151	60 Church Lane, Newington, Sittingbourne, ME9 7JU	Residential
R_152	Cherrycroft, Parsonage Lane, Bobbing, Sittingbourne, ME9 8PZ	Residential
R_153	75 Quinton Road, Sittingbourne, ME10 2DB	Residential
R_154	7 Bismuth Drive, Sittingbourne, ME10 5JT	Residential
R_155	Quinton Cottage, Quinton Road, Sittingbourne, ME10 2DD	Residential

Traffic Data

To derive the AADT figures, the follow steps were undertaken:

1. The average weekday peak hour to peak period (AM 7-10, IP 10-16, PM 16-19) factors were derived from the 7 ATC data collected in June 2017 on A2 corridor. Those factors are 2.86 for AM, 6 for IP and 2.83 for PM period. The 12-hour flows can therefore be calculated**;**
2. Similarly, with the same data source, the 12 hour to 24-hour factor is derived as 1.28 to convert the 24-hour average weekday flow data from the 12-hour flow in step 1.

3. The factor of 0.94 is also derived which is used to convert the 24-hour weekday flow to the average of week of 24-hour flow
4. Finally, the factor of 1.01 is applied to convert the June flow to the AADT figures, which is derived from the WebTRIS

The AM, IP and PM above are the total hourly flows across all five user classes (Car business, Car commute, Car other, LGV and HGV) for each link.

Note that a PCU factor of 2 is applied to convert the HGV flow from PCUs into Vehicles before applying the AADT formula.

Appendix C – Air Quality verification and model adjustment

Introduction

Model verification is the comparison of modelled concentrations with available local monitoring data. Verification identifies how accurate the modelled results are in comparison to monitored results and provides an indication on how well the model is preforming. Discrepancies in results can arise as a result of the following:

- Uncertainties and limitations with meteorological data
- Inaccuracies in the traffic data
- Complexities of road junctions and street canyons
- Estimates of background pollutant concentrations
- Variables in the model input parameters such as roughness length, minimum Monin-Obukhov
- The overall limitations with the dispersion model
- Inaccuracies associated with monitoring data and monitored locations

Model Performance

The model performance was scrutinised to establish how robust the modelled results were when compared to monitoring data. Guidance outlined in LAQM.TG(16) was used to evaluate the model's performance and identify any uncertainties. The guidance states modelled results must be adjusted to ensure final concentrations are representative of the monitoring information in the study area.

If the model does not perform well against the monitoring data, then a review of the input data must be done to ensure it is reasonable and accurately represents the air quality modelling process. If all input data, such as background concentrations and traffic data, has been reviewed and deemed suitable, then the modelled results may need to be adjusted to better align with monitored results.

Verification Methodology

NOx/NO2

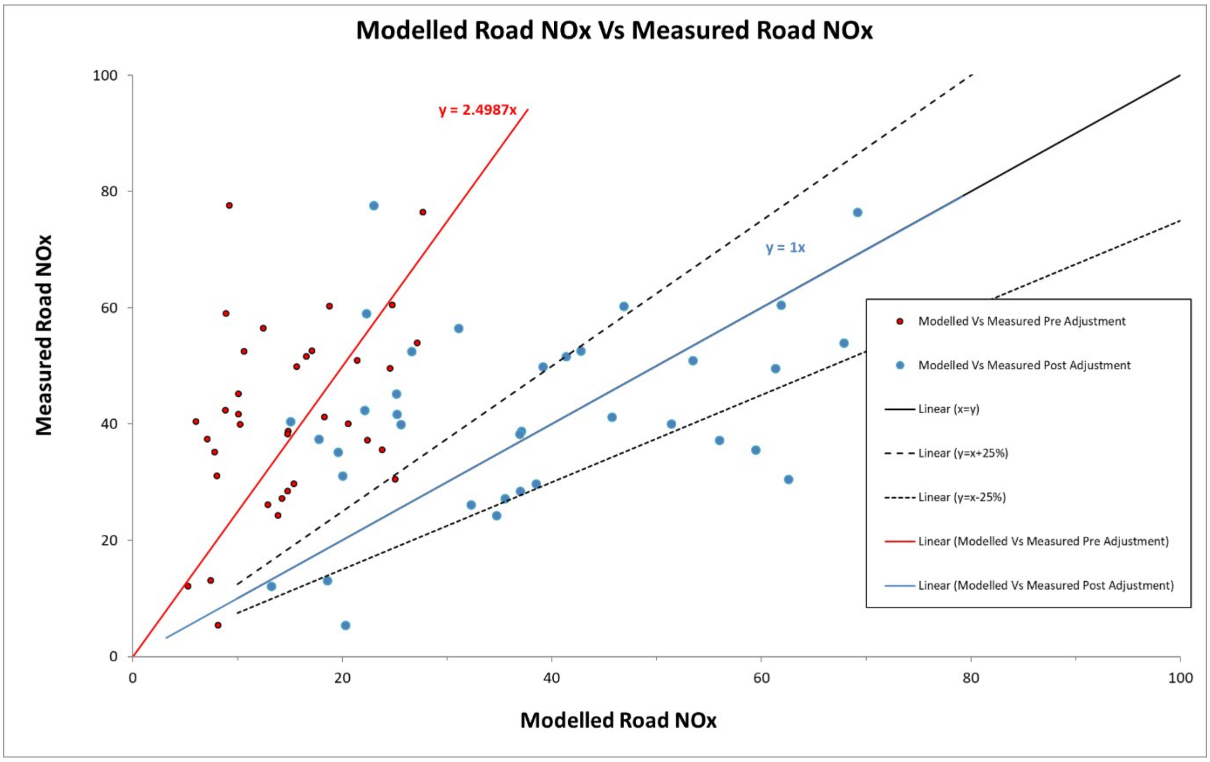
The verification methodology followed the guidance outlined in LAQM TG.(16). The first step in the verification process was to compare the modelled road NOx against the monitored road NOx. Since diffusion tubes measure NO_2, the Defra NOx to NO_2 calculator was used to calculate the road NOx from the local authority diffusion tubes. This comparison allowed for the modelled road NOx to be adjusted.

Linear regression determines the best line of fit for the modelled NOx against the monitored NOx. The gradient of the best line of fit is then used as the adjustment factor.

The second step in the verification process was to calculate the road NO_2. Using the adjusted road NOx from step 1. The NOx to NO2 calculator was used to convert the adjusted road NOx into road NO_2. A comparison was then drawn between the road NO_2 against the monitored NO_2, and the road NO_2 was adjusted accordingly.

The linear regression plots comparing modelled and monitored road NOx concentrations before and after adjustment for both the local authority monitoring can be found in Diagram 8-1

DIAGRAM 8-1 MODELLED ROAD NO$_X$ COMPARED WITH MEASURED ROAD NO$_X$ BEFORE AND AFTER ADJUSTMENT



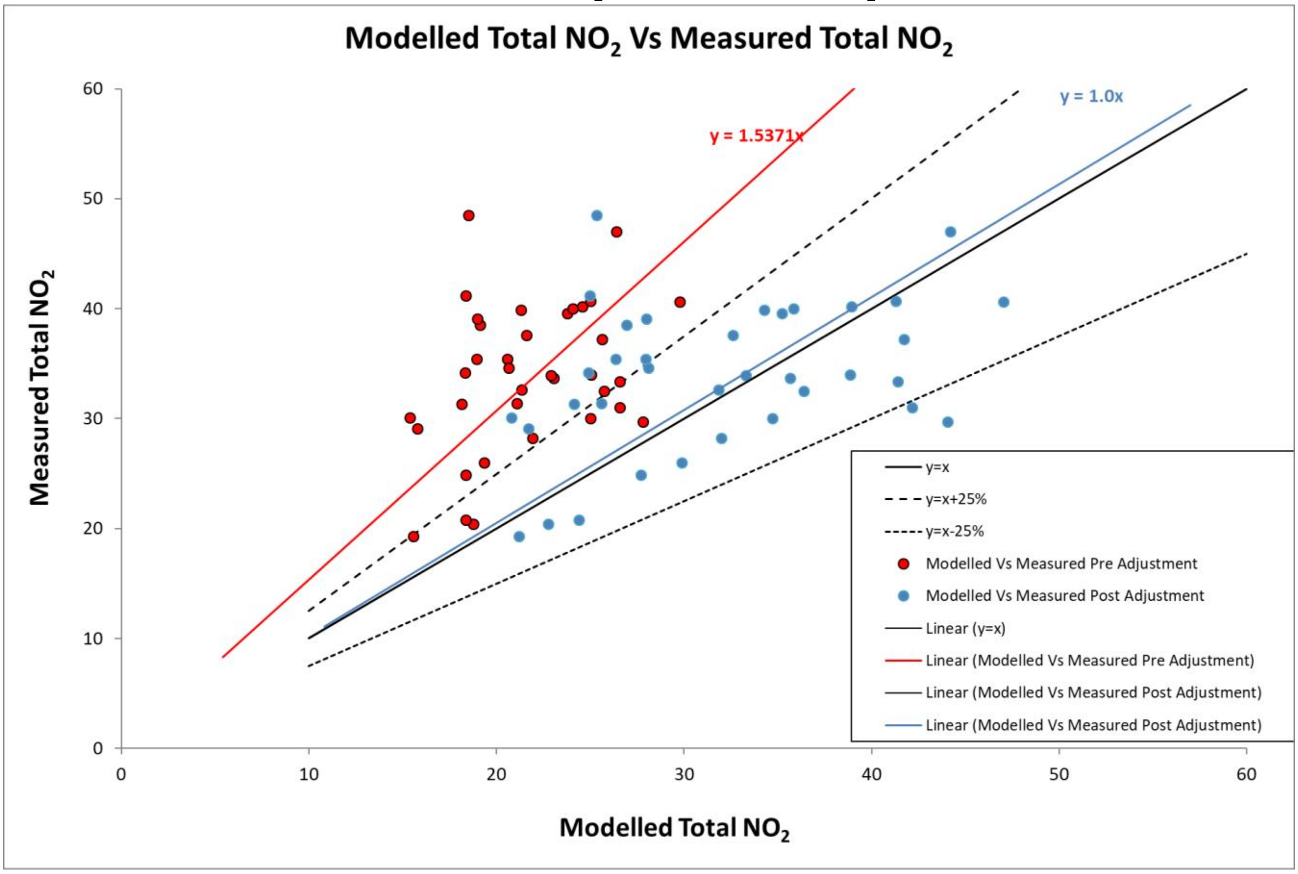
Prior to adjusting the modelling results all input data were reviewed, and no further improvements were identified.

Following modelling adjustment of the Road NOx as described above. The comparison with the calculated annual mean NO_2 concentrations, modelled vs monitored concentrations before and after adjustment can be found in Diagram 8-2.

There are still a number of sites that even after adjustment show they are underpredicting. When these sites were investigated in further detail the measurement sites were close to junctions and while not kerbside ie less than 1m from the road they were extremely close to the road. Modelling around complex junctions can require a more detailed traffic model for example micro simulation to fully represent the changes in speed in these locations. The strategic nature of the transport model has meant that we may underpredict air quality in these locations. There were a few sites where there were short sections of street canyon however if the whole road link had been changed to a street canyon this would have resulted in a much greater over prediction.

However, any remaining underprediction in these locations will be seen across all scenarios therefore the impact from the LP will remain the same. This would not change the overall conclusions of the report and would not result in any exceedances of the air quality objectives.

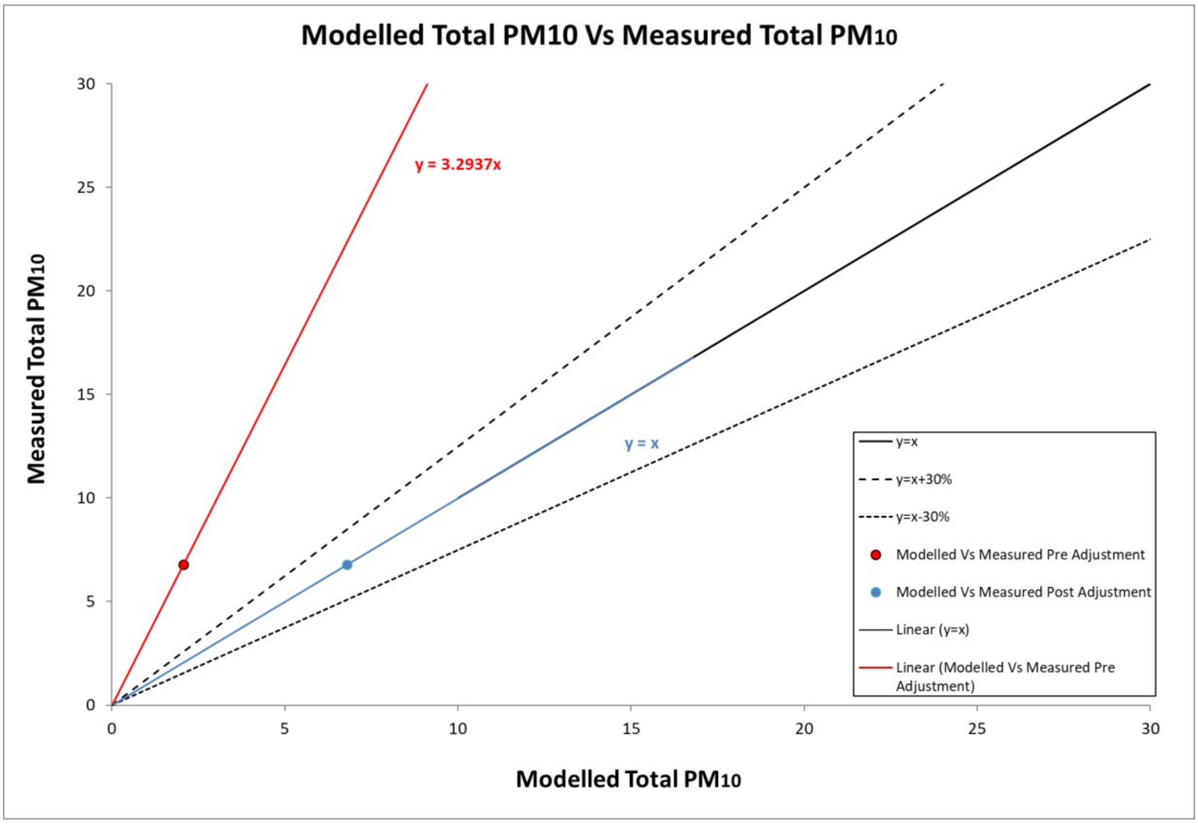
DIAGRAM 8-2 COMPARISON OF MODELLED NO_2 AND MEASURED NO_2



PM_{10} verification

The modelled bassline PM_{10} concentrations were compared to the measurement data from 2017 at site ZW3. Ideally when undertaking model verification and as recommended by LAQM TG(16) the model should not be verified and adjusted by only one point.

When the modelled Road contribution of PM_{10} was compared to the Road contribution of measured PM_{10} at ZW3 in 2017 an adjustment factor of 3.2937 was required.



Where there are no monitoring points for verification LAQM TG(16) advises using the NOx adjustment factor to provide a more spatially appropriate verification factor. In order for the assessment to be worst case the PM_{10} factor has been used.

Appendix D – Modelling results

NO_2 results

APPENDIX TABLE 6: PRDICTED ANNUAL MEAN NO_2 CONCENTRATIONS AT ALL SPECIFIED RECEPOTRS FOR ALL SCENARIOS

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m³)	2037 1054 change as % of AQO (40 µg/m³)
R_01	**40.2**	36.3	21.8	19.3	19.3	19.3	0.0%	0.1%
R_02	14.1	13.0	9.4	8.8	8.8	8.8	0.0%	0.0%
R_03	16.4	15.1	11.0	10.3	10.6	10.7	0.7%	1.0%
R_04	29.1	26.9	19.8	18.2	18.6	19.1	0.9%	2.3%
R_05	23.0	21.0	14.1	13.0	13.0	13.0	0.1%	0.1%
R_06	23.4	21.6	15.8	15.3	15.8	16.5	1.3%	3.0%
R_07	19.3	17.6	12.0	11.0	11.5	11.6	1.3%	1.6%
R_08	19.5	17.8	12.1	11.1	11.1	11.1	-0.1%	0.0%
R_09	18.9	17.3	11.8	10.9	10.8	10.9	-0.1%	0.0%
R_10	19.1	17.4	11.9	11.0	10.9	11.0	-0.1%	0.0%
R_11	13.9	12.8	9.3	8.8	8.8	8.8	0.0%	0.0%
R_12	33.6	30.5	19.7	17.7	18.2	18.4	1.2%	1.8%
R_13	29.8	27.1	18.3	16.8	16.5	16.5	-0.8%	-0.7%

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m³)	2037 1054 change as % of AQO (40 µg/m³)
R_14	27.9	25.3	16.5	14.6	15.5	15.7	2.5%	2.8%
R_15	14.2	13.0	9.6	9.1	9.0	9.0	-0.2%	-0.1%
R_16	38.8	35.2	21.9	19.3	19.5	19.6	0.5%	0.9%
R_17	33.3	30.3	20.1	18.4	18.0	18.0	-1.0%	-0.9%
R_18	29.4	26.8	18.3	16.9	16.5	16.5	-1.2%	-1.2%
R_19	20.6	19.1	13.8	12.8	12.9	12.9	0.1%	0.1%
R_20	23.0	20.9	13.8	12.4	13.0	13.4	1.5%	2.4%
R_21	32.2	29.3	18.8	16.8	16.9	17.0	0.2%	0.5%
R_22	13.6	12.5	9.2	8.7	8.7	8.7	0.0%	0.0%
R_23	34.6	31.4	19.0	16.6	17.9	18.1	3.3%	3.7%
R_24	33.6	30.4	19.1	16.7	18.0	18.2	3.3%	3.8%
R_25	15.5	14.3	10.6	10.2	9.9	10.0	-0.7%	-0.4%
R_26	29.4	26.7	18.3	16.8	16.6	16.6	-0.4%	-0.4%
R_27	**49.3**	**44.8**	27.8	24.7	25.9	26.6	3.0%	4.6%
R_28	22.4	20.4	13.7	12.3	12.9	13.0	1.6%	1.8%
R_29	18.1	16.6	11.4	10.4	10.6	11.4	0.5%	2.6%

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m³)	2037 1054 change as % of AQO (40 µg/m³)
R_30	22.0	20.3	14.4	13.3	13.4	13.4	0.2%	0.2%
R_31	14.2	13.0	9.6	9.0	9.0	9.0	-0.1%	-0.1%
R_32	14.6	13.5	10.2	9.6	9.8	9.8	0.3%	0.3%
R_33	20.9	19.0	12.9	11.7	12.2	12.3	1.3%	1.6%
R_34	38.0	34.4	22.1	20.1	19.8	19.8	-0.7%	-0.7%
R_35	20.0	18.5	13.5	12.5	12.6	12.6	0.2%	0.2%
R_36	22.2	20.4	14.3	13.3	13.4	13.4	0.2%	0.3%
R_37	14.2	13.1	9.6	9.0	9.0	9.2	0.1%	0.5%
R_38	14.1	13.0	9.6	9.0	9.0	9.0	-0.1%	0.0%
R_39	24.9	22.8	16.0	15.5	14.3	14.4	-3.0%	-2.5%
R_40	18.1	16.8	12.4	11.7	11.3	11.4	-0.9%	-0.5%
R_41	18.1	16.7	11.1	10.5	10.5	10.5	-0.1%	0.0%
R_42	21.1	19.5	13.3	12.3	12.2	12.3	0.0%	0.2%
R_43	24.5	22.5	15.5	14.6	13.9	14.0	-1.7%	-1.5%
R_44	32.8	30.3	19.7	17.5	17.7	17.9	0.5%	0.9%
R_45	18.6	16.9	12.3	11.6	11.4	11.5	-0.5%	-0.3%

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m³)	2037 1054 change as % of AQO (40 µg/m³)
R_46	22.3	20.5	12.6	11.8	11.9	11.9	0.1%	0.1%
R_47	19.3	17.8	12.7	11.8	11.7	11.8	-0.2%	0.2%
R_48	16.6	15.4	11.4	10.7	10.6	10.7	-0.2%	0.0%
R_49	22.8	21.0	14.1	12.9	12.9	13.0	0.0%	0.2%
R_50	16.2	15.0	11.3	10.7	10.5	10.5	-0.7%	-0.4%
R_51	35.9	32.6	19.7	17.2	18.8	19.1	3.9%	4.6%
R_52	14.8	13.5	9.7	9.0	9.2	9.1	0.3%	0.3%
R_53	29.0	26.4	17.0	15.2	15.8	16.1	1.5%	2.3%
R_54	27.9	25.3	16.3	14.7	16.0	16.4	3.3%	4.1%
R_55	23.0	20.9	14.1	12.7	13.2	13.3	1.1%	1.5%
R_56	13.3	12.2	9.4	9.0	9.0	9.1	-0.1%	0.1%
R_57	33.5	30.4	18.8	16.5	18.1	18.4	4.0%	4.7%
R_58	25.7	23.4	15.3	13.7	15.0	15.2	3.3%	3.9%
R_59	14.7	13.6	10.4	10.3	9.8	9.8	-1.3%	-1.3%
R_60	14.7	13.6	10.4	10.3	9.8	9.8	-1.3%	-1.3%
R_61	23.7	21.5	13.9	12.5	12.5	12.6	0.0%	0.2%

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m³)	2037 1054 change as % of AQO (40 µg/m³)
R_62	22.9	21.1	14.8	14.0	13.8	14.1	-0.5%	0.2%
R_63	19.3	17.8	13.2	12.6	12.7	13.0	0.2%	1.0%
R_64	27.8	24.9	16.2	14.8	15.0	15.3	0.6%	1.3%
R_65	23.5	21.6	14.6	13.4	13.2	13.3	-0.6%	-0.2%
R_66	20.5	19.0	13.5	12.8	13.1	13.4	0.6%	1.4%
R_67	19.5	18.0	13.3	12.6	12.5	12.6	-0.2%	0.0%
R_68	**45.2**	**40.4**	25.2	22.8	23.0	23.6	0.5%	2.0%
R_69	16.5	15.1	10.8	10.1	10.1	10.2	0.1%	0.2%
R_70	18.6	17.1	12.9	12.4	12.5	13.1	0.2%	1.6%
R_71	17.6	16.2	11.9	11.0	11.2	11.2	0.4%	0.3%
R_72	17.5	16.2	12.1	11.4	11.5	11.7	0.1%	0.7%
R_73	19.2	17.6	12.1	11.2	11.6	12.0	1.1%	2.1%
R_74	14.8	13.5	10.0	9.9	9.5	9.5	-1.2%	-0.9%
R_75	36.7	33.2	20.2	18.3	18.0	18.1	-0.8%	-0.3%
R_76	25.1	22.9	15.0	14.0	13.7	13.8	-0.9%	-0.5%
R_77	19.3	17.6	11.9	11.0	11.6	11.6	1.4%	1.5%

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m^3)	2037 1054 change as % of AQO (40 µg/m^3)
R_78	26.5	24.4	15.1	14.2	14.5	14.9	0.7%	1.6%
R_79	18.2	16.6	11.6	10.7	11.1	11.4	1.0%	1.8%
R_80	25.3	23.0	15.1	14.1	13.8	13.9	-0.7%	-0.4%
R_81	19.2	17.5	11.9	10.8	10.8	10.9	0.0%	0.2%
R_82	23.0	20.8	14.1	12.8	12.8	12.9	0.0%	0.3%
R_83	19.3	17.6	11.9	10.8	10.8	10.9	0.0%	0.2%
R_84	41.8	37.7	23.4	20.8	20.8	21.0	0.1%	0.5%
R_85	16.7	15.4	11.5	10.8	10.8	10.9	0.0%	0.2%
R_86	20.5	18.6	12.8	11.5	12.2	12.3	1.9%	2.1%
R_87	20.9	19.2	12.1	11.3	11.4	11.5	0.1%	0.4%
R_88	24.3	22.4	16.4	15.8	16.4	17.2	1.4%	3.3%
R_89	18.5	17.1	12.8	12.3	12.4	12.9	0.2%	1.4%
R_90	33.1	29.6	18.8	17.1	17.2	17.6	0.3%	1.3%
R_91	19.1	17.4	12.0	10.9	11.4	11.5	1.2%	1.4%
R_92	28.6	25.7	17.0	15.6	16.5	16.8	2.4%	3.2%
R_93	17.3	15.8	11.1	10.2	10.5	10.5	0.8%	0.8%

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m³)	2037 1054 change as % of AQO (40 µg/m³)
R_94	18.7	17.2	12.4	11.4	11.7	11.6	0.8%	0.6%
R_95	**47.1**	**42.1**	26.8	24.5	25.1	26.0	1.4%	3.9%
R_96	23.4	21.4	14.2	12.9	13.2	13.3	0.7%	0.9%
R_97	17.5	16.1	11.4	10.4	10.7	10.6	0.9%	0.6%
R_98	37.7	33.7	21.6	19.6	20.2	20.9	1.6%	3.2%
R_99	21.7	19.8	13.5	11.7	13.3	13.3	3.9%	3.8%
R_100	19.7	18.2	13.4	12.8	13.0	13.3	0.5%	1.4%
R_101	18.2	16.7	11.8	10.6	11.1	10.9	1.2%	0.8%
R_102	28.2	25.2	16.3	14.9	15.0	15.3	0.2%	0.9%
R_103	18.7	17.0	11.9	11.1	11.2	11.2	0.3%	0.5%
R_104	21.9	19.9	13.3	12.2	13.1	13.2	2.2%	2.3%
R_105	20.2	18.6	13.3	12.6	12.5	12.9	-0.4%	0.7%
R_106	18.4	17.0	12.0	11.4	11.2	11.3	-0.4%	0.0%
R_107	26.1	23.4	15.5	14.3	14.5	14.8	0.5%	1.5%
R_108	27.8	25.2	16.4	15.1	16.2	16.3	2.5%	2.8%
R_109	24.8	22.6	14.8	13.8	14.4	14.5	1.5%	1.8%

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m^3)	2037 1054 change as % of AQO (40 µg/m^3)
R_110	19.4	17.7	12.1	11.3	11.5	11.6	0.4%	0.6%
R_111	20.0	18.5	13.5	12.9	13.1	13.4	0.6%	1.4%
R_112	17.4	16.1	11.8	11.1	11.1	11.2	-0.1%	0.1%
R_113	18.1	16.7	12.3	11.6	11.5	11.8	-0.2%	0.4%
R_114	21.5	19.4	13.2	12.2	12.3	12.5	0.3%	0.9%
R_115	21.9	20.2	14.2	13.6	13.4	14.1	-0.5%	1.3%
R_116	19.6	18.1	13.1	12.1	12.3	12.2	0.5%	0.4%
R_117	32.9	29.4	19.0	17.5	17.8	18.4	0.8%	2.2%
R_118	24.0	22.1	15.1	14.3	13.9	14.3	-0.9%	-0.1%
R_119	21.8	20.0	13.9	12.8	12.1	12.2	-2.0%	-1.7%
R_120	30.1	27.8	18.9	17.7	17.7	18.4	0.0%	1.8%
R_121	23.5	21.7	15.9	15.3	15.8	16.5	1.3%	3.0%
R_122	17.7	16.3	12.2	11.7	11.7	12.1	0.1%	1.0%
R_123	21.8	19.8	13.6	12.5	12.5	12.5	0.0%	0.0%
R_124	15.7	14.5	10.6	10.0	10.0	10.1	0.1%	0.2%
R_125	15.2	14.0	10.3	9.7	9.7	9.7	0.0%	0.1%

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m³)	2037 1054 change as % of AQO (40 µg/m³)
R_126	15.5	14.3	10.5	9.9	9.9	9.9	0.1%	0.1%
R_127	15.3	14.1	10.3	9.7	9.8	9.8	0.1%	0.2%
R_128	15.0	13.8	10.2	9.6	9.7	9.7	0.1%	0.2%
R_129	19.9	18.3	12.8	11.9	11.9	11.9	0.1%	0.1%
R_130	17.7	16.2	11.5	11.1	10.8	11.0	-0.8%	-0.3%
R_131	14.9	13.7	10.1	9.6	9.6	9.6	0.0%	0.0%
R_132	25.8	23.4	15.7	14.3	14.3	14.3	-0.2%	0.0%
R_133	24.1	21.9	15.0	13.9	13.7	13.7	-0.5%	-0.5%
R_134	15.3	14.1	10.4	9.8	9.8	9.8	0.0%	0.1%
R_135	27.9	25.3	16.2	14.6	14.5	14.6	-0.2%	0.1%
R_136	22.2	20.2	13.8	12.6	12.7	12.7	0.1%	0.1%
R_137	20.6	18.8	12.8	11.8	11.8	11.9	0.0%	0.2%
R_138	20.0	18.4	13.1	12.2	12.4	12.4	0.4%	0.6%
R_139	21.6	19.7	13.5	12.4	12.5	12.5	0.1%	0.3%
R_140	15.5	14.2	10.4	9.8	9.9	9.9	0.1%	0.2%
R_141	21.4	19.6	13.5	12.4	12.5	12.5	0.2%	0.2%

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m³)	2037 1054 change as % of AQO (40 µg/m³)
R_142	15.4	14.2	10.5	9.9	9.9	10.0	0.1%	0.2%
R_143	31.9	29.0	18.3	17.0	16.5	16.7	-1.5%	-0.8%
R_144	29.3	26.5	16.8	15.3	15.1	15.2	-0.5%	-0.3%
R_145	16.7	15.3	10.8	10.3	10.4	10.4	0.1%	0.2%
R_146	24.6	22.4	14.6	13.1	13.1	13.2	0.0%	0.2%
R_147	35.5	32.2	19.8	17.7	17.6	17.8	-0.4%	0.1%
R_148	25.6	23.3	15.2	14.1	13.7	13.8	-1.1%	-0.9%
R_149	25.4	23.1	15.2	14.2	13.8	13.8	-1.2%	-1.0%
R_150	20.0	18.2	12.9	11.9	11.9	11.9	-0.1%	-0.1%
R_151	16.6	15.2	11.0	10.6	10.4	10.5	-0.7%	-0.3%
R_152	18.5	16.9	12.4	11.7	11.5	11.5	-0.5%	-0.4%
R_153	22.0	20.1	14.1	13.3	13.0	13.0	-0.8%	-0.7%
R_154	19.9	18.2	12.8	11.8	11.8	11.8	0.0%	0.0%
R_155	21.8	19.9	14.0	13.0	12.8	12.9	-0.5%	-0.4%

SWECO

APPENDIX TABLE 7: MODELLED ANNUAL MEAN NO_2 CONCENTRATIONS AT 2017 MONIOTIRNG LOCATIONS RECEPTORS FOR ALL SCENARIOS

Monitoring location	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m³)	2037 1054 change as % of AQO (40 µg/m³)
ZW6	29.2	27.2	17.3	16.1	15.6	15.8	-1.2%	-0.7%
ZW8	27.3	25.4	17.2	15.9	15.7	15.7	-0.4%	-0.3%
ZW3	39.8	36.7	23.0	20.8	21.0	21.5	0.5%	1.8%
SW66	26.3	24.5	15.7	14.0	14.0	14.1	0.0%	0.2%
SW45	24.4	22.7	14.8	13.4	13.4	13.5	-0.1%	0.1%
SW35	24.8	23.0	15.0	13.6	13.5	13.6	-0.2%	0.0%
SW42	29.9	27.9	17.5	15.8	15.7	15.8	-0.4%	-0.1%
SW19	25.7	23.9	15.4	14.1	13.9	14.0	-0.5%	-0.2%
SW37	24.4	22.6	14.9	13.9	13.6	13.7	-0.8%	-0.5%
SW38	31.0	28.9	18.2	17.0	16.4	16.7	-1.5%	-0.8%
SW20	29.4	27.4	17.4	16.3	15.7	16.0	-1.3%	-0.7%
SW36	34.6	32.2	19.7	17.9	17.6	17.7	-0.8%	-0.3%
SW78	37.8	35.3	21.6	19.0	19.0	19.2	0.0%	0.4%
SW62	**45.7**	**42.7**	26.7	23.3	23.4	23.4	0.3%	0.4%
SW82	30.5	28.4	18.9	17.3	17.1	17.1	-0.5%	-0.5%
SW52	32.5	30.2	20.0	18.2	18.0	18.0	-0.6%	-0.6%

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Monitoring location	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m³)	2037 1054 change as % of AQO (40 µg/m³)
SW51	34.3	31.9	20.8	18.9	18.7	18.7	-0.7%	-0.6%
SW89	27.6	25.7	17.4	16.0	15.8	15.8	-0.4%	-0.4%
SW71	34.9	32.6	21.9	19.8	19.6	19.6	-0.5%	-0.4%
SW73	27.5	25.7	18.4	16.9	16.8	16.8	-0.3%	-0.1%
SW58	**40.2**	37.9	22.9	20.6	20.9	21.0	0.9%	0.9%
SW83	**42.8**	**40.3**	23.8	21.4	22.0	22.0	1.5%	1.6%
SW97	31.2	29.3	19.4	17.7	17.9	18.0	0.4%	0.8%
SW53	19.7	18.4	13.4	12.6	12.6	12.6	0.0%	0.0%
SW56	33.1	30.9	19.7	17.6	17.8	17.9	0.4%	0.9%
SW87	37.8	35.4	22.0	19.4	19.6	19.7	0.3%	0.8%
SW90	**40.9**	38.3	23.3	20.4	20.8	20.9	0.9%	1.3%
SW76	31.7	29.3	18.9	17.1	17.1	17.5	0.1%	1.0%
SW77	23.6	21.6	14.4	13.3	13.2	13.2	-0.3%	-0.2%
SW88	22.4	20.7	14.6	14.0	13.4	13.5	-1.4%	-1.3%
SW07	11.3	10.5	8.2	7.8	7.8	7.8	0.0%	0.0%
SW14	16.7	15.5	11.6	10.9	10.9	10.9	-0.1%	0.0%

Monitoring location	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 $\mu g/m^3$)	2037 1054 change as % of AQO (40 $\mu g/m^3$)
SW13	23.9	21.7	14.1	13.0	13.0	13.2	0.1%	0.4%
SW84	33.9	32.1	22.6	20.8	20.1	20.3	-1.9%	-1.3%
SW85	35.5	33.8	23.6	21.8	20.9	21.2	-2.2%	-1.5%
SW86	25.2	23.7	17.7	16.6	16.3	16.4	-0.9%	-0.6%
SW99	27.0	25.1	16.4	14.5	15.5	15.6	2.4%	2.8%
SW100	15.6	14.4	10.8	10.0	10.3	10.3	0.9%	0.9%
SW80	33.2	31.1	19.1	16.8	18.3	18.6	3.9%	4.6%
SW91	15.3	14.2	10.2	9.5	9.8	9.8	0.6%	0.8%
SW101	20.4	19.0	13.1	11.9	12.2	12.3	0.7%	1.0%
SW92	21.2	19.8	13.2	11.9	12.5	12.6	1.6%	1.9%
SW102	29.0	27.1	17.0	15.0	16.3	16.6	3.3%	3.9%
SW103	20.8	19.3	13.0	11.9	12.6	12.7	1.5%	2.0%
SW28	**42.8**	39.5	24.6	22.3	22.5	23.1	0.5%	2.0%
SW30	**40.3**	37.2	23.2	21.1	21.3	21.8	0.5%	1.9%
SW31	**40.0**	36.9	23.6	21.5	22.0	22.8	1.3%	3.3%
SW95	**40.6**	37.4	23.9	21.9	22.3	23.2	1.1%	3.2%

Monitoring location	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m^3)	2037 1054 change as % of AQO (40 µg/m^3)
SW32	27.3	25.1	16.4	14.9	15.2	15.6	0.7%	1.6%
SW96	**42.9**	39.5	24.7	22.3	22.6	23.1	0.5%	2.0%
SW22	25.2	23.1	15.1	13.9	13.9	14.2	0.2%	0.8%
SW29	**42.8**	39.5	24.6	22.3	22.5	23.1	0.5%	2.0%
SW98	25.7	23.9	15.7	15.1	15.6	15.9	1.3%	2.0%
SW104	18.2	16.8	11.5	10.5	10.5	10.6	0.1%	0.1%
SW105	18.9	17.4	11.8	10.8	10.9	10.9	0.1%	0.2%
SW34	14.8	13.7	9.8	9.1	9.1	9.1	-0.1%	-0.1%
SW106	13.8	12.8	9.7	9.2	9.2	9.2	-0.1%	0.0%

PM_{10} results

APPENDIX TABLE 8: PREDICTED ANNUAL MEAN PM_{10} RESULTS FOR ALL SPECIFIED RECEPTORS FOR ALL SCENARIOS

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m^3)	2037 1054 change as % of AQO (40 µg/m^3)
R_01	20.4	19.8	18.6	18.8	18.9	18.9	0.2%	0.2%
R_02	15.3	15.0	14.0	14.0	14.0	14.0	0.0%	0.0%
R_03	16.8	16.4	15.5	15.6	15.7	15.7	0.3%	0.2%
R_04	19.4	19.0	18.9	19.4	19.6	19.8	0.5%	1.0%
R_05	18.7	18.3	17.3	17.4	17.4	17.4	0.1%	0.1%
R_06	18.3	17.9	17.4	18.1	18.4	18.7	0.8%	1.5%
R_07	17.4	17.1	16.1	16.2	16.5	16.6	0.8%	1.0%
R_08	17.6	17.2	16.2	16.3	16.3	16.3	0.0%	0.0%
R_09	17.5	17.1	16.2	16.2	16.2	16.2	0.0%	0.0%
R_10	17.5	17.2	16.2	16.3	16.2	16.3	0.0%	0.0%
R_11	15.3	14.9	14.0	14.0	14.0	14.0	0.0%	0.0%
R_12	19.4	19.0	17.9	18.0	18.1	18.1	0.1%	0.2%
R_13	19.0	18.6	17.8	18.0	17.9	17.9	-0.3%	-0.3%
R_14	21.1	20.6	19.9	20.0	20.7	20.7	1.7%	1.9%

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m³)	2037 1054 change as % of AQO (40 µg/m³)
R_15	15.4	15.0	14.1	14.2	14.1	14.1	-0.1%	0.0%
R_16	21.3	20.8	19.7	19.9	20.0	20.0	0.2%	0.4%
R_17	19.7	19.2	18.4	18.7	18.6	18.6	-0.3%	-0.3%
R_18	18.9	18.5	17.7	17.9	17.8	17.8	-0.4%	-0.4%
R_19	17.3	16.9	15.9	16.0	16.0	16.0	0.0%	0.0%
R_20	19.8	19.4	18.4	18.5	18.9	19.0	0.9%	1.3%
R_21	19.9	19.4	18.4	18.5	18.6	18.6	0.1%	0.2%
R_22	15.7	15.4	14.4	14.4	14.4	14.4	0.0%	0.0%
R_23	22.8	22.3	21.1	21.2	22.2	22.3	2.3%	2.5%
R_24	22.5	22.1	21.0	21.1	22.0	22.1	2.3%	2.6%
R_25	15.9	15.6	14.7	14.9	14.8	14.8	-0.2%	-0.2%
R_26	19.1	18.7	18.0	18.2	18.2	18.2	-0.2%	-0.2%
R_27	21.7	21.2	20.0	20.2	20.2	20.3	0.2%	0.4%
R_28	19.8	19.3	18.5	18.6	19.0	19.0	1.1%	1.2%
R_29	18.4	18.0	17.0	17.0	17.0	17.3	0.2%	0.8%
R_30	17.5	17.1	16.2	16.3	16.3	16.3	0.1%	0.1%

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m³)	2037 1054 change as % of AQO (40 µg/m³)
R_31	15.4	15.1	14.1	14.1	14.1	14.1	0.0%	0.0%
R_32	16.5	16.1	15.2	15.2	15.3	15.3	0.2%	0.2%
R_33	19.4	19.0	18.0	18.1	18.4	18.5	0.9%	1.0%
R_34	21.0	20.5	19.7	20.1	20.0	20.0	-0.3%	-0.3%
R_35	17.2	16.8	15.9	15.9	16.0	16.0	0.1%	0.1%
R_36	17.8	17.4	16.4	16.6	16.6	16.6	0.1%	0.1%
R_37	17.8	17.5	16.4	16.5	16.5	16.5	0.0%	0.2%
R_38	15.4	15.0	14.1	14.1	14.1	14.1	0.0%	0.0%
R_39	18.3	17.9	17.2	17.8	17.4	17.4	-1.1%	-0.9%
R_40	15.8	15.5	14.7	14.9	14.7	14.8	-0.5%	-0.3%
R_41	16.9	16.5	15.3	15.4	15.4	15.4	0.0%	0.0%
R_42	16.4	16.0	14.9	15.0	15.1	15.2	0.4%	0.4%
R_43	18.1	17.8	16.8	17.2	17.0	17.1	-0.4%	-0.3%
R_44	19.4	19.0	17.8	17.9	18.0	18.1	0.4%	0.6%
R_45	15.9	15.6	14.6	14.7	14.6	14.7	-0.2%	-0.1%
R_46	17.4	17.0	15.4	15.5	15.6	15.6	0.1%	0.1%

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m³)	2037 1054 change as % of AQO (40 µg/m³)
R_47	16.0	15.6	14.7	14.8	14.8	14.9	-0.1%	0.1%
R_48	15.5	15.1	14.2	14.3	14.2	14.3	-0.1%	0.0%
R_49	16.8	16.4	15.3	15.3	15.5	15.6	0.5%	0.6%
R_50	15.4	15.1	14.2	14.3	14.2	14.3	-0.3%	-0.2%
R_51	21.4	21.0	19.8	20.0	21.1	21.2	2.8%	3.2%
R_52	15.5	15.1	14.1	14.2	14.3	14.3	0.2%	0.2%
R_53	19.6	19.2	18.6	18.9	19.8	20.0	2.3%	2.7%
R_54	19.5	19.1	18.3	18.5	19.4	19.6	2.2%	2.6%
R_55	18.2	17.8	16.9	17.1	17.4	17.5	0.9%	1.0%
R_56	16.1	15.8	14.9	15.1	15.0	15.1	-0.1%	0.1%
R_57	20.8	20.4	19.5	19.6	20.7	20.9	2.8%	3.1%
R_58	19.0	18.6	17.8	18.0	18.9	19.0	2.2%	2.5%
R_59	15.5	15.2	14.2	14.5	14.3	14.3	-0.6%	-0.6%
R_60	15.5	15.2	14.2	14.5	14.3	14.3	-0.6%	-0.6%
R_61	17.5	17.1	16.1	16.2	16.2	16.2	0.1%	0.1%
R_62	18.2	17.8	17.0	17.3	17.2	17.3	-0.1%	0.1%

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Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m^3)	2037 1054 change as % of AQO (40 µg/m^3)
R_63	17.3	16.9	16.2	16.6	16.6	16.8	0.2%	0.5%
R_64	19.6	19.2	18.6	18.9	19.0	19.2	0.2%	0.6%
R_65	17.6	17.1	16.2	16.4	16.2	16.2	-0.7%	-0.6%
R_66	17.6	17.2	16.4	16.7	16.9	17.0	0.4%	0.7%
R_67	17.4	17.0	16.2	16.5	16.5	16.6	0.0%	0.1%
R_68	24.2	23.7	23.6	24.5	24.8	25.1	0.6%	1.5%
R_69	16.7	16.3	15.4	15.5	15.5	15.5	0.0%	0.0%
R_70	17.2	16.8	16.1	16.4	16.5	16.8	0.1%	0.8%
R_71	17.0	16.6	15.7	15.7	15.8	15.8	0.2%	0.2%
R_72	17.0	16.6	15.7	15.9	16.0	16.1	0.1%	0.3%
R_73	16.1	15.7	14.8	14.9	15.2	15.3	0.6%	0.9%
R_74	16.8	16.4	15.5	15.8	15.6	15.7	-0.4%	-0.3%
R_75	20.3	19.8	18.8	19.1	19.0	19.1	-0.3%	-0.1%
R_76	18.1	17.7	16.8	17.0	16.9	17.0	-0.2%	-0.1%
R_77	17.3	17.0	16.0	16.2	16.6	16.7	1.2%	1.2%
R_78	18.9	18.5	17.0	17.4	17.5	17.7	0.4%	0.8%

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Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m^3)	2037 1054 change as % of AQO (40 µg/m^3)
R_79	15.9	15.5	14.6	14.7	15.0	15.0	0.5%	0.7%
R_80	18.1	17.7	16.7	16.9	16.8	16.9	-0.2%	-0.1%
R_81	16.9	16.5	15.5	15.6	15.6	15.7	0.0%	0.1%
R_82	18.5	18.1	17.3	17.4	17.4	17.5	0.0%	0.1%
R_83	16.9	16.5	15.5	15.6	15.6	15.7	0.0%	0.1%
R_84	21.7	21.1	20.2	20.5	20.5	20.6	0.0%	0.2%
R_85	16.8	16.4	15.5	15.6	15.6	15.7	0.0%	0.1%
R_86	17.8	17.4	16.6	16.6	16.8	16.7	0.4%	0.3%
R_87	17.6	17.2	15.7	15.9	15.9	15.9	0.0%	0.1%
R_88	18.5	18.1	17.7	18.4	18.7	19.1	0.9%	1.7%
R_89	17.2	16.8	16.0	16.4	16.4	16.7	0.1%	0.7%
R_90	20.9	20.5	20.0	20.5	20.7	20.9	0.3%	0.8%
R_91	17.5	17.1	16.3	16.3	16.4	16.4	0.3%	0.2%
R_92	20.0	19.5	19.1	19.5	19.5	19.6	0.1%	0.4%
R_93	17.1	16.8	15.8	15.9	16.0	16.0	0.3%	0.2%
R_94	17.2	16.8	15.9	16.0	16.1	16.1	0.4%	0.3%

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m3)	2037 1054 change as % of AQO (40 µg/m3)
R_95	25.2	24.7	25.0	26.1	26.1	26.6	0.2%	1.2%
R_96	17.6	17.2	16.2	16.3	16.3	16.3	-0.1%	0.0%
R_97	16.9	16.5	15.5	15.5	15.8	15.7	0.5%	0.4%
R_98	22.3	21.8	21.7	22.3	22.4	22.7	0.3%	0.9%
R_99	18.0	17.6	16.6	16.5	16.8	16.7	0.8%	0.4%
R_100	17.4	17.1	16.3	16.7	16.8	17.0	0.3%	0.7%
R_101	17.0	16.6	15.7	15.7	15.9	15.9	0.7%	0.5%
R_102	19.6	19.2	18.6	19.0	19.1	19.3	0.2%	0.6%
R_103	17.3	16.9	16.1	16.2	16.3	16.3	0.2%	0.2%
R_104	18.2	17.8	16.8	17.1	17.8	17.8	1.8%	1.8%
R_105	17.5	17.1	16.2	16.5	16.4	16.6	-0.3%	0.3%
R_106	16.8	16.4	15.6	15.7	15.7	15.8	-0.1%	0.0%
R_107	19.3	18.9	18.3	18.7	18.7	18.9	0.0%	0.4%
R_108	19.7	19.3	18.5	18.9	19.6	19.6	1.7%	1.8%
R_109	18.9	18.5	17.6	18.1	18.3	18.3	0.5%	0.7%
R_110	17.5	17.1	16.2	16.4	16.5	16.5	0.1%	0.1%

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m^3)	2037 1054 change as % of AQO (40 µg/m^3)
R_111	17.5	17.1	16.4	16.7	16.9	17.0	0.3%	0.8%
R_112	16.9	16.6	15.6	15.8	15.8	15.8	0.0%	0.0%
R_113	17.1	16.7	15.8	16.0	16.0	16.1	-0.1%	0.2%
R_114	18.2	17.8	17.1	17.3	17.3	17.4	0.0%	0.3%
R_115	17.9	17.5	16.6	17.0	16.9	17.2	-0.3%	0.5%
R_116	17.4	17.0	16.2	16.3	16.4	16.4	0.3%	0.2%
R_117	21.1	20.6	20.4	20.9	21.0	21.2	0.1%	0.6%
R_118	18.1	17.7	17.0	17.3	17.2	17.3	-0.2%	0.0%
R_119	17.3	16.9	16.0	16.2	15.9	15.9	-0.8%	-0.7%
R_120	19.7	19.3	18.6	19.1	19.2	19.5	0.1%	0.8%
R_121	18.3	17.9	17.4	18.1	18.4	18.7	0.8%	1.6%
R_122	17.0	16.6	15.8	16.1	16.1	16.3	0.1%	0.5%
R_123	18.5	18.0	17.0	17.1	17.1	17.1	0.0%	0.0%
R_124	16.1	15.7	14.7	14.8	14.8	14.9	0.1%	0.1%
R_125	16.0	15.6	14.6	14.7	14.7	14.7	0.0%	0.1%
R_126	16.0	15.7	14.7	14.8	14.8	14.8	0.0%	0.1%

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m³)	2037 1054 change as % of AQO (40 µg/m³)
R_127	16.0	15.6	14.7	14.7	14.8	14.8	0.1%	0.1%
R_128	16.0	15.6	14.6	14.7	14.7	14.7	0.1%	0.1%
R_129	17.3	16.9	15.9	15.9	16.0	16.0	0.1%	0.0%
R_130	16.5	16.1	15.1	15.4	15.3	15.3	-0.4%	-0.2%
R_131	15.9	15.6	14.6	14.7	14.7	14.7	0.0%	0.0%
R_132	17.5	17.1	16.2	16.3	16.3	16.3	-0.1%	0.0%
R_133	18.1	17.6	16.7	16.9	16.9	16.9	-0.2%	-0.2%
R_134	16.0	15.6	14.7	14.7	14.8	14.8	0.0%	0.1%
R_135	18.8	18.4	17.4	17.6	17.6	17.6	0.0%	0.1%
R_136	18.5	18.1	17.1	17.2	17.2	17.2	0.1%	0.1%
R_137	18.6	18.2	17.2	17.3	17.3	17.3	0.0%	0.1%
R_138	17.2	16.8	16.0	16.2	16.3	16.3	0.2%	0.2%
R_139	18.8	18.4	17.4	17.6	17.6	17.6	0.1%	0.1%
R_140	16.0	15.7	14.7	14.8	14.8	14.8	0.1%	0.1%
R_141	17.6	17.2	16.2	16.2	16.3	16.3	0.2%	0.1%
R_142	16.1	15.7	14.7	14.8	14.9	14.9	0.1%	0.1%

Receptor Name	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m³)	2037 1054 change as % of AQO (40 µg/m³)
R_143	19.8	19.3	18.4	18.8	18.7	18.7	-0.3%	-0.1%
R_144	18.7	18.3	17.3	17.5	17.4	17.5	-0.2%	-0.1%
R_145	16.6	16.3	15.3	15.4	15.5	15.5	0.1%	0.1%
R_146	18.1	17.7	16.7	16.8	16.8	16.8	0.1%	0.1%
R_147	20.6	20.1	19.1	19.4	19.4	19.5	-0.1%	0.2%
R_148	18.2	17.8	16.8	17.0	16.9	17.0	-0.2%	-0.1%
R_149	18.2	17.7	16.8	17.1	17.0	17.1	-0.3%	-0.1%
R_150	18.1	17.7	16.8	16.8	16.8	16.8	0.0%	0.0%
R_151	15.7	15.3	14.4	14.6	14.5	14.5	-0.4%	-0.2%
R_152	19.2	18.7	17.8	17.9	17.9	17.9	-0.2%	-0.1%
R_153	18.5	18.1	17.2	17.5	17.3	17.3	-0.4%	-0.3%
R_154	18.1	17.7	16.7	16.8	16.8	16.8	0.0%	0.0%
R_155	18.5	18.0	17.1	17.3	17.2	17.2	-0.2%	-0.2%

APPENDIX TABLE 9: PREDICTED ANNUAL MEAN PM10 CONCENTRATIONS AT 2017 (NO_2) MONITORING LOCATIONS ALL SCENARIOS

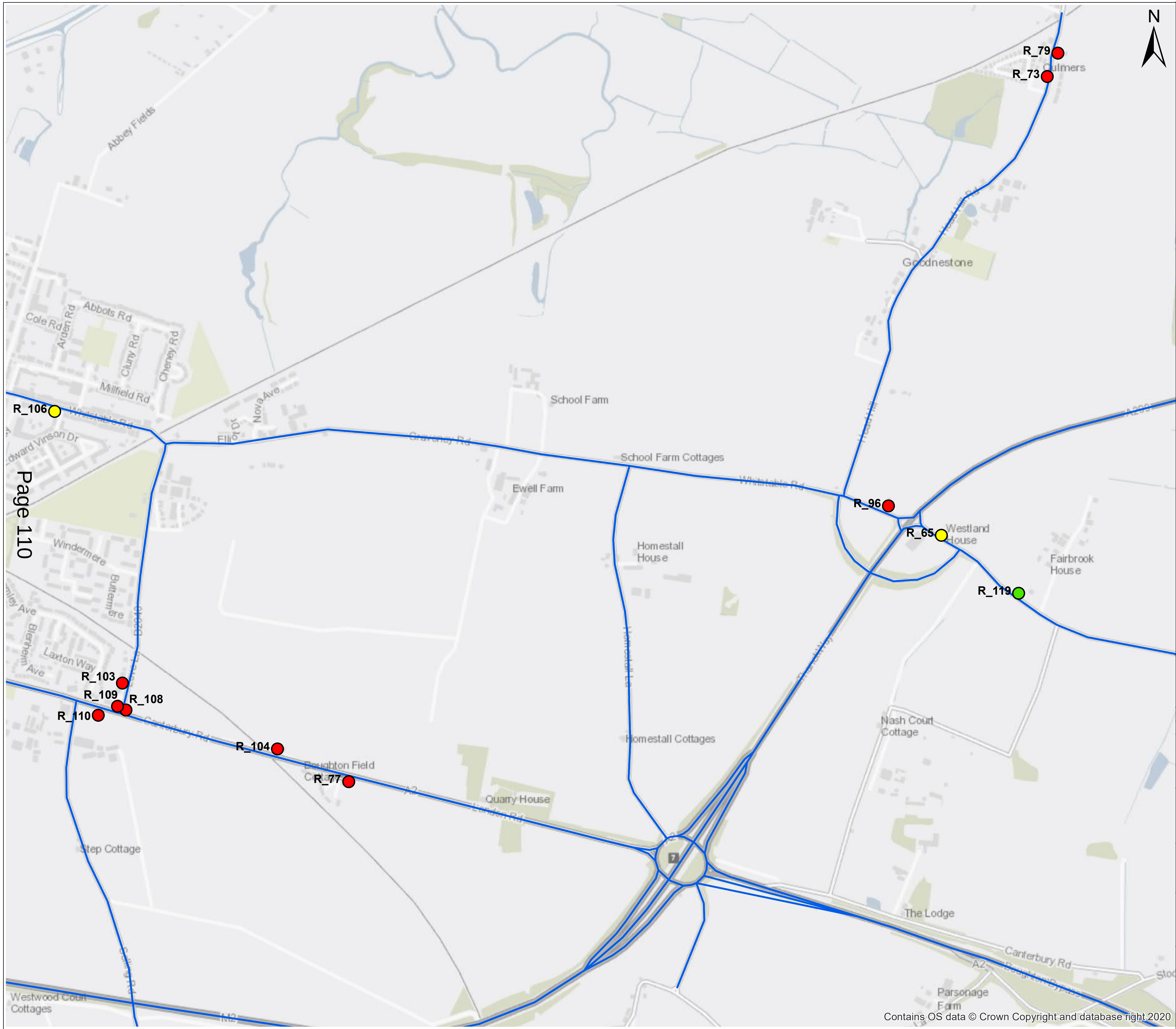
Monitoring location	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m^3)	2037 1054 change as % of AQO (40 µg/m^3)
ZW6	19.2	18.7	17.8	18.1	18.0	18.1	-0.3%	-0.1%
ZW8	17.6	18.3	17.5	17.7	17.6	17.6	-0.1%	-0.1%
ZW3	23.6	22.5	22.3	23.1	23.3	23.6	0.5%	1.2%
SW66	17.4	18.2	17.2	17.4	17.4	17.4	0.1%	0.2%
SW45	17.0	17.8	16.8	16.9	16.9	17.0	0.0%	0.1%
SW35	17.0	17.8	16.8	17.0	17.0	17.0	0.0%	0.1%
SW42	18.0	18.8	17.8	18.0	18.0	18.0	-0.1%	0.0%
SW19	16.9	17.7	16.7	16.9	16.8	16.9	-0.1%	-0.1%
SW37	16.7	17.5	16.5	16.8	16.7	16.7	-0.2%	-0.1%
SW38	18.7	19.3	18.4	18.8	18.6	18.7	-0.3%	-0.1%
SW20	18.2	18.9	17.9	18.3	18.2	18.2	-0.3%	-0.1%
SW36	18.9	19.6	18.6	18.9	18.8	18.9	-0.3%	-0.1%
SW78	20.6	21.2	20.2	20.5	20.5	20.6	0.1%	0.4%
SW62	22.9	23.7	22.7	23.0	22.9	22.9	-0.1%	-0.2%
SW82	18.4	19.0	18.2	18.5	18.4	18.4	-0.2%	-0.2%
SW52	19.0	19.5	18.7	19.1	19.0	19.0	-0.2%	-0.2%

Monitoring location	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m^3)	2037 1054 change as % of AQO (40 µg/m^3)
SW51	19.3	19.9	19.1	19.4	19.3	19.3	-0.3%	-0.3%
SW89	17.7	18.4	17.5	17.8	17.7	17.7	-0.1%	-0.1%
SW71	20.4	20.5	20.1	20.4	20.4	20.4	-0.1%	-0.1%
SW73	18.3	18.5	18.0	18.3	18.3	18.3	-0.1%	0.0%
SW58	19.0	20.1	18.7	18.9	19.0	19.0	0.3%	0.3%
SW83	19.5	20.6	19.1	19.3	19.4	19.5	0.4%	0.4%
SW97	17.8	18.6	17.5	17.7	17.7	17.8	0.1%	0.2%
SW53	15.8	16.6	15.6	15.7	15.7	15.8	0.0%	0.0%
SW56	18.9	19.7	18.7	18.8	18.9	18.9	0.1%	0.3%
SW87	20.2	21.0	19.9	20.1	20.1	20.2	0.2%	0.4%
SW90	20.6	21.5	20.3	20.4	20.6	20.6	0.3%	0.5%
SW76	18.9	19.2	18.5	18.7	18.8	18.9	0.2%	0.6%
SW77	17.4	18.2	17.3	17.4	17.4	17.4	0.0%	0.0%
SW88	17.5	18.2	17.4	17.8	17.5	17.5	-0.7%	-0.6%
SW07	14.5	15.4	14.5	14.5	14.5	14.5	0.0%	0.0%
SW14	14.4	15.3	14.3	14.3	14.3	14.4	0.0%	0.0%

Monitoring location	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m^3)	2037 1054 change as % of AQO (40 µg/m^3)
SW13	15.6	16.5	15.4	15.5	15.5	15.6	0.1%	0.3%
SW84	16.1	16.9	16.1	16.4	16.0	16.1	-0.9%	-0.6%
SW85	16.6	17.3	16.5	16.8	16.4	16.6	-1.0%	-0.7%
SW86	14.2	15.0	14.1	14.3	14.1	14.2	-0.4%	-0.3%
SW99	20.7	20.6	19.8	19.9	20.6	20.7	1.7%	1.9%
SW100	17.3	17.9	17.1	17.1	17.3	17.3	0.5%	0.6%
SW80	21.0	20.6	19.6	19.7	20.8	21.0	2.7%	3.1%
SW91	15.6	16.2	15.3	15.4	15.5	15.6	0.4%	0.4%
SW101	16.9	17.3	16.5	16.6	16.8	16.9	0.6%	0.8%
SW92	17.2	17.6	16.6	16.7	17.2	17.2	1.1%	1.2%
SW102	19.7	19.5	18.5	18.7	19.6	19.7	2.2%	2.5%
SW103	17.3	17.5	16.6	16.8	17.2	17.3	1.0%	1.2%
SW28	24.7	23.4	23.3	24.2	24.4	24.7	0.6%	1.4%
SW30	23.8	22.7	22.5	23.3	23.5	23.8	0.5%	1.3%
SW31	24.2	22.9	23.0	23.8	23.9	24.2	0.2%	1.0%
SW95	24.5	23.2	23.2	24.1	24.2	24.5	0.1%	1.0%

Monitoring location	2017	2019	2027	2037	2037 776	2037 1054	2037 776 change as % of AQO (40 µg/m³)	2037 1054 change as % of AQO (40 µg/m³)
SW32	19.3	19.3	18.7	19.1	19.2	19.3	0.2%	0.6%
SW96	24.8	23.4	23.3	24.2	24.4	24.8	0.6%	1.4%
SW22	18.6	18.7	18.0	18.4	18.4	18.6	0.2%	0.5%
SW29	24.7	23.4	23.3	24.2	24.4	24.7	0.6%	1.4%
SW98	18.8	18.9	18.0	18.6	18.8	18.8	0.4%	0.7%
SW104	14.6	15.5	14.5	14.6	14.6	14.6	0.1%	0.1%
SW105	14.7	15.6	14.6	14.7	14.7	14.7	0.1%	0.1%
SW34	13.9	14.8	13.9	13.9	13.9	13.9	-0.1%	-0.1%
SW106	15.2	16.1	15.2	15.2	15.2	15.2	0.0%	0.0%

Appendix E – Figures

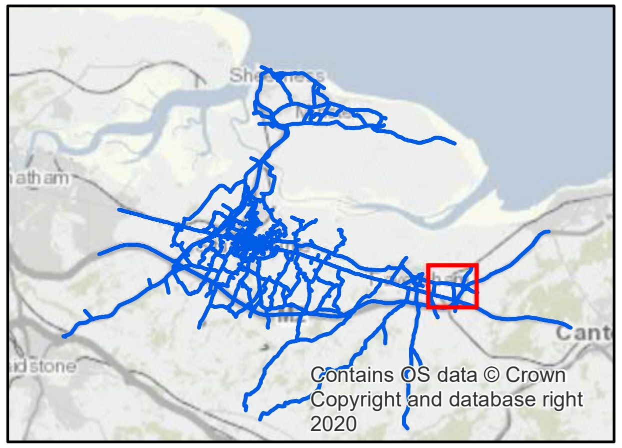


Legend

Percentage Change - 1054 Development

- 0% Change
- Between 0% and -1%
- Between 0% and 1%
- Greater than 1%
- Less than -1%
- Modelled Road Network

0 360 720 Meters



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Client

Swale Borough Council

Project

Swale Local Development Plan

Drawing Title

Figure 3h Percentage change with 1054 Development in place

Scale @ A3	1:10,000	DO NOT SCALE	
Project No.	65201817	Status	S2
BIM No.	119046-SWECO-EGN-000-DR-GS-000XX		

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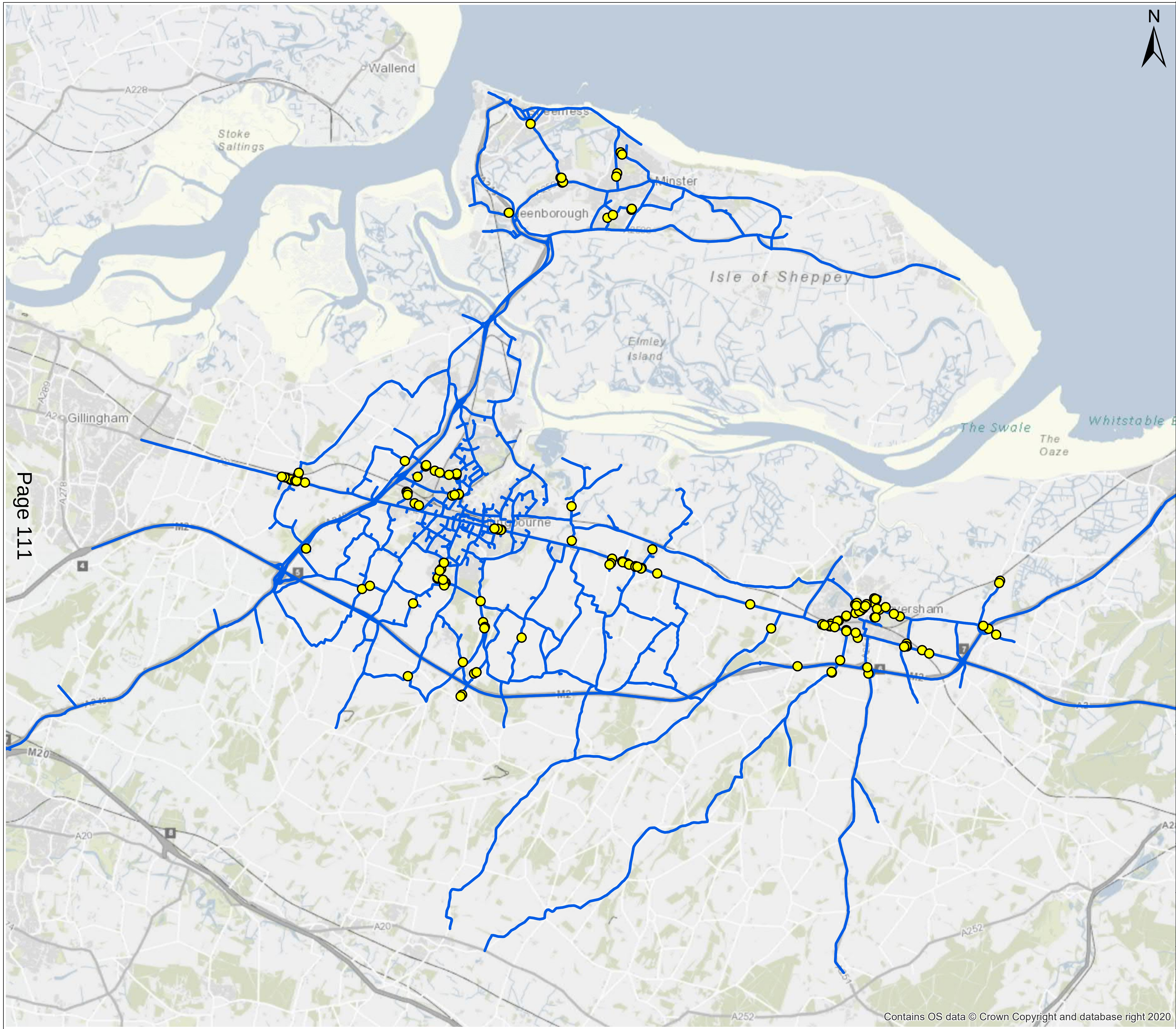
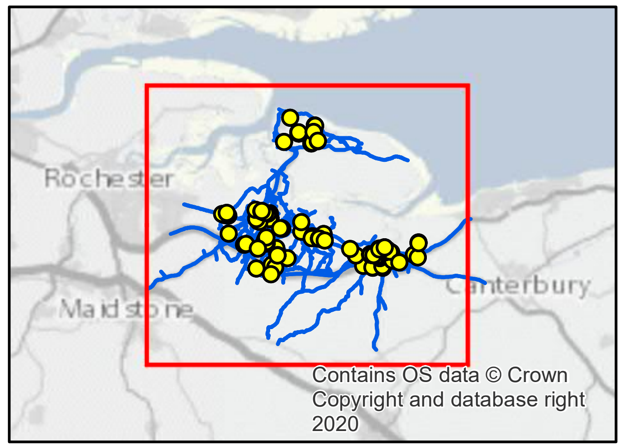


Legend

- Modelled Human Receptors
- Modelled Road Network

0 3,600 7,200 Meters



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Client

Swale Borough Council

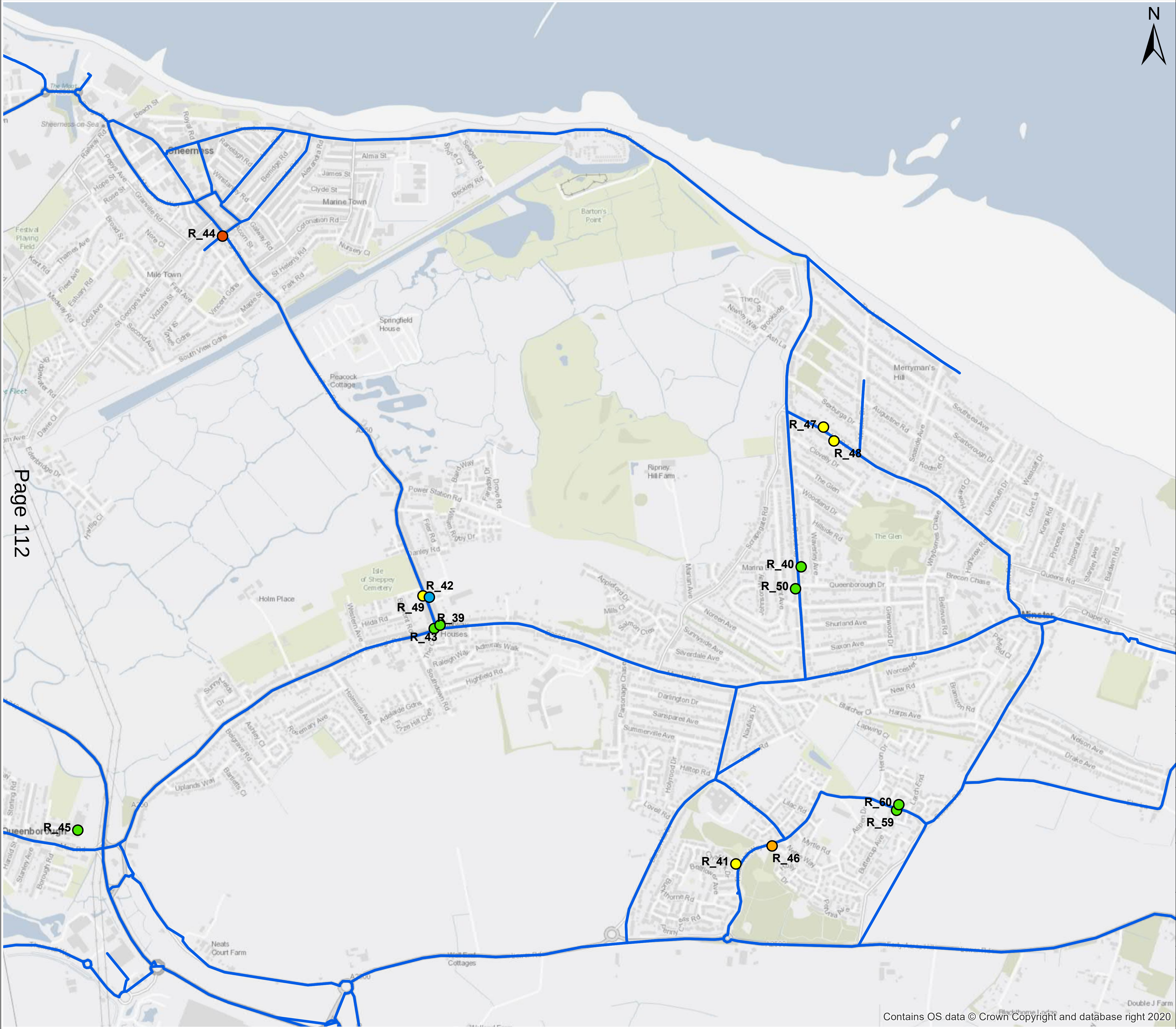
Project

Swale Local Development Plan

Drawing Title

Figure 1
Modelled road network and sensitive human receptors

Scale @ A3	1:100,000	DO NOT SCALE	
Project No.	65201440	Status	S2
BIM No.	119046-SWECO-EGN-000-DR-GS-000XX		

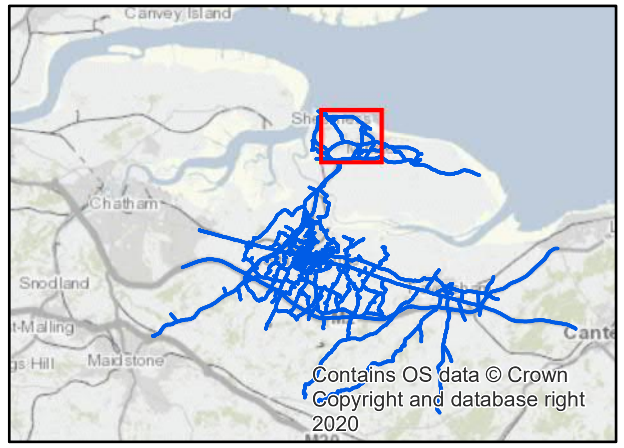


Legend

Percentage Change - 776 Development

- 0% Change
- Between 0% and -1%
- Between 0% and 1%
- Greater than 1%
- Less than -1%
- Modelled Road Network

0 500 1,000 Meters



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Client

Swale Borough Council

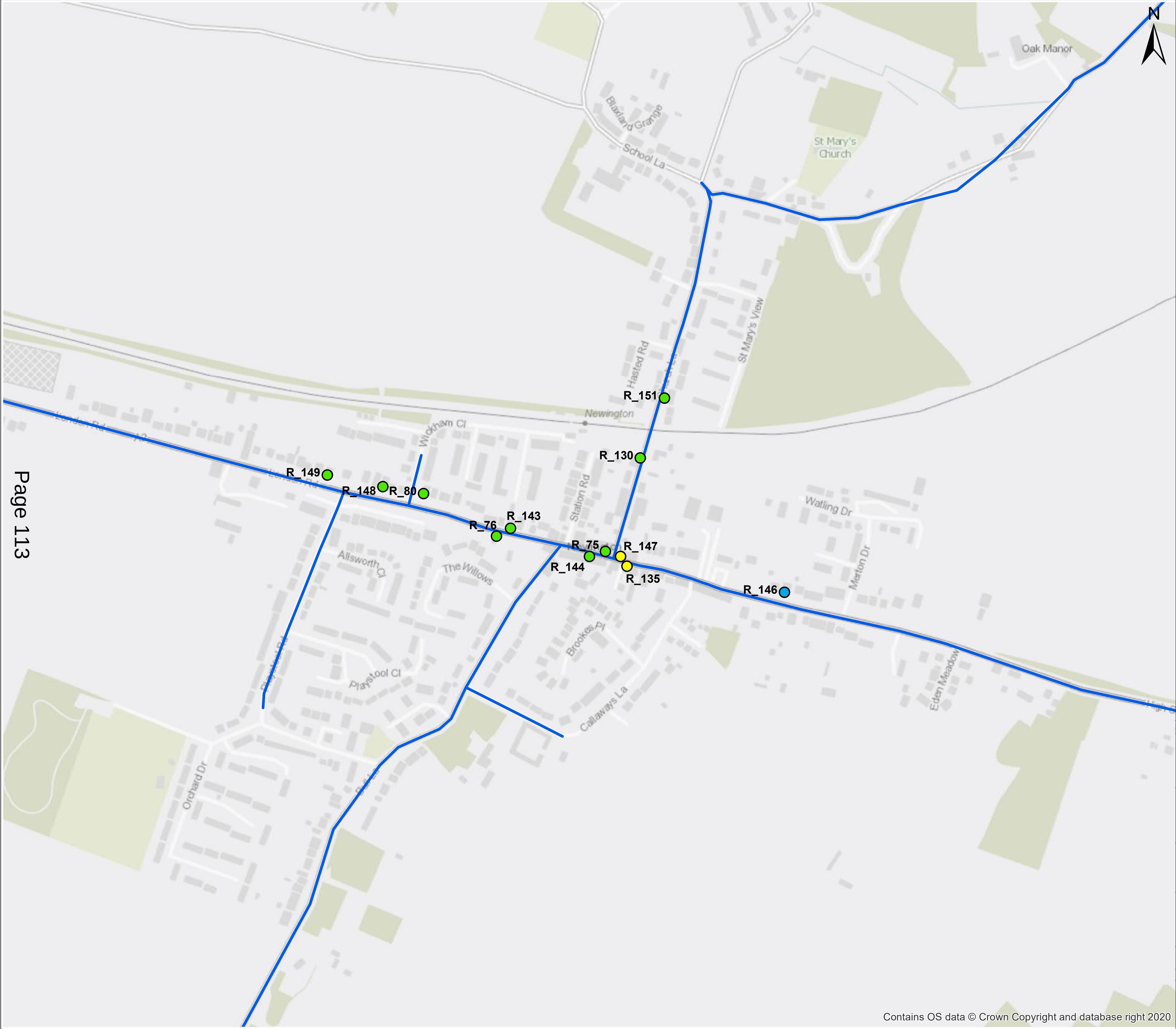
Project

Swale Local Development Plan

Drawing Title

Figure 2a
Percentage change with 776 Development in place

Scale @ A3	1:15,000	DO NOT SCALE	
Project No.	65201817	Status	S2
BIM No.	119046-SWECO-EGN-000-DR-GS-000XX		

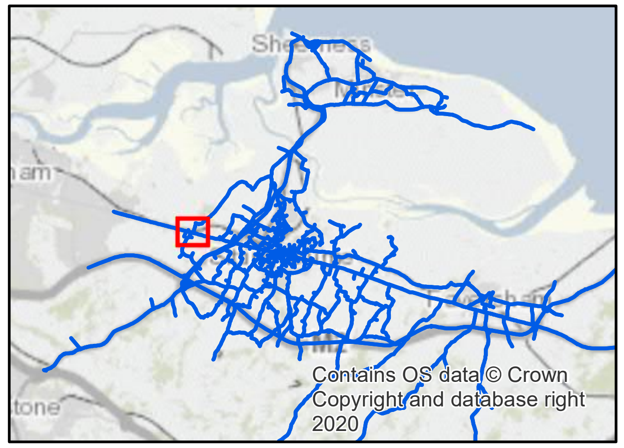


Legend

Percentage Change - 776 Development

- 0% Change
- Between 0% and -1%
- Between 0% and 1%
- Greater than 1%
- Less than -1%
- Modelled Road Network

0 180 360 Meters



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Rev.	Rev. Date	Drawing Suitability	Drawn	Appr'd

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Client

Swale Borough Council

Project

Swale Local Development Plan

Drawing Title

Figure 2b
Percentage change with 776 Development in place

Scale @ A3	1:5,062	DO NOT SCALE	
Project No.	65201817	Status	S2
BIM No.	119046-SWECO-EGN-000-DR-GS-000XX		

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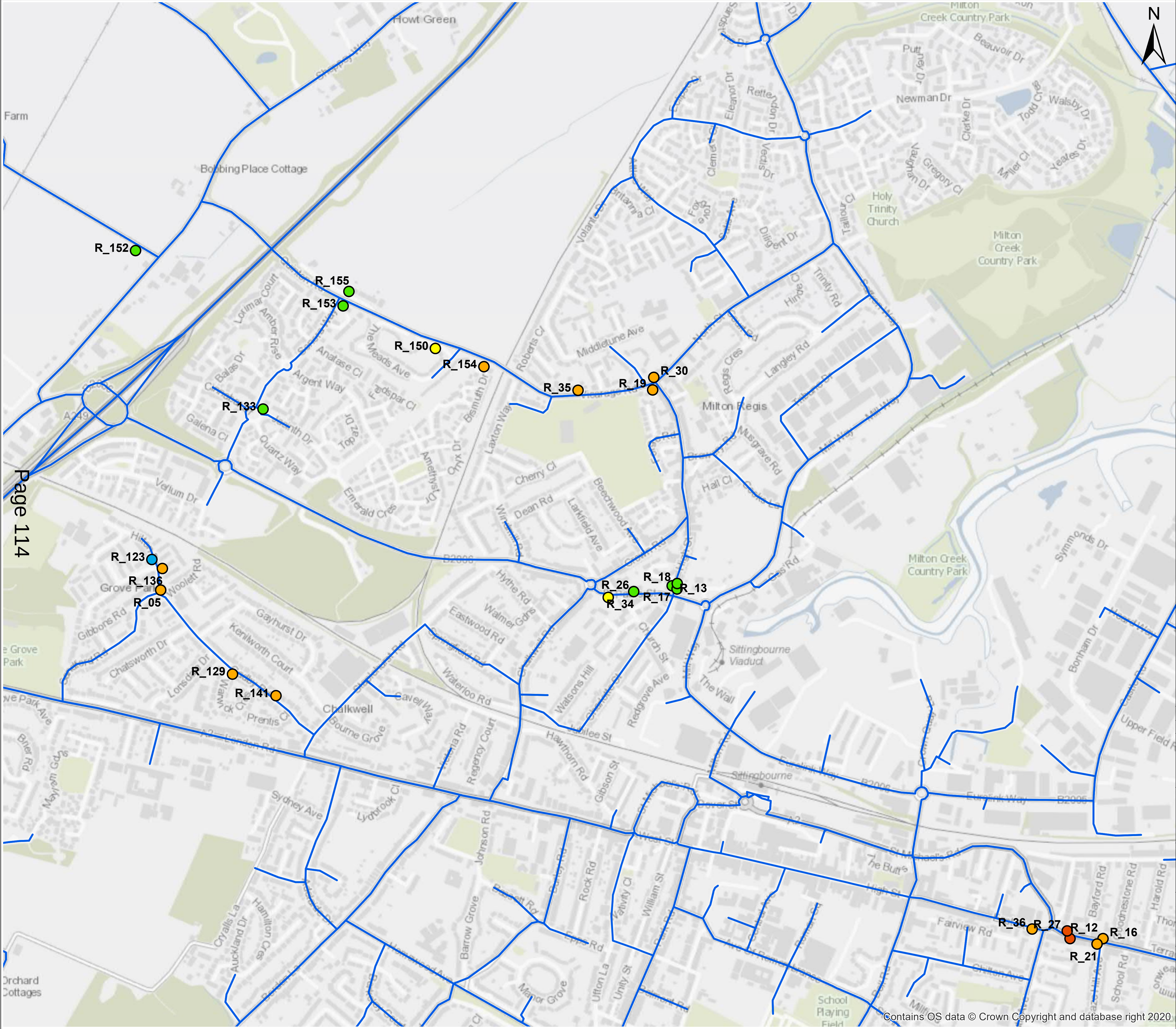
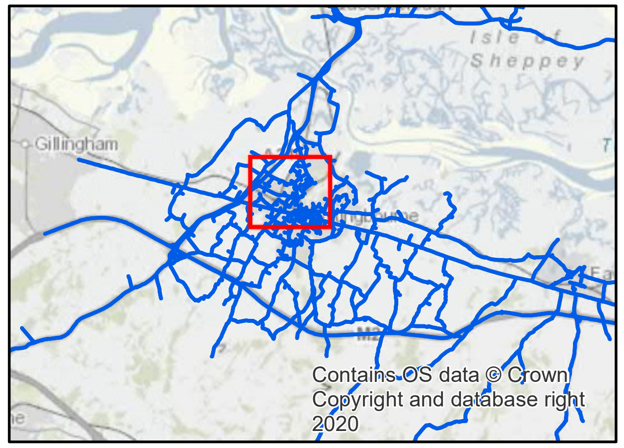


Legend

Percentage Change - 776 Development

- 0% Change
- Between 0% and -1%
- Between 0% and 1%
- Greater than 1%
- Less than -1%
- Modelled Road Network

0 360 720 Meters



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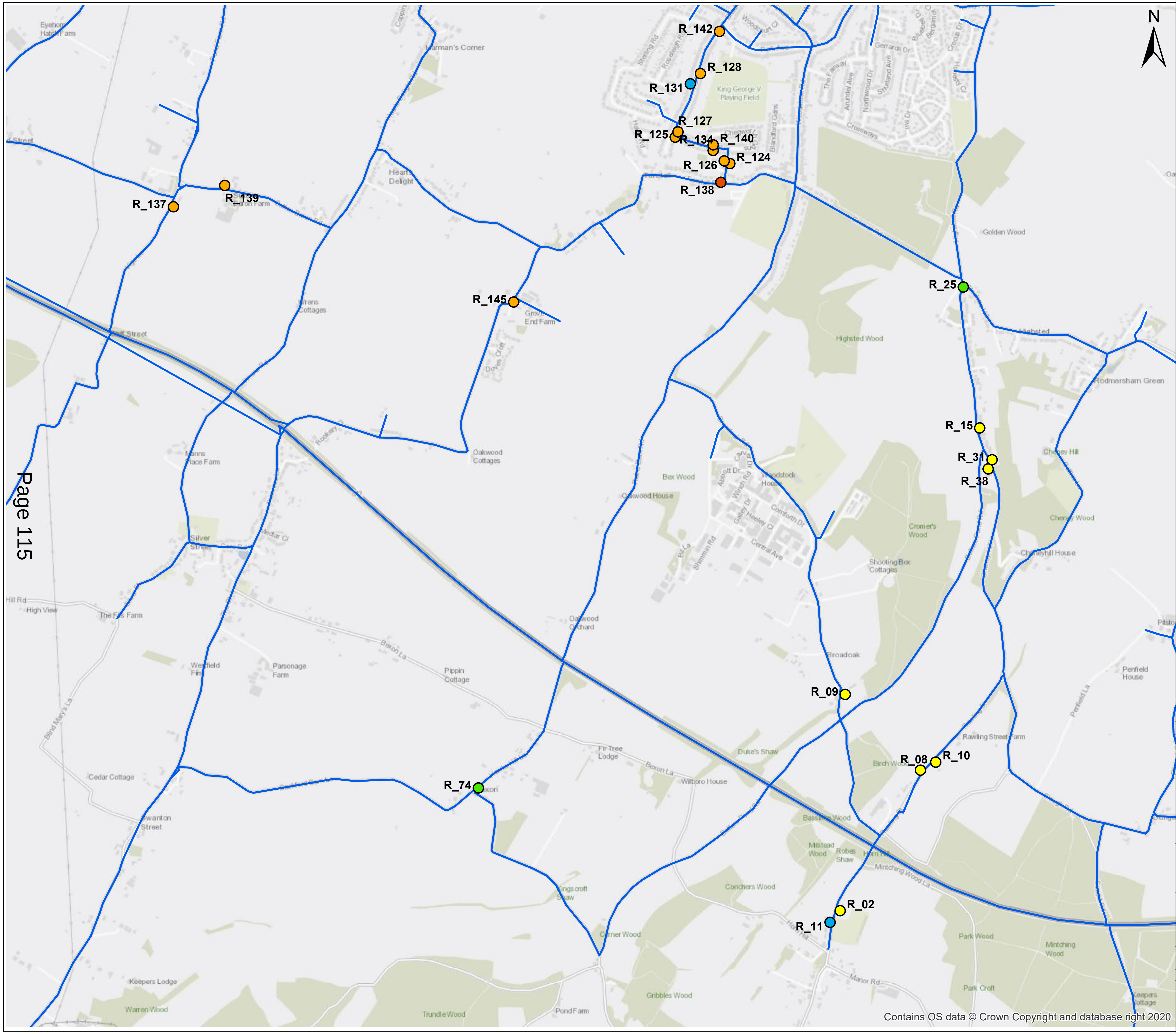
Client: Swale Borough Council

Project: **Swale Local Development Plan**

Drawing Title: **Figure 2c Percentage change with 776 Development in place**

Scale @ A3	1:10,000	DO NOT SCALE	
Project No.	65201817	Status	S2
BIM No.	119046-SWECO-EGN-000-DR-GS-000XX		

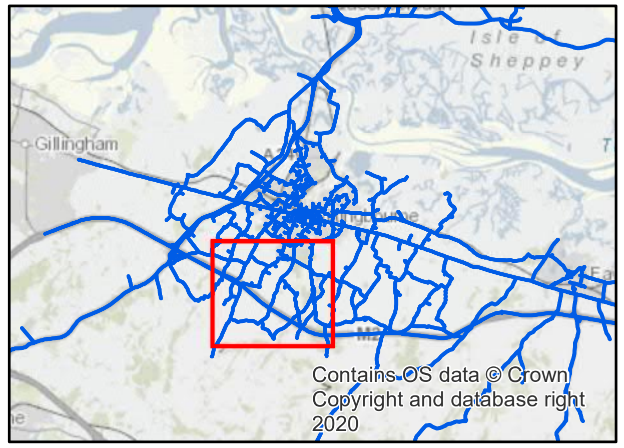


Legend

Percentage Change - 776 Development

- 0% Change
- Between 0% and -1%
- Between 0% and 1%
- Greater than 1%
- Less than -1%
- Modelled Road Network

0 500 1,000 Meters



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Client

Swale Borough Council

Project

Swale Local Development Plan

Drawing Title

Figure 2d
Percentage change with 776 Development in place

Scale @ A3	1:15,000	DO NOT SCALE	
Project No.	65201817	Status	S2
BIM No.	119046-SWECO-EGN-000-DR-GS-000XX		

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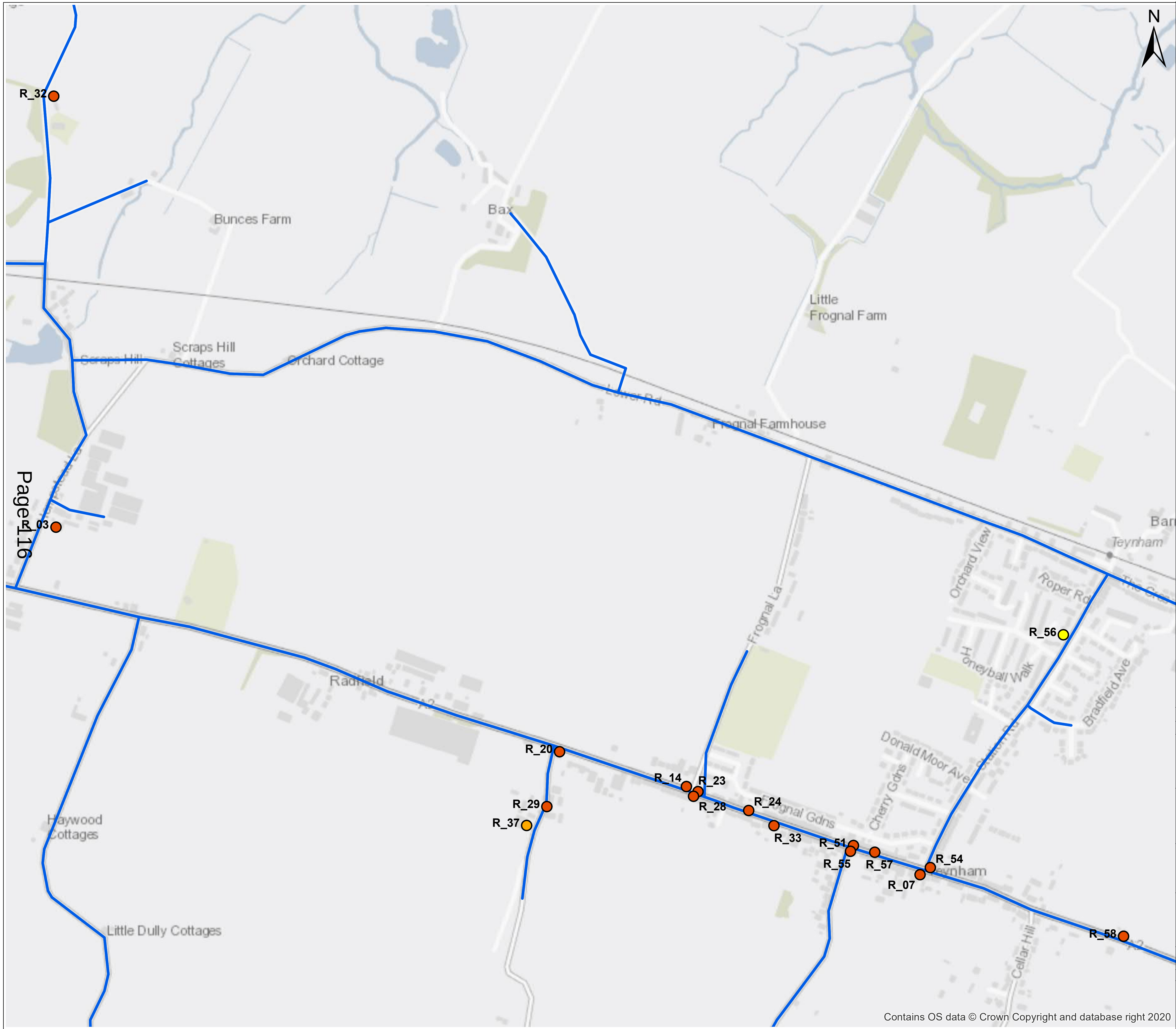
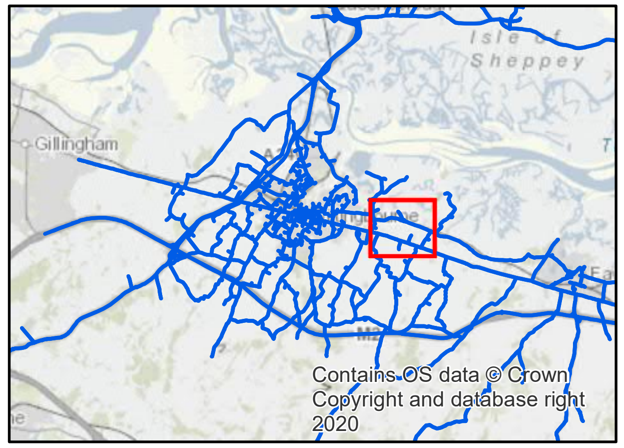


Legend

Percentage Change - 776 Development

- 0% Change
- Between 0% and -1%
- Between 0% and 1%
- Greater than 1%
- Less than -1%
- Modelled Road Network

0 285 570 Meters



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Client

Swale Borough Council

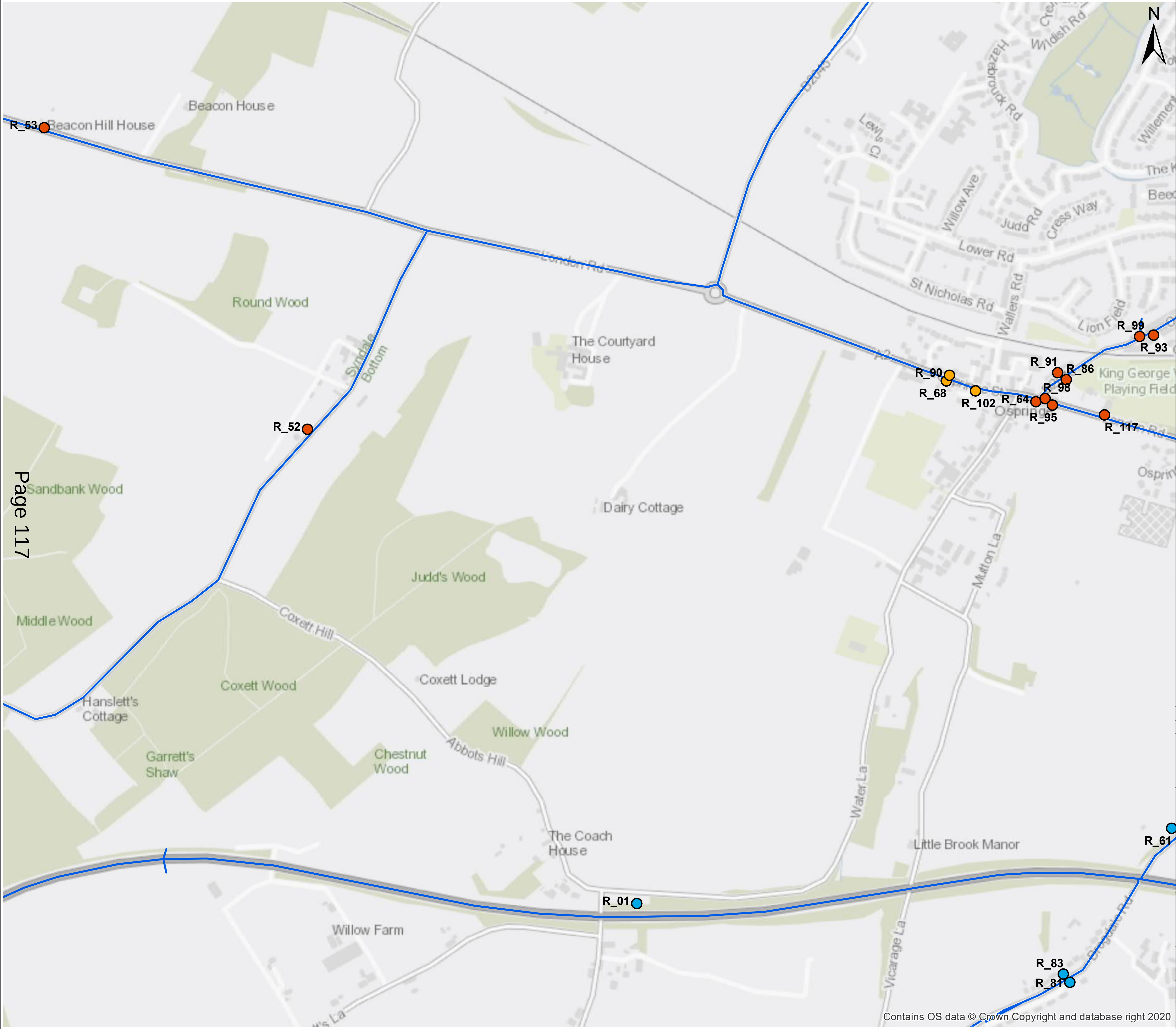
Project

Swale Local Development Plan

Drawing Title

Figure 2e
Percentage change with 776 Development in place

Scale @ A3	1:8,000	DO NOT SCALE	
Project No.	65201817	Status	S2
BIM No.	119046-SWECO-EGN-000-DR-GS-000XX		

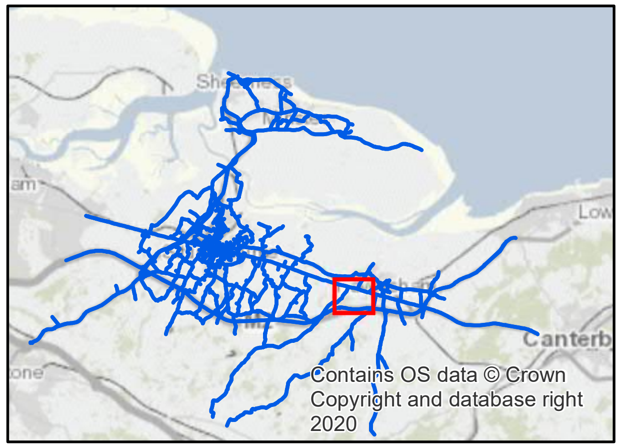


Legend

Percentage Change - 776 Development

- 0% Change
- Between 0% and -1%
- Between 0% and 1%
- Greater than 1%
- Less than -1%
- Modelled Road Network

0 285 570 Meters



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Client

Swale Borough Council

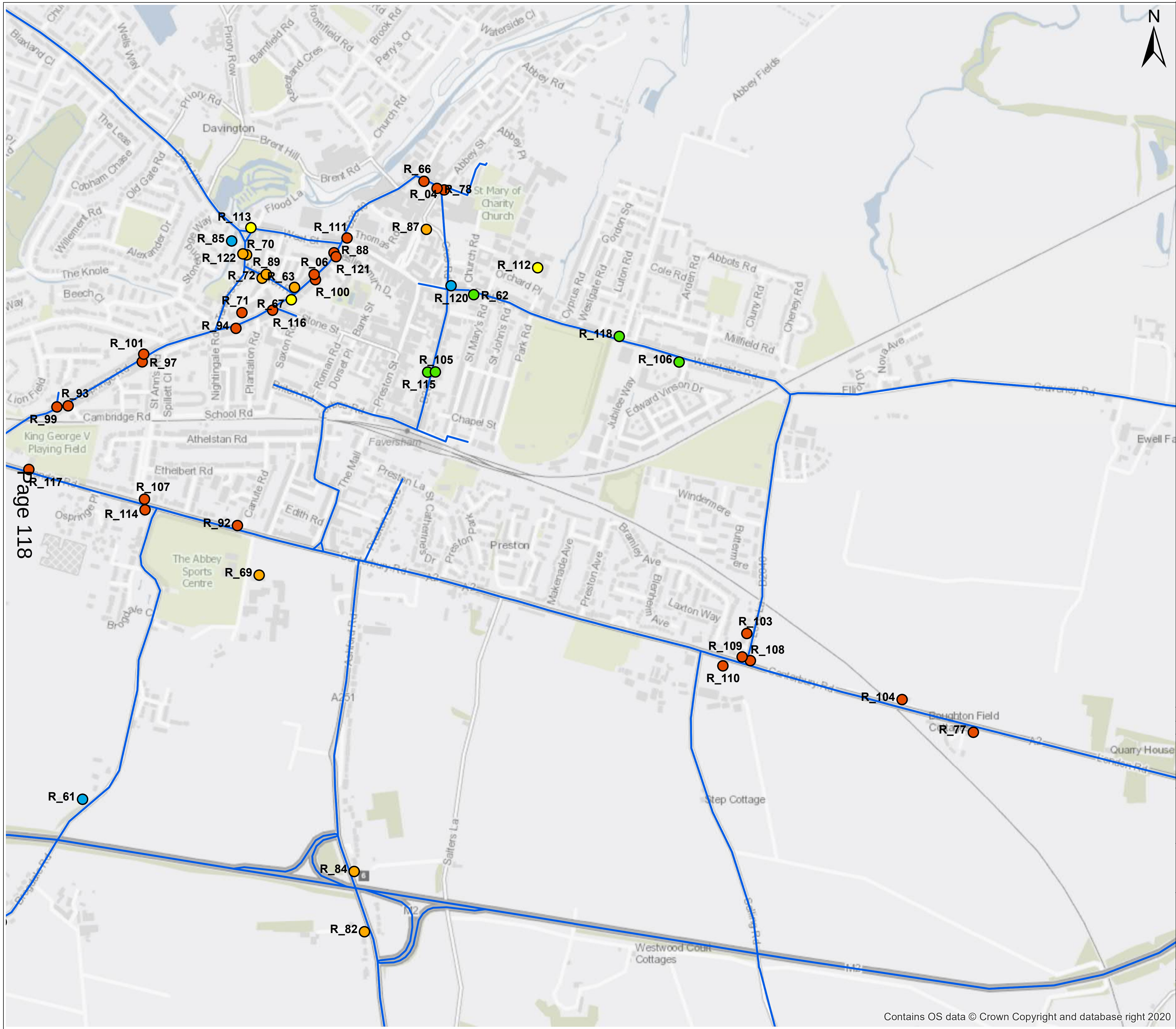
Project

Swale Local Development Plan

Drawing Title

Figure 2f
Percentage change with 776 Development in place

Scale @ A3	1:8,000	DO NOT SCALE	
Project No.	65201817	Status	S2
BIM No.	119046-SWECO-EGN-000-DR-GS-000XX		

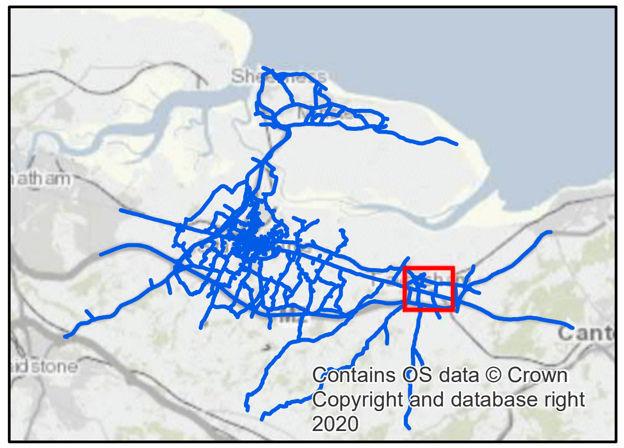


Legend

Percentage Change - 776 Development

- 0% Change
- Between 0% and -1%
- Between 0% and 1%
- Greater than 1%
- Less than -1%
- Modelled Road Network

0 360 720 Meters



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Client

Swale Borough Council

Project

Swale Local Development Plan

Drawing Title

Figure 2g
Percentage change with 776 Development in place

Scale @ A3	1:10,000	DO NOT SCALE	
Project No.	65201817	Status	S2
BIM No.	119046-SWECO-EGN-000-DR-GS-000XX		

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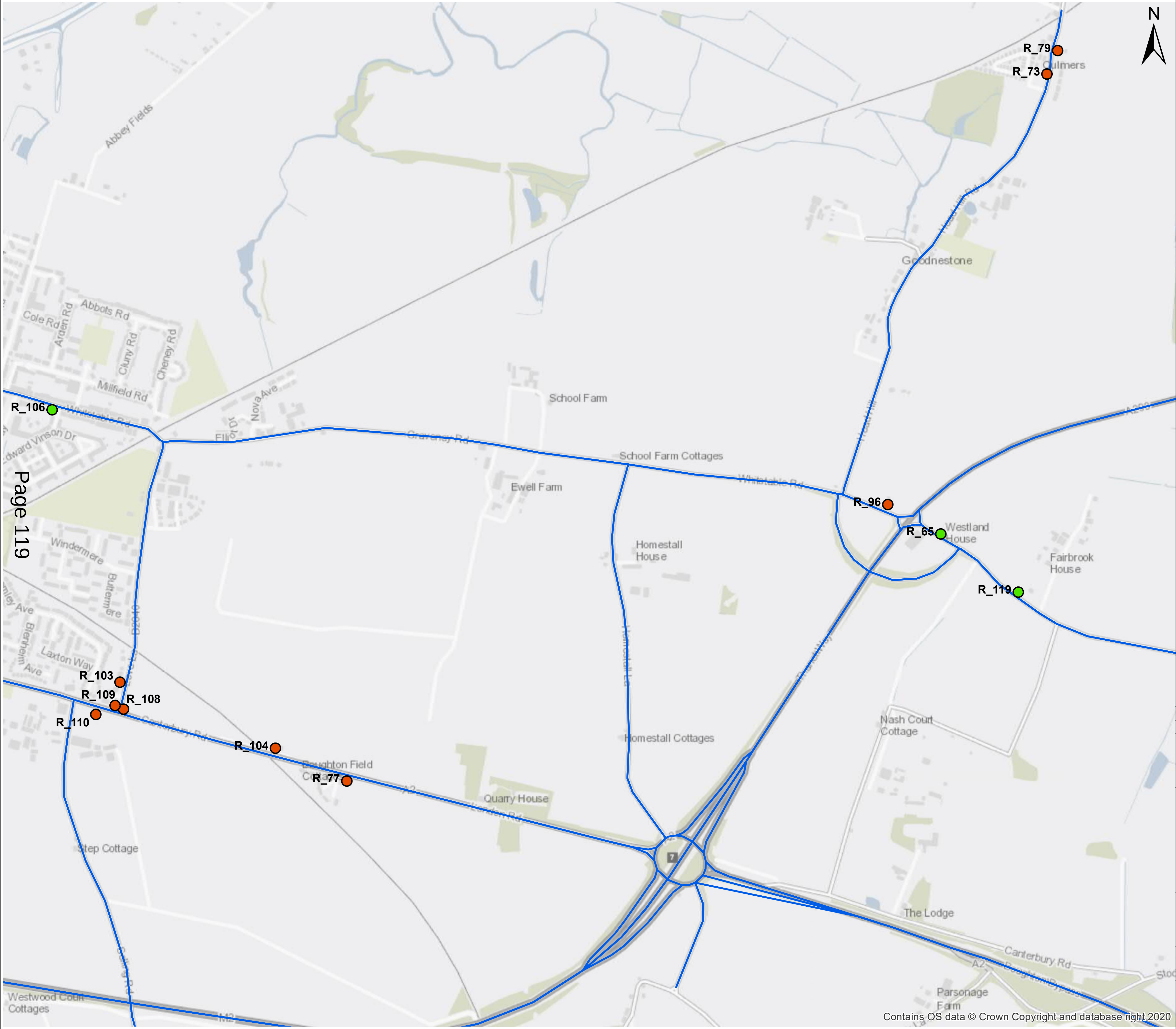
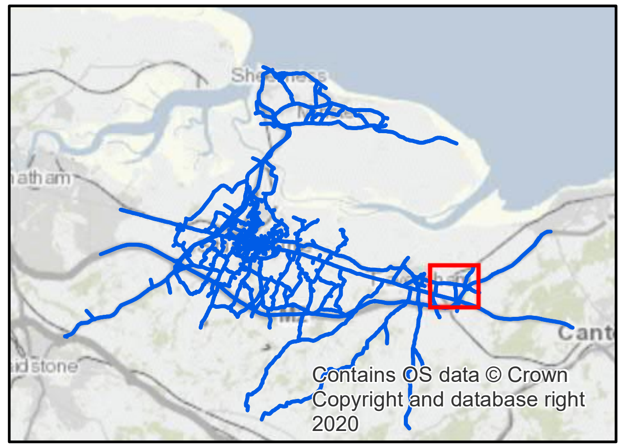


Legend

Percentage Change - 776 Development

- 0% Change
- Between 0% and -1%
- Between 0% and 1%
- Greater than 1%
- Less than -1%
- Modelled Road Network

0 360 720 Meters



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Client

Swale BOROUGH COUNCIL

Project

Swale Local Development Plan

Drawing Title

Figure 2h
Percentage change with 776 Development in place

Scale @ A3	1:10,000	DO NOT SCALE	
Project No.	65201817	Status	S2
BIM No.	119046-SWECO-EGN-000-DR-GS-000XX		

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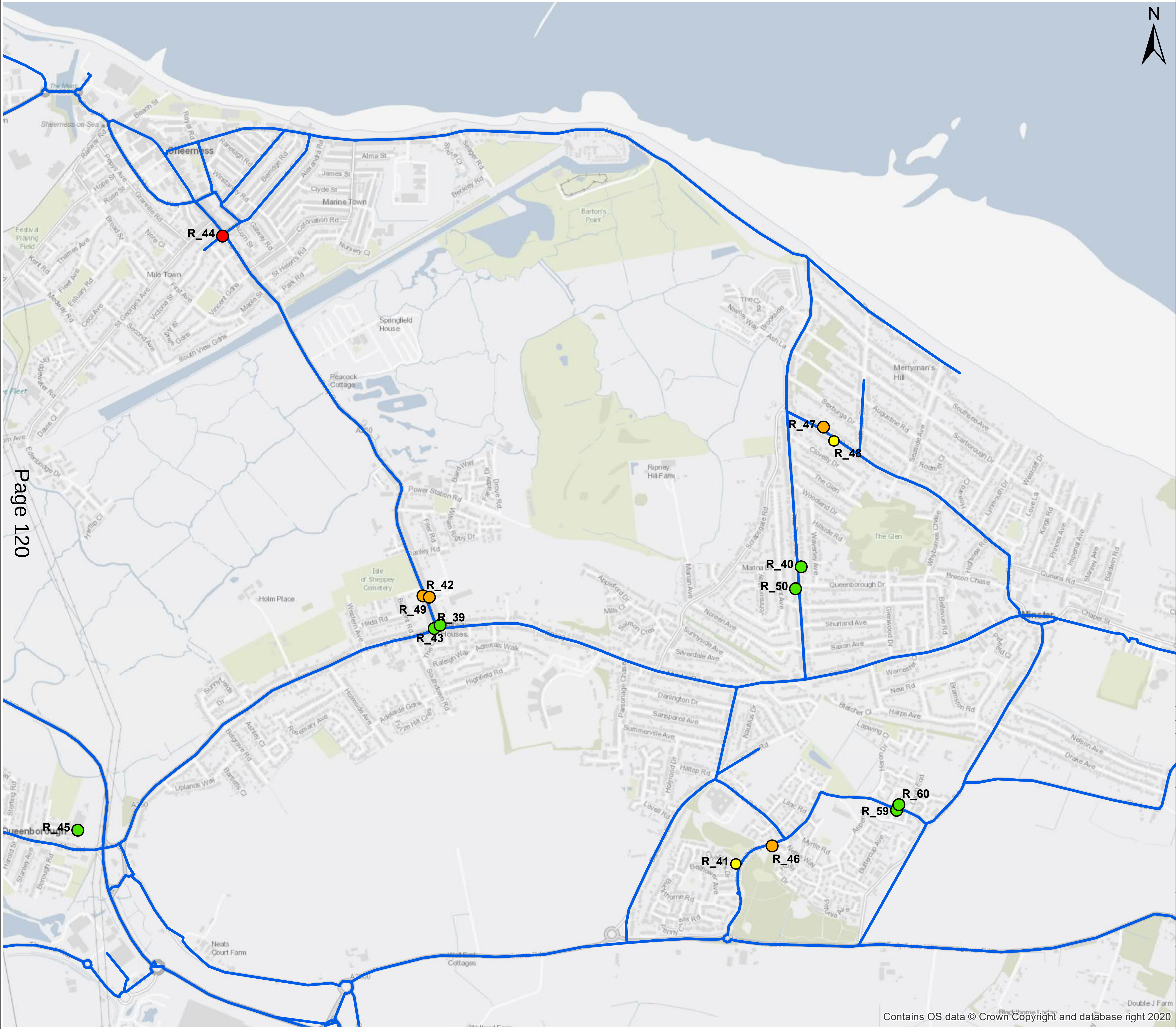
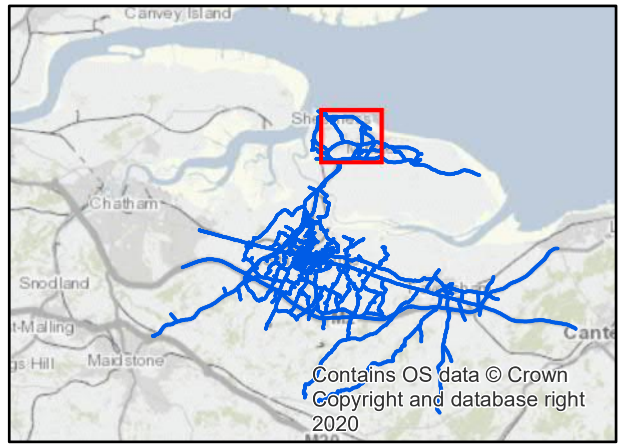


Legend

Percentage Change - 1054 Development

- 0% Change
- Between 0% and -1%
- Between 0% and 1%
- Greater than 1%
- Less than -1%
- Modelled Road Network

0 500 1,000 Meters



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Client

Swale Borough Council

Project

Swale Local Development Plan

Drawing Title

Figure 3a Percentage change with 1054 Development in place

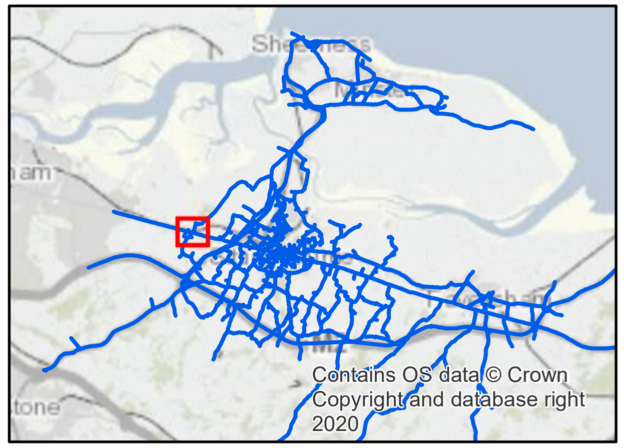
Scale @ A3	1:15,000	DO NOT SCALE	
Project No.	65201817	Status	S2
BIM No.	119046-SWECO-EGN-000-DR-GS-000XX		

Legend

Percentage Change - 1054 Development

- 0% Change
- Between 0% and -1%
- Between 0% and 1%
- Greater than 1%
- Less than -1%
- Modelled Road Network

0 180 360 Meters



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Rev.	Rev. Date	Drawing Suitability	Drawn	Appr'd

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Client

Swale Borough Council

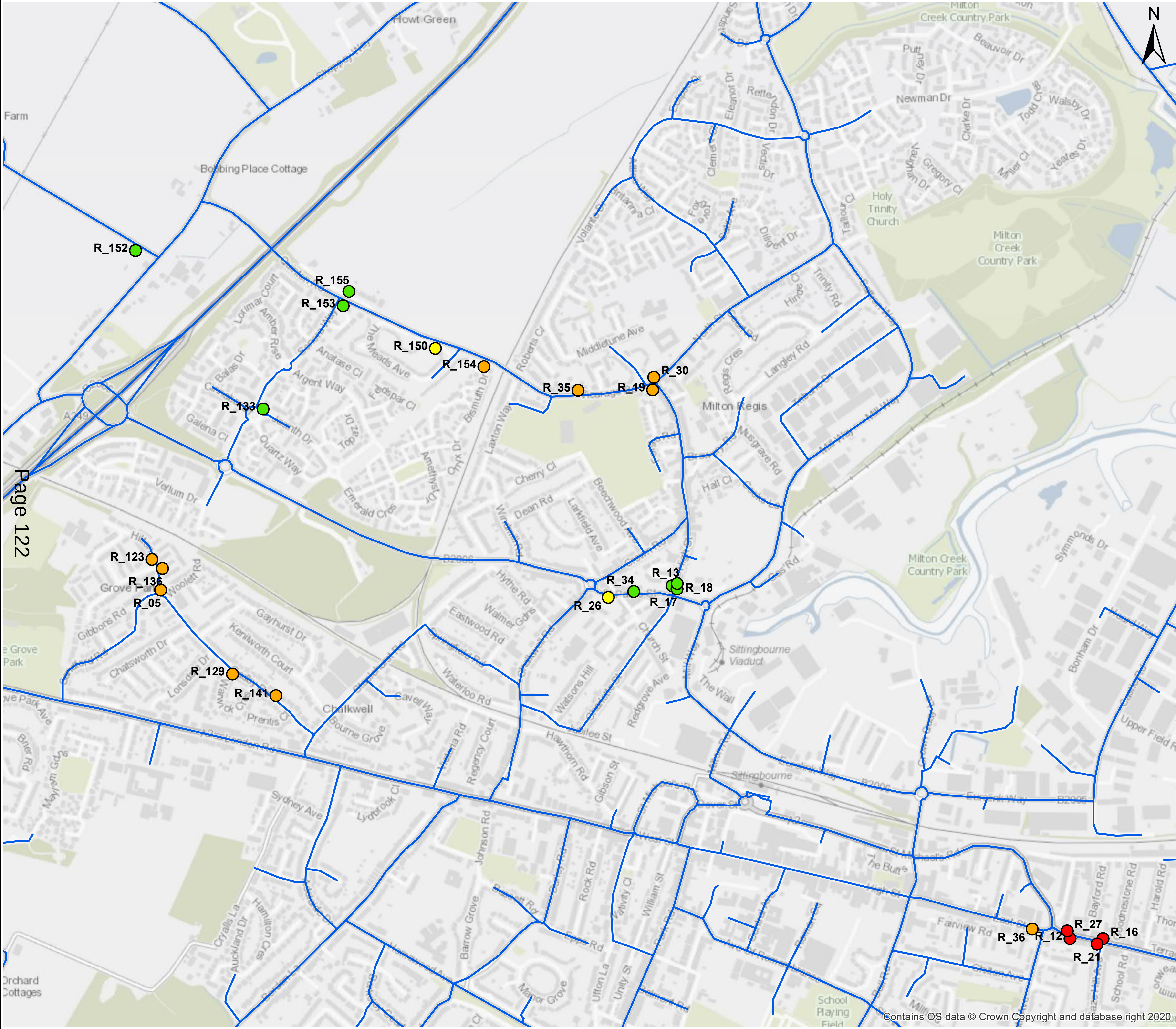
Project

Swale Local Development Plan

Drawing Title

Figure 2b
Percentage change with 1054 Development in place

Scale @ A3	1:5,062	DO NOT SCALE	
Project No.	65201817	Status	S2
BIM No.	119046-SWECO-EGN-000-DR-GS-000XX		



Legend

Percentage Change - 1054 Development

- 0% Change
- Between 0% and -1%
- Between 0% and 1%
- Greater than 1%
- Less than -1%
- Modelled Road Network

0 360 720 Meters

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Client

Swale Borough Council

Project

Swale Local Development Plan

Drawing Title

Figure 3c Percentage change with 1054 Development in place

Scale @ A3	1:10,000	DO NOT SCALE	
Project No.	65201817	Status	S2
BIM No.	119046-SWECO-EGN-000-DR-GS-000XX		

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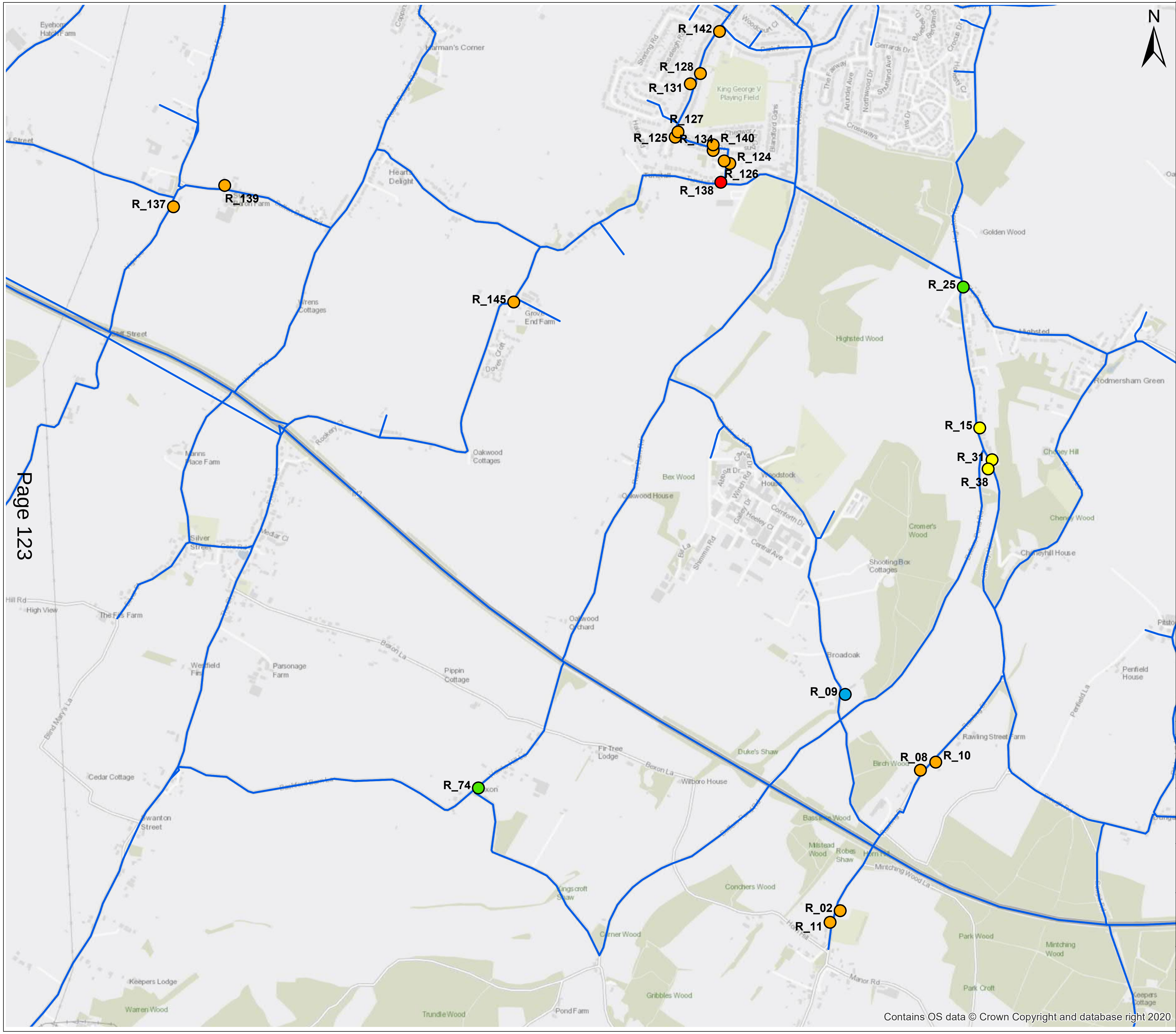
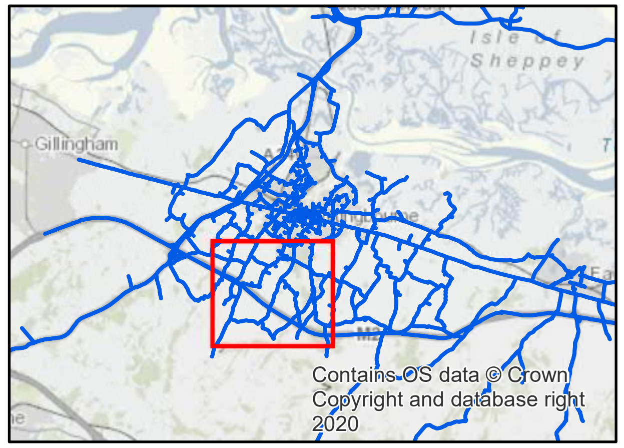


Legend

Percentage Change - 1054 Development

- 0% Change
- Between 0% and -1%
- Between 0% and 1%
- Greater than 1%
- Less than -1%
- Modelled Road Network

0 500 1,000 Meters



P01	25/09/2020	For Information	AA	JS
Rev.	Rev. Date	Drawing Suitability	Drawn	Appr'd

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Client

Swale Borough Council

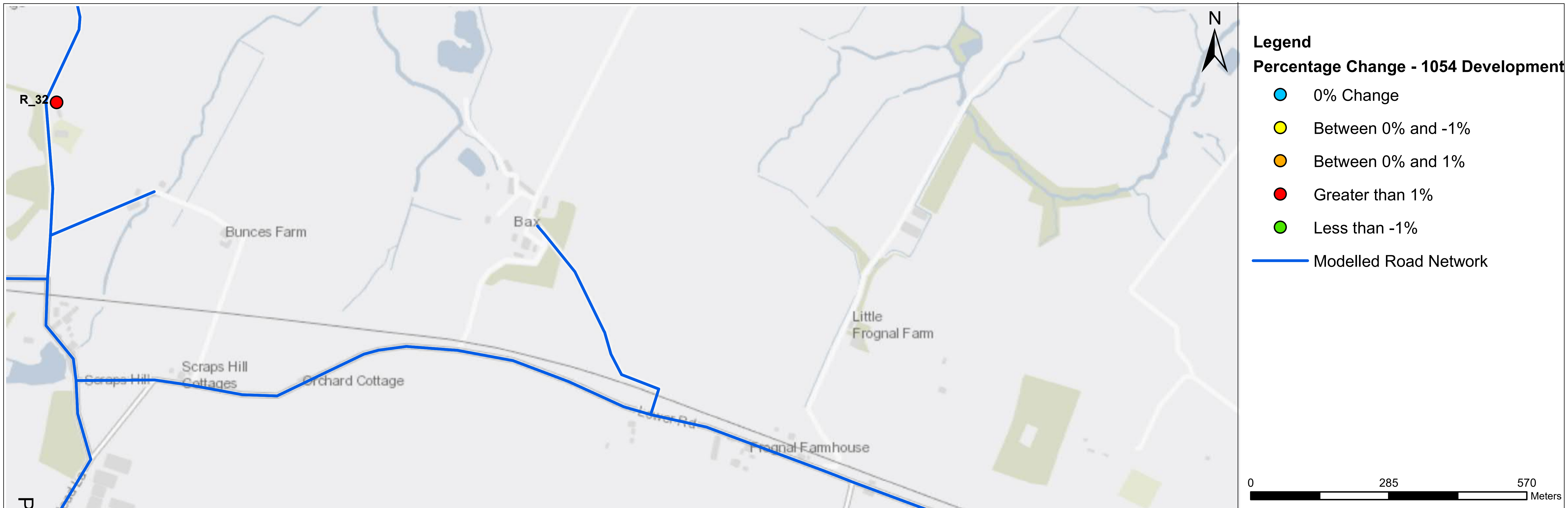
Project

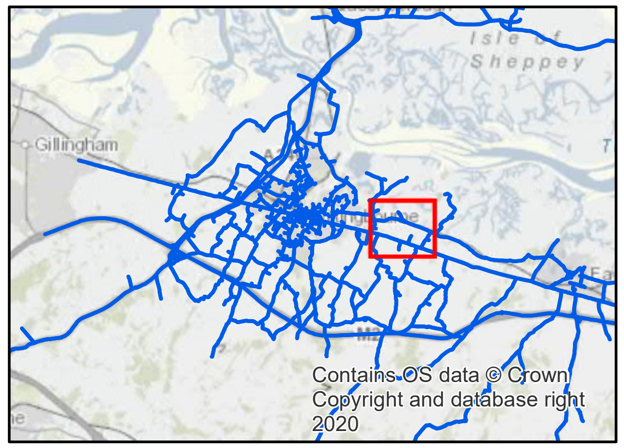
Swale Local Development Plan

Drawing Title

Figure 3d
Percentage change with 1054 Development in place

Scale @ A3	1:15,000	DO NOT SCALE	
Project No.	65201817	Status	S2
BIM No.	119046-SWECO-EGN-000-DR-GS-000XX		





Rev.	Rev. Date	Drawing Suitability	Drawn	Appr'd
P01	25/09/2020	For Information	AA	JS

SWECO

Sweco, City Park Bldg Alexandra Parade, Suite 3/5, City Park, 368 Alexandra Parade, Glasgow G31 3AU Tel: +44 (0) 141 414 1700

Client

Swale Borough Council

Project

Swale Local Development Plan

Drawing Title

Figure 3e
Percentage change with 1054 Development in place

Scale @ A3	1:8,000	DO NOT SCALE	
Project No.	65201817	Status	S2
BIM No.	119046-SWECO-EGN-000-DR-GS-000XX		

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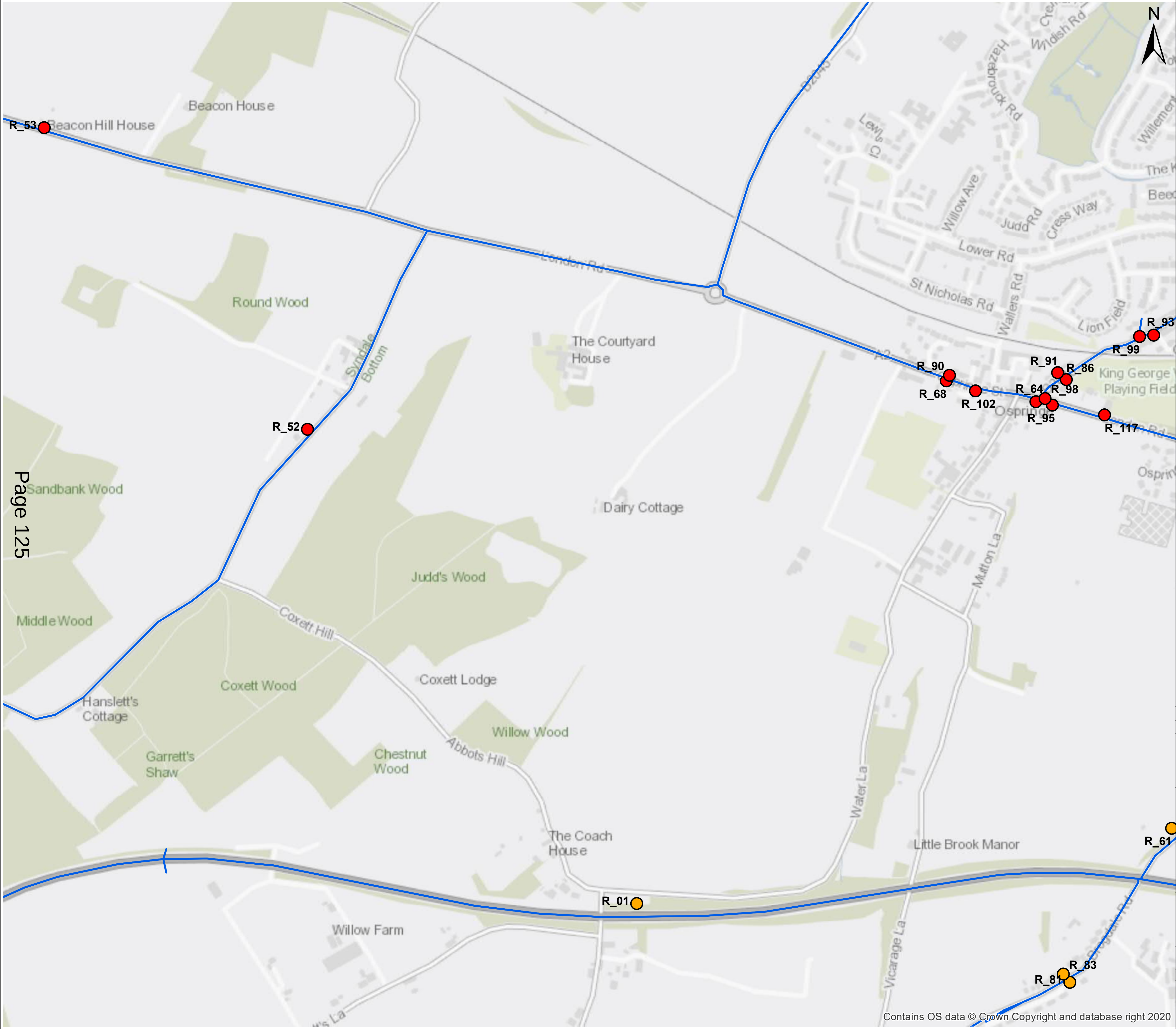
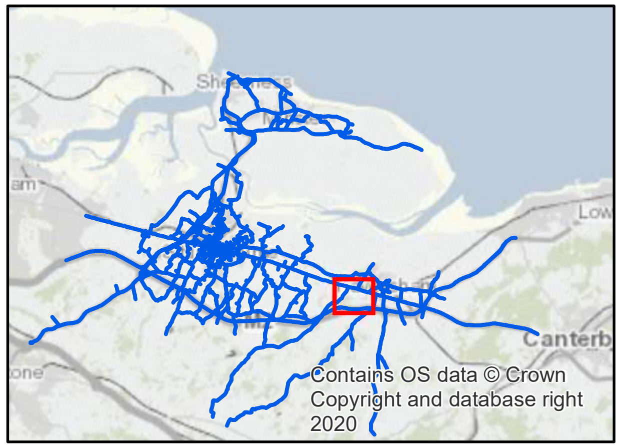


Legend

Percentage Change - 1054 Development

- 0% Change
- Between 0% and -1%
- Between 0% and 1%
- Greater than 1%
- Less than -1%
- Modelled Road Network

0 285 570 Meters



P01	25/09/2020	For Information	AA	JS
Rev.	Rev. Date	Drawing Suitability	Drawn	Appr'd

SWECO

Sweco, City Park Bldg Alexandra Parade, Suite 3/5, City Park, 368 Alexandra Parade, Glasgow G31 3AU Tel: +44 (0) 141 414 1700

Client

Swale BOROUGH COUNCIL

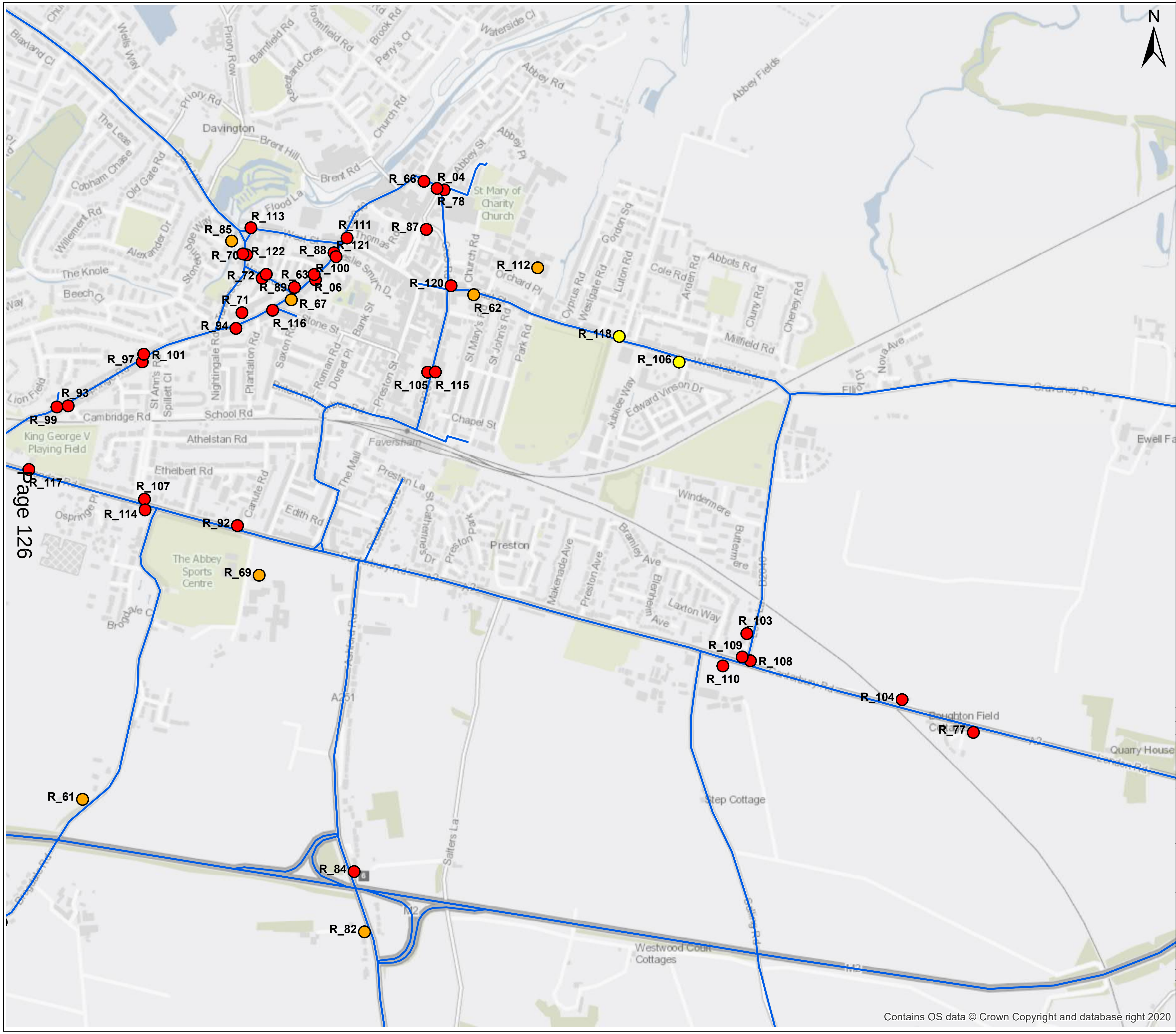
Project

Swale Local Development Plan

Drawing Title

Figure 3f
Percentage change with 1054 Development in place

Scale @ A3	1:8,000	DO NOT SCALE	
Project No.	65201817	Status	S2
BIM No.	119046-SWECO-EGN-000-DR-GS-000XX		

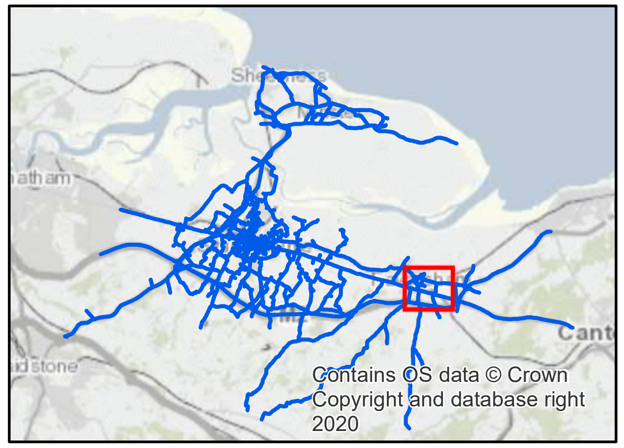


Legend

Percentage Change - 1054 Development

- 0% Change
- Between 0% and -1%
- Between 0% and 1%
- Greater than 1%
- Less than -1%
- Modelled Road Network

0 360 720 Meters



Rev.	Rev. Date	Drawing Suitability	Drawn	Appr'd
P01	25/09/2020	For Information	AA	JS

SWECO

Sweco, City Park Bldg Alexandra Parade, Suite 3/5, City Park, 368 Alexandra Parade, Glasgow G31 3AU Tel: +44 (0) 141 414 1700

Client

Swale

Project

Swale Local Development Plan

Drawing Title

Figure 3g
Percentage change with 1054 Development in place

Scale @ A3	1:10,000	DO NOT SCALE	
Project No.	65201817	Status	S2
BIM No.	119046-SWECO-EGN-000-DR-GS-000XX		

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