



NFCC
National Fire
Chiefs Council



Developing a National Risk Methodology

Definition of Risk Phase 2

Road Traffic Collisions: Draft Report (V2)

17 March 2023

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Executive Summary

- i. The National Fire Chiefs Council (NFCC) in collaboration with Operational Research in Health Limited (ORH) have produced this Draft Report (V2) into the likelihood, consequence and risk of Road Traffic Collisions (RTCs), as part of Phase 2 of NFCC's Definition of Risk (DoR) project.
- ii. The overall objective as defined by NFCC is "to deliver an evidence-based and consistent methodology for determining 'level of risk' that also provides a national benchmarking capability".
- iii. NFCC and ORH worked collaboratively to complete this report, taking a data-driven approach to researching the likelihood and consequence of RTCs, and the influencing factors that underpin the risk of these incidents.
- iv. The project required multiple data sources, which enabled us to define the likelihood of RTCs by type of road. NFCC/ORH determined that it was more suitable to proceed with the Stats19 data (as opposed to IRS data) as it provided a richer data source, both in terms of the number of records and the incident details.
- v. NFCC/ORH analysed the likelihood and consequence of RTCs in terms of the total number, relative proportions and annual rates per kilometre of road. The Stats19 data fields were then examined in relation to the effect of incidents on people, vehicles, the road network and potentially the responding FRS. Different metrics for classifying incident consequence were tested before finalising an approach that gave a suitable breakdown of high, medium or low consequence incidents.
- vi. From the analysis it can be seen that road class, type, speed and the urban/rural category all affect likelihood and consequence to varying extents, and that the combination of these factors is key. Therefore a four-factor categorisation has been applied to every segment of road in determining the final likelihood, consequence and risk values.
- vii. Unlike the Dwelling Fire methodology, the statistical modelling of the relationships between demographic factors for home driver LSOA and the likelihood and consequence of RTCs did not produce any pertinent findings.
- viii. While the research and background analysis for RTCs was as complex as for Dwelling Fires, the resultant methodology for FRSs is much simpler in terms of the number of data sources and steps. However, a reasonable level of GIS expertise will be required to process the data.
- ix. This risk approach should be viewed as a way to categorise the road network in terms of the expected profile of RTCs, with the tacit understanding that there will be local variations which may require specific interventions from the FRS.
- x. The immediate next step is for NFCC to undertake a consultation exercise with FRSs on this Draft Report document and subsequently publish the findings to all FRSs. Other future developments could include benchmarking capability and potentially, in the longer term, the production of a digital toolkit for FRSs.

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1 Introduction

1.1 The National Fire Chiefs Council (NFCC) in collaboration with Operational Research in Health Limited (ORH, see Appendix A1) have produced this Draft Report (V2) into the likelihood, consequence and risk of Road Traffic Collisions (RTCs), as part of Phase 2 of NFCC's Definition of Risk (DoR) project.

Background

1.2 Working with fire and rescue services (FRSs), NFCC committed to establishing a national definition of risk and developing a strategic community risk management framework to enable the conceptualisation of that definition.

1.3 To enable these products to have the required impact, they need to be supported by a risk assessment methodology (or methodologies) to facilitate consistent application of the strategic framework to risk management planning. This should enable FRSs to focus their resources on activities where they will have the greatest impact on reducing risk and vulnerability within their local communities.

1.4 As a part of Phase 1, the Definition of Risk project has delivered:

- A national definition of risk ("A combination of the likelihood and consequences of hazardous events").
- A strategic risk management framework (see Figure 1-1), which shows how the DoR fits into a typical risk assessment methodology.
- A glossary of risk-related terms.

1.5 Phase 2 will help to pave the way towards the ambition of delivering a digital solution for assessing UK FRS-related risk to improve the safety, health, well-being, and economic prosperity of communities. To do this, the components of the framework require further detailed development to enable consistent interpretation and application.

Scope

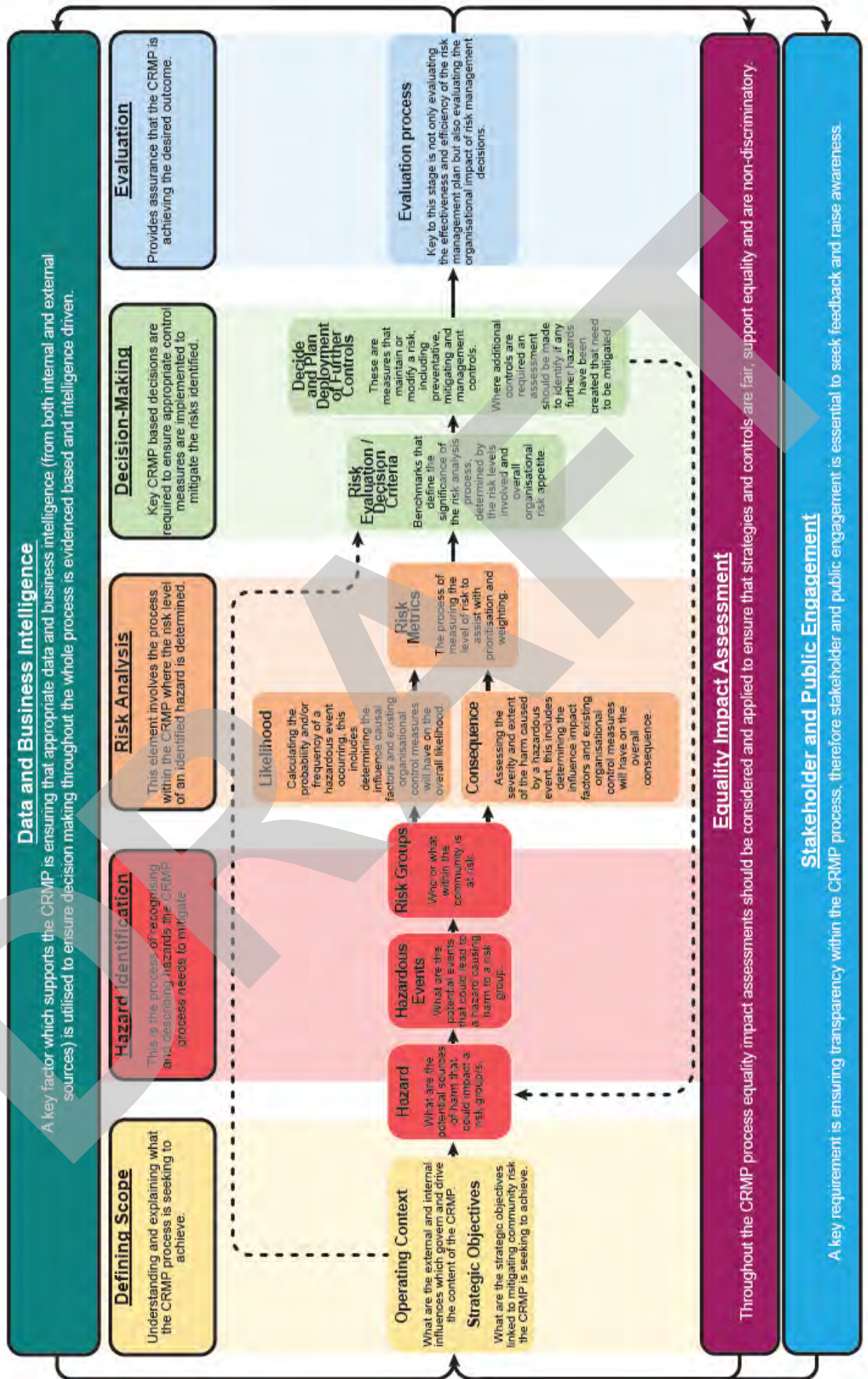
1.6 The overall objective as defined by NFCC is "to deliver an evidence-based and consistent methodology for determining 'level of risk' that also provides a national benchmarking capability across a central hazardous events and risk group database".

1.7 NFCC set out the following stages for completing the project (see initial scope in Figure 1-2):

1.8 **Stage 2.0: Pre-commencement** = Planning for the project, setting data expectations, etc.

- **Stage 2.1: Proof of Concept** = Developing a methodology to assess Dwelling Fires and planning how this would be applied to other types of hazardous events.
- **Stage 2.2: Tollgate 1** = Once initial development is complete the project board will determine if the deliverable meets the requirements and make a decision on whether to proceed with full development.

Figure 1-1: NFCC Community Risk Management Planning – Strategic Framework



- **Stage 2.3: Full Assessment** = Application of Domestic Dwelling Fire (DDF) methodology across broader hazards and associated hazardous events.
- **Stage 2.4: Tollgate 2** = NFCC review/sign off – final products to be signed off by the project and programme board.

1.9 In January 2022, NFCC and ORH produced a report into the Proof of Concept for the DoR project, focusing on the likelihood and consequence of Dwelling Fire incidents (Stage 2.1). There is further information in the DDF report on the scope, background and rationale for the DoR.

1.10 This Draft Report is for the **Full Assessment** (Stage 2.3) with the focus on RTCs. ORH is working with NFCC to develop the risk framework for Other Building Fires (OBFs), while NFCC is considering this for other hazardous events such as flooding and wildfires.

About this Document

1.11 This report sets out an overview of the process that NFCC/ORH have taken in developing an appropriate methodology for RTCs. With the objective of conciseness, and following feedback from the DDF report, not all elements of the research have been included; instead the focus is on the key findings and recommended process.

1.12 For an FRS user who is looking to apply the methodology, this can be found in Section 4, however the background to the approach (Section 2) and key analysis findings (Section 3) may provide useful context. A summary is provided at the beginning of each section and we have provided a glossary of key terms (see Appendix A2).

Figure 1-2: Original Scope

Proof of Concept

Using “dwelling fires” as the hazardous event and incorporating people and place (type of dwelling and construction type if attainable) as the risk groups to:

- Identify influencing factors or characteristics that impact on risk level
- Develop a methodology that determines the risk metric (value/score) against each of the influencing factors, taking into account likelihood and consequence
- Provide an explanation of how this risk metric can be translated into an evaluation of risk [i.e. high / medium / low] allowing for a national comparison
- Develop a set of national criteria that define the significance of the risk metric score
- The method used to achieve the risk criteria for each risk metric, must be detailed for approval.
- The use of these national criteria and descriptors should enable the risk metric to be translated into an evaluation of risk (i.e. high, medium, low), allowing a national comparison of building types, hazardous events, and risk groups.

Data

- Data sets required for the PoC phase must be identified in advance in order for access to be acquired
- As a part of PoC delivery data sets required to extend this beyond dwelling fires must be identified within two weeks of project commencement

Requirements for the Proof of Concept

- The Methodology used must be scalable so that it can be used at a local level (individual Fire Service), regionally and nationally
- Technical descriptions of all the properties of the methodology must be provided
- There must be a clear explanation of any limitations to the approach and / or any gaps in data that prevented completion (data that would enable full use of the methodology)
- Comprehensive guidance needs to be provided for end users detailing how the methodology could be applied locally
- A robust plan to outline approach to final delivery and how you would apply this methodology across other hazardous events, including a detailed gap analysis
- The work produced needs to be translatable into a digital format

Tollgate 1

Once initial development is complete the project board will determine if the deliverable meets the requirements and make go/no go decision to proceed with full development. If the board decides not to continue the contract will be terminated at this point.

Final Delivery

This will cover the same requirements as proof of concept but to be covering a longer list of hazardous events (beyond domestic dwelling fires) to be agreed in collaboration with the supplier and our local SMEs

Tollgate 2

- NFCC review / sign off – Final products to be signed off by Project & Programme board.
- Products to be signed off and adopted by NFCC.

Implementation support requirements

- The product should be able to be implemented in all UK FRS, agnostic of administration, geography, workforce etc.
- The product should be scalable and useable at a national level to inform discussions around national processes such as inspection programmes
- Actively signpost the Project Team to any other guidance, legislation, best practice, etc. they might not be aware of
- Further to the above, weekly meetings with the project manager to discuss progress and resource requirements will also be required

2 Approach

NFCC and ORH worked collaboratively to complete this report, taking a data-driven approach to researching the likelihood and consequence of RTCs, and the influencing factors that underpin the risk of these incidents.

The project required multiple data sources, which enabled the likelihood of RTCs by type of road to be defined. The consequence of RTCs was also based on the historical data for incidents, taking into account the potential impact on individuals, the road network and the FRS. These could be combined to develop an overall risk metric for RTCs by road type.

NFCC/ORH determined that it was more suitable to proceed with the Stats19 data due to some inconsistencies in RTC reporting by FRS in the IRS data, and that the Stats19 data provided a richer data source, both in terms of the number of records and the incident details.

NFCC/ORH examined the Stats19 data fields relating to the effect of incidents on people, vehicles, the road network and potentially the responding FRS. Different metrics for classifying incident consequence were tested before finalising an approach that gave a suitable breakdown of high, medium or low consequence incidents.

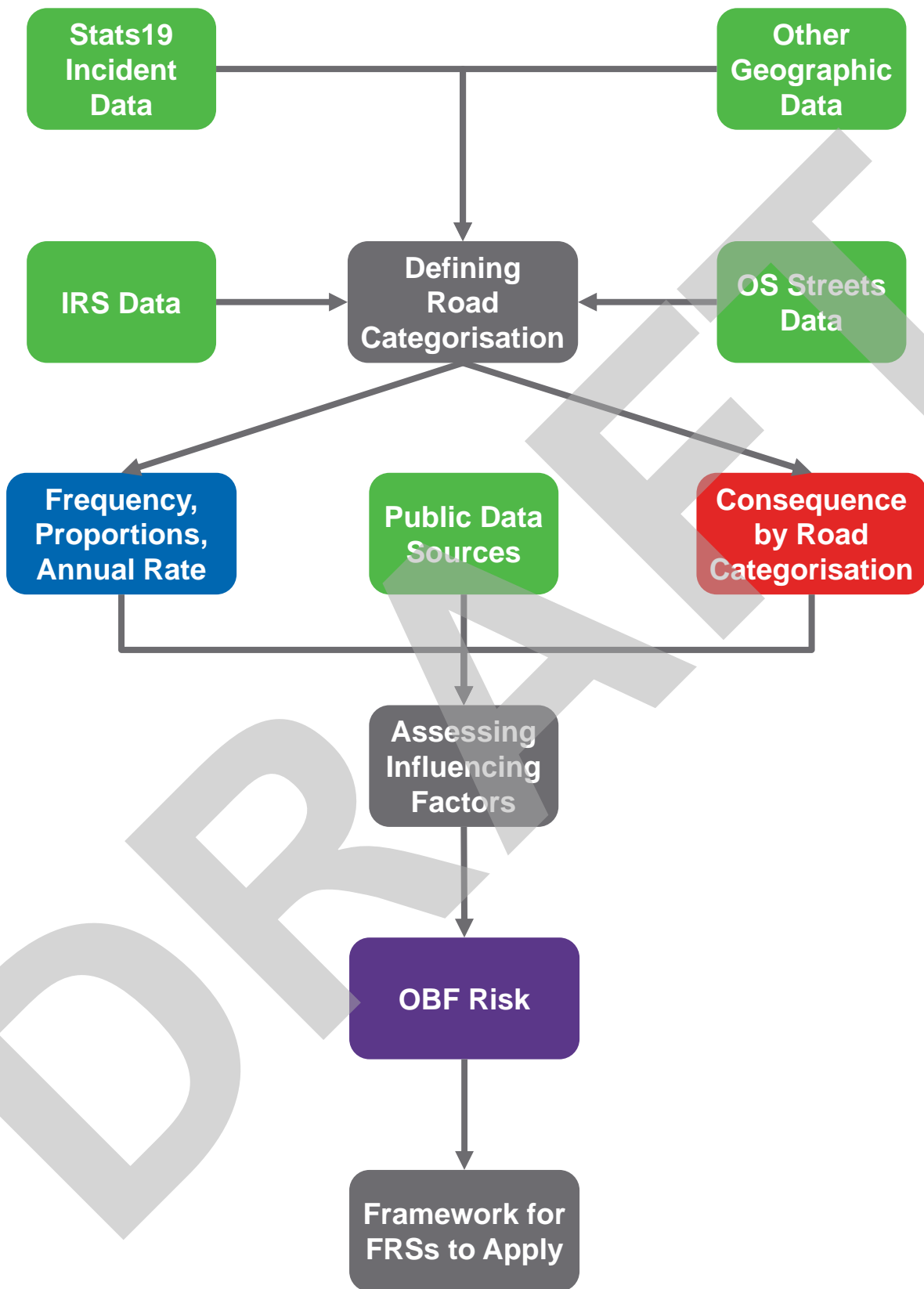
Data analysis and statistical modelling were then used to assess the influence that demographic factors had on the likelihood and consequence of RTCs.

In addition to detailing the process that FRSs can follow to measure risk in their local area, consideration has been taken of the potential gaps, opportunities for enhancing the approach and the next steps toward delivering a consistent methodology for UK FRSs.

Background

- 2.1 NFCC/ORH have conducted a data-driven and wide-ranging national study into the likelihood and consequence of RTCs. This required a collaborative and iterative approach, drawing on the knowledge of SMEs at NFCC and the technical experience of ORH.
- 2.2 In conducting this research, numerous options were discussed, trialled and evaluated, before being either discarded or taken forward. The approach set out in this report is the product of that research, however is not regarded as the finished article. Instead, it is hoped that it is a framework that will be refined over time as FRSs adopt the methodology locally and further research can be conducted around the national picture.
- 2.3 With the objective of delivering an evidence-based and consistent methodology for determining 'level of risk', the project phases described below summarise the approach taken and how this has resulted in a set of recommendations to FRSs.
- 2.4 The project required multiple data sources, which enabled the likelihood of RTCs by type of road to be defined. The consequence of RTCs was also based on the historical data for incidents, taking into account the potential impact on individuals, the road network and the FRS. These could be combined to develop an overall risk metric for RTCs by road type, which was then modelled against potential influencing factors (see RTC Methodology Overview in Figure 2-1). The overall output is an approach that FRSs can apply in their own local area.

Figure 2-1: Overview of RTC Methodology



Key:

Data / Input

Likelihood Calculation

Consequence Calculation

Assessment Process

Data Collection

2.5 The data collection for this project focused on the following areas:

- IRS data for a six-year period (1 April 2014 to 31 March 2020) for all FRSs in England (see Appendix **A3**).
- Stats19 RTC incident data for the corresponding sample period (see Appendix **A4**). This data is publicly available from the Department for Transport (DfT), however DfT provided an additional field for *Driver Home LSOA* to NFCC/ORH, which enabled further analysis on RTC locations and potential influencing factors.
- National data from a range of publicly available data sources at Lower Super Output Area (LSOA) or Unique Property Reference Number (UPRN) level, which would all be considered as potential influencing factors (see Appendix **A5**).
- Ordnance Survey (OS) provided its Highways data for Great Britain (see Appendix **A6**) to NFCC/ORH, which enabled mapping of the entire road network and exploration of how this was linked to the likelihood and consequence of RTCs.
- NFCC acquired posted road speed limits data from Basemap, which could then be matched to the OS Highways data to enable road speed to be evaluated as a factor.
- Office of National Statistics (ONS) data on the urban/rural classification of LSOAs.

2.6 The Home Office provided the **IRS data** for all incident types, however only RTCs have been assessed in this report. While the incident data only covers FRSs in England, the approach developed in this report should be directly applicable to all UK FRSs.

2.7 DfT provides open access to **Road Safety Data (Stats19)** from 1979 to 2021 on its website: <https://www.data.gov.uk/dataset/cb7ae6f0-4be6-4935-9277-47e5ce24a11f/road-safety-data>. The definition of this data from DfT is as follows:

These files provide detailed road safety data about the circumstances of personal injury road collisions in Great Britain from 1979, the types of vehicles involved and the consequential casualties. The statistics relate only to personal injury collisions on public roads that are reported to the police, and subsequently recorded, using the STATS19 collision reporting form.

2.8 For this project, NFCC/ORH used three tables from the freely accessible datasets (see Appendix **A4**):

- **Accidents:** Information on the RTC incidents, which provided the primary key. Includes data on location, date/time and road conditions.
- **Vehicles:** Records for every vehicle that was involved in the accidents (could be multiple records per accident), including the age, type and resultant impacts on the vehicle from the accident.
- **Casualties:** Information on the people involved in the accidents (if they were casualties), including their age and role in the accident (passenger or driver).

2.9 While the Stats19 data goes back as far as 1979, data for the same six-year period as the IRS data (1 April 2014 to 31 March 2020) was used to enable comparison between the data sources. From an analytical perspective, there may be value in using a wider date range (say,

2011 to 2021), however going back too far might introduce some distortion in trends. For this project, Stats19 data for England and Wales was used as there were some minor data issues involving the merger of the Scottish police services.

- 2.10 The potential **influencing factors** can be considered as one of three datasets:
- **Place:** Data on the local area (typically LSOA) that gives insight into the local environmental, economic and social factors. Data sources include census reporting, the Indices of Multiple Deprivation (IMD) and the Office of National Statistics (ONS).
 - **Property:** Data relating to the individual property, such as its building type, condition and occupancy. The main data sources are OS and Energy Performance Certificates (EPC); property data is at UPRN level.
 - **People:** Data on households or individuals in terms of their behavioural patterns, which could include factors relating to health, employment and income. As established during the DDF report, NFCC/ORH did not find any freely available data at national level, but recognise that this would add to the model.
- 2.11 The **OS Highways data** (see Appendix A6) includes many fields of information for every segment of road in the UK, with over 6.5 million records. The key data from OS Highways that NFCC/ORH used for this project included the TOID (the OS identifier for the road segment), road length, form of way (the road type, for example, junction or single carriageway) and the road class (A road, B road, etc).
- 2.12 The Highways data is available to all FRSs through the Public Sector Geospatial Agreement (PSGA), and further information is available on the OS website: <https://beta.ordnancesurvey.co.uk/products/os-mastermap-highways-network-roads>.
- 2.13 For this project, NFCC had to purchase **road speed data** for the UK from Basemap: <https://basemap.co.uk/speed-data>. The dataset provided the posted road speed limit for every OS TOID (based on 2022 data from Basemap, which is updated on an annual basis), enabling this information to be linked to every road segment on the OS Highways data. Basemap also hold data for the average traffic speed by road, however this would have incurred additional cost and was excluded from this project.
- 2.14 In the near future, OS intends to include road speed as part of its wider project to bring data sources into the National Geographic Database (OS NGD): <https://www.ordnancesurvey.co.uk/business-government/new-data-access-methods>.
- 2.15 **ONS urban/rural data** is freely available by LSOA online: <https://www.ons.gov.uk/methodology/geography/geographicalproducts/ruralurbanclassifications/2011ruralurbanclassification>. Each road segment was assigned to an LSOA and therefore its urban/rural status determined according to ONS. For the analysis, the ONS categories were simplified into four groups from most urban to most rural (see Section 4).

Data Analysis

- 2.16 The initial intention was to combine the IRS and Stats19 data to create a joined-up dataset with all RTCs as recorded by fire services enhanced with additional fields from the DfT data, however there is no automatic link between the two datasets. DfT has undertaken exploratory analysis to create a link based on time and location, but this was only successful for approximately 70% of RTCs in the IRS data in 2021. NFCC/ORH therefore evaluated the IRS

and Stats19 data sources to decide which would be more appropriate for determining risk of RTCs.

2.17 The IRS data is sourced from FRSs, so should provide a more direct representation of the RTC challenge to services. However some challenges with the data were noted:

- Using the *IsRTC* flag to identify relevant incidents in IRS, the rate of RTCs per head of population highlighted some potential discrepancies in reporting. For example, the rate in Norfolk was nearly three times higher than in Suffolk, which are comparable services in terms of their underlying geography, station profile and road network.
- The *Special_Service_Type_Description* field was used to explore the potential severity of RTCs in IRS, however there are significant variations in the subtypes that FRSs use to record these incidents. For example, some FRSs use 'make scene safe' while others use 'make vehicle safe' to presumably describe the same type of intervention. In addition, the proportions by subtype vary hugely between FRSs, which suggests that this categorisation is being applied differently across the country (see Appendix B1).

2.18 NFCC/ORH determined that it was more suitable to proceed with the Stats19 data due to the issues with the IRS data and the following benefits of the Stats19 data:

- In England, the number of RTCs recorded in Stats19 was four times higher than in IRS for the six-year sample (754,3262 compared to 182,158). Although this will include more minor incidents, the geographic distribution is richer, leading to more robust analysis.
- The Stats19 data includes records for Wales, which adds more depth to the analysis (Scotland incidents are in Stats19 as well, however an issue with the data quality prior to the merger with Police Scotland was noted).
- There is much greater detail on the people and vehicles involved in the incident in Stats19 compared to IRS, which is helpful for classifying consequence.
- There is also a degree of variation in the rates per head of population in the Stats19 data, however the range is smaller than in IRS and aligned to expectations (for example, higher in urban areas with more commuters).

2.19 Concern was raised that using Stats19 data would encompass too many RTCs, including minor incidents that an FRS would not be required to attend. While a valid concern, there are two important counterpoints here:

- In defining the consequence of RTCs in Stats19 data (see below), only incidents that met a certain threshold were included, so the least impactful incidents were removed from the analysis.
- If there are locations with lots of minor incidents, this may be indicative of somewhere that could soon have a major incident. For example, a crossroads with several slow-speed collisions might suggest an underlying issue with the junction and that a more significant collision could occur.

2.20 The analysis that NFCC/ORH conducted in this project was focused on the Stats19 incidents and where these occurred on the road network. To do this, a 20-metre buffer was created around all road segments on the OS Highways data, the Stats19 incident coordinates plotted, and an OS TOID to every incident geocoded. This enabled analysis of the frequency of incidents by road length according to the information about the road; class, type, speed, etc.

Describing Consequence

- 2.21 One of the major decision-making processes in the project was determining an appropriate method for classifying RTCs according to the severity or consequence of an incident.
- 2.22 This was a simpler process than for Dwelling Fires and OBFs as it was appropriate to restrict the impacts to those recorded in the Stats19 data (unlike the OBF methodology that sought to include perceived life risk factors as well as measurable outcomes from incidents).
- 2.23 For RTCs, NFCC/ORH examined the Stats19 data fields relating to the effect of incidents on people, vehicles, the road network and potentially the responding FRS. Different metrics for classifying incident consequence were tested before finalising an approach that gave a suitable breakdown of high, medium or low consequence incidents.

Modelling Influencing Factors

- 2.24 Random Forest Modelling and statistical analysis was used to identify which factors are potentially good indicators for the likelihood and consequence of RTCs.
- 2.25 Unlike the previous modelling of Dwelling Fires and OBFs, the work focused on the home driver location as opposed to the incident location. This is based on the concept that the underlying people/place data for where an RTC occurs is not expected to influence risk, but that where the driver(s) comes from may be important.
- 2.26 Random Forest Models calculate a score by comparing historical incident demand and home driver locations for RTCs with many different combinations of base data variables (see Figure 2-2 for a description of how Random Forest Models were applied in the DDF report).
- 2.27 This process was undertaken for LSOA data, as this was the most granular information on home driver locations that DfT could provide. NFCC/ORH also modelled the factors that influence the consequence of RTCs, again using the Random Forest approach. The output was a long list of ranked factors that contribute to the likelihood and consequence of RTCs.

Gap Analysis

- 2.28 Throughout the project, NFCC and ORH have identified several areas where enhancements could have been made. Many of these are around data availability, both for FRS data and other sources. The key gaps are set out below, however this list is not exhaustive; as FRSs adopt the framework approach at local level, more issues are likely to become apparent. Some of the gaps were previously highlighted in the report for Dwelling Fires.

Incident Data

- 2.29 Although **IRS data** is centrally held by the Home Office, this is not readily accessible to NFCC or individual FRSs. If there was an established data link open to all FRSs, this would provide the opportunity for services to assess risk in neighbouring areas and conduct benchmarking.
- 2.30 A question was raised in the DDF report around whether the **incident types in IRS** were still the most appropriate (this was more apparent for the analysis of OBFs, where address data has revealed some instances of potential crossover between the different types of primary fires).

Figure 2-2: Random Forest Modelling (Dwelling Fire Methodology)

ORH used Random Forest Modelling and statistical analysis to identify which factors are good indicators for the likelihood of each of the different risk categories.

Random Forest Models (RFMs) calculate a risk score by comparing historical incident demand levels and locations with many different combinations of base data variables.

With this comparison, the model determines relationships between variables and the demand pattern. Each variable is ranked based on its individual contribution to the likelihood for the incident category, enabling the most important factors to be identified.

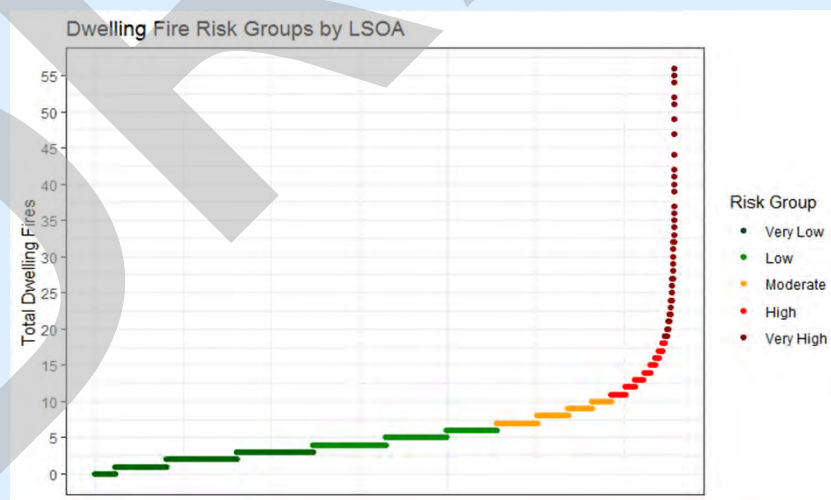
An area's final value is an aggregation of the individual variables; the modelling can quantify relationships, but not which characteristics cause incidents. An advantage of this approach is that if you can estimate how a factor in an area may change, you can identify how risk may be affected. This could especially be key to prevention and protection work.

The aim of the RFM was to predict the risk level of every LSOA in England (as opposed to a precise number of incidents).

The principal was to use machine learning techniques to identify significant patterns within the data that enable us to establish which factors are most closely linked to risk:

- **Concept:** Form 'decision trees' to ask the most pertinent questions that define risk and add information at each step.
- **Model Setup:** We 'trained' the model using a sample of data (80% of LSOAs), using machine learning to identify best questions to ask. After the sampling, the model was validated against the remaining 20% of LSOAs. This was repeated five times for completeness.
- **Outputs:** Predicted risk level by LSOA and key characteristics that contribute to risk.

For each incident type, ORH clustered the LSOAs in England based on the number of incidents. This was conducted using a clustering algorithm to select appropriate groups.



The key objective of the RFM is to identify the key characteristics that LSOAs in a risk group share with each other and the importance of these factors in predicting the level of risk.

The output of the RFM for each incident category is a prediction of the risk level for all LSOAs in England, based on the set of characteristics identified as being the most important for classifying the level of risk.

- 2.31 As highlighted above, there seem to be some discrepancies with the frequency of RTCs recorded by FRSs (using the *IsRTC* flag in IRS) and more notably the **subtype of RTC incidents** based on the *Special_Service_Type_Description*.
- 2.32 The Stats19 data has around four times as many records as IRS for the same sample period, which is explained by the recording approach. In theory, every incident in IRS should have a corresponding record in Stats19, assuming it has been reported by an individual or police service. Further work to **align the IRS and Stats19 datasets** for historical records, and data sharing agreements to automate this for future incidents, would provide greater opportunities for exploring RTC incident data in more detail.
- 2.33 For this project NFCC/ORH focused on six years of incident data from Stats19, however this information is available from 1979 to 2021 and is updated regularly. There could be merit in **extending the sample period for Stats19** to include more data in the analysis of risk.

Road Data

- 2.34 The OS NGD project will hopefully bring together multiple datasets into a single service that FRSs can access through the PSGA. In particular, the inclusion of road speed limit data will avoid any requirement to purchase this data from a separate source.
- 2.35 If available, information on the average traffic speed for each road segment could be a valuable addition to the analysis. This would provide definition in terms of classifying roads by expected speed and understanding the relationship with RTC prevalence. On a similar note, data for traffic flows (ie, road usage) by segment of road would enhance the analysis greatly.

Other Data

- 2.36 The potential gaps in other data sources are the same as previously listed in the report for Dwelling Fire incidents, including Exeter data for granular health and vulnerability information, lifestyle data at household level, and updated data from the 2021 UK Census.
- 2.37 There are also opportunities to establish links with other data providers and the ongoing NFCC work into **Economic and Social Value** of the UK FRS Project.
- 2.38 There is a caveat here around linking the other data sources to the IRS or Stats19 incident data. As discussed, it is more appropriate to consider the home driver location (rather than incident location) when considering potential influencing factors. In this study, data was limited to home driver LSOA, although DfT holds data for postcode – FRSs might be able to access this more granular information locally.

Further Considerations

- 2.39 If it were possible to link the IRS and Stats19 data, this would provide an opportunity for **assessing consequence** in relation to the response provided by the FRS. This could include the number of units assigned, equipment used or duration of the incident, all of which could be appropriate proxies for the overall consequence of the incident.
- 2.40 NFCC has recently completed work on the re-clustering of **family groups** to provide a helpful method for comparing FRSs, and how these could be set to categorise FRSs in an appropriate manner; see: <https://www.ukfrs.com/community-risk/family-groups-re-clustered-2022>. As these are adopted, they could provide a useful tool for benchmarking, or even a more suitable level for modelling likelihood and consequence (rather than by FRS or nationally).

3 Key Findings

NFCC/ORH analysed the likelihood and consequence of RTCs in terms of the total number, relative proportions and annual rates per kilometre of road, using four key data points relating to the category of road.

The likelihood of RTCs generally increased on major roads, those with higher speed limits and in urban areas.

NFCC/ORH determined consequence by using ten fields from the Stats19 data, including casualty severity and number of vehicles. The proportion of High consequence RTCs appears to increase with higher speed limits. In an opposite result to likelihood, the consequence of RTCs increases when moving from urban to rural areas.

From the analysis it can be seen that road class, type, speed and the urban/rural category all affect likelihood and consequence to varying extents, and that the combination of these factors is key. Therefore a four-factor categorisation has been applied to every segment of road in determining the final likelihood, consequence and risk values.

Unlike the Dwelling Fire methodology, the statistical modelling of the relationships between demographic factors for home driver LSOA and the likelihood and consequence of RTCs did not produce any pertinent findings.

Approach

Road Categorisation

- 3.1 The analysis that NFCC/ORH conducted in this project was focused on the Stats19 incidents and where these occurred on the road network. To do this, a 20-metre buffer was created around all road segments on the OS Highways data, the Stat19 incident coordinates plotted, and an OS TOID to every incident geocoded. This the likelihood and consequence of incidents to be assessed according to the information about the road from the OS highways data, Basemap speed data and ONS urban/rural classification.
- 3.2 The OS Highways data includes data for all roads and paths in England, Wales and Scotland, which equates to more than 1.6 million kilometres of roads. For this analysis, only England and Wales were selected – to match the Stats19 data – and tracks, restricted access roads, paths, etc, were removed to focus on a dataset of 367,431 kilometres of roads.
- 3.3 The number of incidents by road length were analysed, and it was found that there were four key data points relating to the category of road:
 - Road Class (A Road, Motorway, etc)
 - Road Type (single carriageway, junctions, etc)
 - Road Speed (posted speed limit)
 - Urban/Rural (ONS classification, simplified to four categories)

3.4 In addition to these individual factors, NFCC/ORH assessed how these combined in order to understand the relationships with likelihood and consequence of incidents.

Incident Selection

3.5 As discussed in the Data Collection (see Section 2), the Stats19 data encompasses all RTCs reported to the police, including some very minor collisions, and therefore gives a much higher number of incidents than the IRS data. To determine a more appropriate set of incidents to analyse, NFCC/ORH used the *Incident Severity* flag in Stats19 as the starting point.

3.6 Any incident that was classified as 'fatal' or 'serious' in Stats19 was automatically included (around 22% of RTCs). In addition, other incidents that met certain criteria were included, for example, those involving multiple vehicles/casualties, larger vehicles or incidents on trunk roads. This also formed a key part of the discussion around categorising the consequence of incidents.

3.7 Following this process, NFCC/ORH used a dataset of 389,613 RTC incidents for the six-year sample period, an average of 64,936 RTCs per year. For comparison, there were 182,158 RTCs recorded in IRS data across the same period.

Likelihood

3.8 Across the entire data sample, the *rate* of incidents is 176.7 RTCs per 1,000 kilometres of road per year (64,936 annual RTCs / 367,431 kilometres of road * 1,000).

3.9 NFCC/ORH analysed how this varies by category of road and the following key points are noted (see Figure 3-1):

- By **Road Class**, RTCs occur much more frequently per km on Motorways, Primary A Roads and A Roads than other classifications.
- Roundabouts and Traffic Islands stand out in terms of **Road Type**. Over 90% of roads are Single Carriageways, which dominates this data breakdown.
- Roads with a **Speed Limit** of 40, 50 or 70 miles per hour (mph) have higher rates of RTCs per km, which is potentially linked to the Road Class. The rate is lowest on 60mph roads – this is a factor of the large number of national speed limit roads (particularly in rural areas) where the usage is very low, so incident rates are below average on this measure.
- By **Urban/Rural Category** there is a clear pattern with incident frequency increasing from the most rural to the most urban classification. Again, this is probably linked to the road usage in these respective areas compared to the total length of roads.

3.10 To explore these findings in more detail, NFCC/ORH analysed the frequency by combining the categories, for example, how the rate of RTC varies by Road Class and Speed Limit (see Appendix B2). Some of these combinations have very small lengths of road, so some caution needs to be applied. Notable findings include the following:

- Roundabouts and junctions on major roads have the highest rates of incidents per km when considering Road Class and Road Type in combination (see B2a).

Figure 3-1: Likelihood Analysis by Road Category

Road Class (OS 'Route Hierarchy')

Road Class	Road Length (km)	Annual Incidents	Incidents per 1,000 km
Motorway	7,299	4,355	596.7
A Road Primary	24,039	13,218	549.8
A Road	22,725	13,226	582
B Road	23,613	7,382	312.6
Local Road	140,281	11,020	78.6
Minor Road	138,703	15,209	109.6
Local Access Road	6,023	375	62.2
Secondary Access Road	4,749	152	32
Total	367,431	64,936	176.7

Road Type (OS 'Form of Way')

Road Type	Road Length (km)	Annual Incidents	Incidents per 1,000 km
Dual Carriageway	22,777	12,161	533.9
Enclosed Traffic Area	726	91	125.1
Roundabout	2,031	2,218	1091.6
Single Carriageway	333,617	44,878	134.5
Slip Road	2,764	1,711	619.3
Traffic Island Link	952	649	681.6
Traffic Island Link At Junction	3,978	3,108	781.2
zOther	587	121	205.4
Total	367,431	64,936	176.7

Speed Limit (Basemap)

Road Speed	Road Length (km)	Annual Incidents	Incidents per 1,000 km
20	40,300	8,102	201
30	159,251	28,539	179.2
40	15,285	6,237	408.1
50	7,683	3,268	425.3
60	128,906	10,941	84.9
70	16,006	7,849	490.4
Total	367,431	64,936	176.7

Urban/Rural Category (Derived from ONS Data)

UR Description	Road Length (km)	Annual Incidents	Incidents per 1,000 km
U1 - Urban conurbations	64,532	21,954	340.2
U2 - Urban towns	113,632	23,502	206.8
R1 - Rural towns	49,288	6,492	131.7
R2 - Rural villages	139,979	12,987	92.8
Total	367,431	64,936	176.7

- Although there is a relatively small amount of 20mph A Roads (Primary and Other), this combination has a disproportionately high rate of RTCs (see **B2b**).
- For all Speed Limits, the frequency increases from the most rural to the most urban classification (see **B2f**).

- 3.11 The next step was to evaluate this as a four-factor categorisation (class, type, speed and urban/rural) for all road segments in England and Wales. There are over 900 categorisations, although some of these might occur only once or twice. For categorisations with less than 50km of road in the OS Highways data, these were grouped based on Road Type and Urban/Rural as these are the most two factors for assessing likelihood.
- 3.12 The most common road categorisation is *Minor Road|Single Carriageway|60|R2* (see Appendix **B3**). There are 73,910 kilometres of this road categorisation, which represents 20% of the roads included in the analysis. The likelihood of incidents on these roads (34 RTCs per 1,000km per year) is relatively low compared to the national average (177 RTCs per 1,000km per year).
- 3.13 Of the 200+ categorisations with more than 50km of roads, the highest frequency of RTCs is recorded for *A Road|Dual Carriageway|20|U1*. For the 71km of this categorisation, there was an average of 186 RTCs per year (or 2,631 RTCs per 1,000km per year).

Defining Consequence

- 3.14 NFCC/ORH examined the Stats19 data fields relating to the effect of incidents on people, vehicles, the road network and potentially the responding FRS. As the data was based on Stats19 and therefore not directly related to FRS incidents, it was important to consider a range of suitable proxies for defining the consequence, testing the different metrics at each stage.
- 3.15 The starting point was the Stats19 definition of severity; 'fatal', 'serious' or 'slight'. This corresponds to the most severely affected casualty that was involved in the RTC. All fatalities were immediately classed as High consequence, while some 'slight' incidents were excluded from the analysis depending on other measures.
- 3.16 The next step was to determine a suitable metric for classifying RTC incidents as high, medium or low (H/M/L) consequence based on the Stats19 fields. Ten data fields were used:

Accident-level Classification	Vehicle-level Classification
Incident Severity	Vehicle Type
Number of Vehicles	Skidding and Overturning
Number of Casualties	Hit Object in Carriageway
Road Classification	Hit Object Off Carriageway
Trunk Road	Vehicle Leaving Carriageway

- 3.17 Thresholds were set for H/M/L for the ten Stats19 data points (see Figure 3-2), so that each incident would have ten H/M/L classifications (one for each field). From this, the highest value is taken forward as the overall incident consequence; for example, if the value for Number of Casualties is *High* and all other values are *Low*, this would be classified as a *High* consequence incident overall.

Figure 3-3: Consequence Analysis by Road Category

Road Class (OS 'Route Hierarchy')

Road Class	Road Length (km)	NFCC Consequence		
		High	Medium	Low
Motorway	7,299	7.3%	31.1%	61.6%
A Road Primary	24,039	8.5%	28.3%	63.2%
A Road	22,725	6.8%	25.3%	67.9%
B Road	23,613	7.8%	28.5%	63.7%
Local Road	140,281	4.3%	21.9%	73.7%
Minor Road	138,703	6.7%	27.7%	65.5%
Local Access Road	6,023	7.0%	23.7%	69.4%
Secondary Access Road	4,749	3.8%	23.4%	72.7%
Total	367,431	6.9%	26.7%	66.5%

Road Type (OS 'Form of Way')

Road Type	Road Length (km)	NFCC Consequence		
		High	Medium	Low
Dual Carriageway	22,777	7.4%	29.7%	62.9%
Enclosed Traffic Area	726	6.1%	19.6%	74.3%
Roundabout	2,031	3.4%	20.8%	75.8%
Single Carriageway	333,617	7.1%	26.5%	66.4%
Slip Road	2,764	5.8%	25.0%	69.2%
Traffic Island Link	952	5.2%	23.9%	70.9%
Traffic Island Link At Junction	3,978	4.8%	22.5%	72.7%
zOther	587	7.3%	25.0%	67.6%
Total	367,431	6.9%	26.7%	66.5%

Speed Limit (Basemap)

Speed Limit (mph)	Road Length (km)	NFCC Consequence		
		High	Medium	Low
20	40,300	3.4%	20.4%	76.1%
30	159,251	5.0%	23.0%	72.0%
40	15,285	7.4%	27.5%	65.2%
50	7,683	9.8%	30.6%	59.5%
60	128,906	12.1%	35.4%	52.5%
70	16,006	8.2%	32.0%	59.8%
Total	367,431	6.9%	26.7%	66.5%

Urban/Rural Category (Derived from ONS Data)

Urban/Rural Category	Road Length (km)	NFCC Consequence		
		High	Medium	Low
U1 - Urban conurbations	64,532	4.8%	22.9%	72.3%
U2 - Urban towns	113,632	5.7%	24.8%	69.5%
R1 - Rural towns	49,288	9.4%	30.3%	60.4%
R2 - Rural villages	139,979	11.2%	34.6%	54.2%
Total	367,431	6.9%	26.7%	66.5%

3.18 NFCC/ORH worked through several iterations of this evaluation process before finalising an approach that gave a suitable breakdown of high, medium or low consequence incidents.

Analysing Consequence

3.19 The final classification of consequence gave the following breakdown of RTC incidents:

- High = 4,456 per year (6.9% of RTCs)
- Medium = 17,308 per year (26.7%)
- Low = 43,172 (66.5%)

Consequence by Road Categorisation

3.20 Following a similar approach to the analysis of RTC likelihood, NFCC/ORH analysed the annual number and the proportion of H/M/L incidents by category of road. For individual road categories, the following key points were noted in relation to the proportion of incidents that were classified as High consequence (see Figure 3-3):

- **Road Class:** Secondary Access Roads (3.8%) and Local Roads (4.3%) have a lower proportion of High consequence incidents than all other road classes (6.7% to 8.5%).
- **Road Type:** There is relatively little variation in this category, however Roundabouts (3.4%) have comparatively few High consequence RTCs.
- **Speed Limit:** The proportion of High consequence RTCs appears to increase with higher speed limits, from 3.4% on 20mph roads to 12.1% on 60mph roads. Only 70mph roads (8.2%) do not follow this trend directly.
- **Urban/Rural:** Unlike incident likelihood, the consequence of RTCs increases when moving from the most urban (4.8%) to the most rural areas (11.2%).

3.21 Combinations of two factors were also evaluated in terms of the proportion of High consequence RTCs. One of the most interesting outcomes was for Speed Limit and Urban/Rural, which highlighted the difference between 60mph roads in the most rural areas (12.7%) to 20mph roads in the most urban areas (3.3%) (see Appendix B4).

3.22 The next step was to evaluate this as a four-factor categorisation (class, type, speed and urban/rural) for all road segments in England and Wales. There are over 900 categorisations, although some of these might occur only once or twice. For categorisations with less than 50km of road in the OS Highways data, these were grouped based on Speed Limit and Urban/Rural as these are the two most important factors for assessing consequence.

3.23 As established in the likelihood analysis, the most common road categorisation is: *Minor Road/Single Carriageway/60/R2* (73,910 kilometres of this road categorisation, see Appendix B5). The consequence of incidents on these roads (10.8% classed as High) is relatively high compared to the national average (6.9%).

3.24 Of the 200+ categorisations with more than 50km of roads, the highest proportion of High consequence RTCs is recorded for *Local Access Road/Single Carriageway/60/U2* (26.1%). While the likelihood is low on this road categorisation (29 RTCs per 1,000km per year), when incidents do occur, they tend to be more severe.

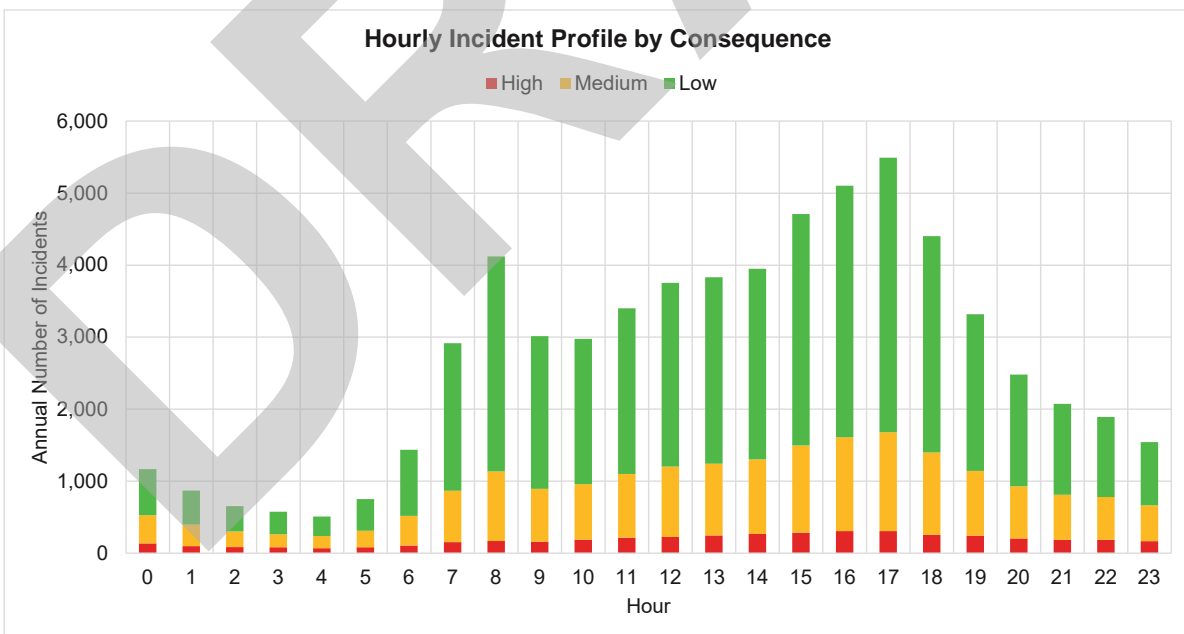
Figure 3-4: Consequence Analysis by Hour

Annual Number of Accidents

Hour	Incidents by NFCC Consequence			
	High	Medium	Low	Total
0	136	391	639	1,166
1	100	299	469	868
2	86	218	349	653
3	83	180	312	575
4	70	168	269	507
5	83	229	439	751
6	107	411	917	1,435
7	155	711	2,050	2,916
8	171	964	2,986	4,120
9	162	732	2,122	3,015
10	191	766	2,020	2,977
11	217	882	2,301	3,401
12	227	976	2,552	3,755
13	247	995	2,591	3,833
14	268	1,035	2,648	3,950
15	285	1,211	3,214	4,711
16	308	1,301	3,495	5,104
17	308	1,371	3,813	5,493
18	258	1,141	3,004	4,403
19	246	897	2,176	3,318
20	205	723	1,554	2,481
21	186	624	1,263	2,073
22	188	591	1,113	1,891
23	168	496	877	1,541
Total	4,456	17,308	43,172	64,936

Proportion of Analysed Accidents

Hour	Incidents by NFCC Consequence			
	High	Medium	Low	Total
0	11.7%	33.5%	54.8%	100.0%
1	11.5%	34.4%	54.1%	100.0%
2	13.2%	33.3%	53.5%	100.0%
3	14.5%	31.3%	54.2%	100.0%
4	13.9%	33.1%	53.1%	100.0%
5	11.1%	30.5%	58.4%	100.0%
6	7.5%	28.6%	63.9%	100.0%
7	5.3%	24.4%	70.3%	100.0%
8	4.1%	23.4%	72.5%	100.0%
9	5.4%	24.3%	70.4%	100.0%
10	6.4%	25.7%	67.8%	100.0%
11	6.4%	25.9%	67.7%	100.0%
12	6.0%	26.0%	68.0%	100.0%
13	6.4%	25.9%	67.6%	100.0%
14	6.8%	26.2%	67.0%	100.0%
15	6.1%	25.7%	68.2%	100.0%
16	6.0%	25.5%	68.5%	100.0%
17	5.6%	25.0%	69.4%	100.0%
18	5.9%	25.9%	68.2%	100.0%
19	7.4%	27.0%	65.6%	100.0%
20	8.3%	29.1%	62.6%	100.0%
21	9.0%	30.1%	60.9%	100.0%
22	9.9%	31.2%	58.8%	100.0%
23	10.9%	32.2%	56.9%	100.0%
Total	6.9%	26.7%	66.5%	100.0%



Other Analysis of Consequence

- 3.25 While not always directly related to the risk methodology, during the course of the project NFCC/ORH analysed the likelihood and consequence of RTCs against a range of other factors. The findings for consequence by hour and by FRS were of particular interest, and are discussed in turn below.
- 3.26 The **hourly distribution of RTCs** has peaks at 0800-0900 and 1500-1900, reflecting rush hour periods for commuting and school drop-offs and pick-ups (see Figure 3-4). However, it is during these hours that the proportion of High consequence RTCs is lowest (4.1% in the morning and 5.6% in the evening).
- 3.27 The proportion of High consequence RTCs is highest between 0300 and 0500 (14.5% and 13.9% in these two hours). While this is an interesting result, it must be stressed that the overall frequency is much lower at this time, and the annual number of High consequence RTCs are actually lowest during this period. In conclusion, for the small number of RTCs that occur in the early hours there are relatively more that are High consequence, but the most, and most High consequence, RTCs occur during rush hours.
- 3.28 When comparing the frequency of RTCs and the consequence **profile by FRS** there is also a mixed viewpoint (see Appendix B6).
- 3.29 The annual number of RTCs is unsurprisingly highest in the larger, metropolitan FRSs where there will be more road users. In London there was an average of 9,787 RTCs per year during the sample, more than 20 times the number in some FRSs; for example, Cleveland (402), Northumberland (405), Shropshire (487) and Gloucestershire (489).
- 3.30 If the focus is instead on the proportion of RTCs classified as High consequence, London Fire Brigade (3.5%) is the lowest FRS. Using this measure, it is some of the more rural FRSs that top the list; Gloucestershire (13.8%), North Wales (12.4%) and Northumberland (12.0%).
- 3.31 While this might point towards a simple conclusion that rural services have fewer RTCs, but that they tend to be more severe, it is also important to factor in the road network (and road usage, were it available) when comparing FRSs. By analysing the annual number of High consequence RTCs per 1,000km of road in each FRS, London (20.7) is the second highest FRS (after Surrey at 23.2), while rural services are generally at the lower end.
- 3.32 The contrary outcomes here highlight the challenges of benchmarking in terms of incident rates. The likelihood, consequence and risk metrics put forward in the methodology draw on data from all FRSs, which overcomes some of the data anomalies at local level.

Determining Risk

- 3.33 As per Phase 1 of the DoR project, risk is considered to be the product of likelihood and consequence.
- 3.34 From the analysis it can be seen that road class, type, speed and the urban/rural category all affect likelihood and consequence to varying extents, and that the combination of these factors is key. Therefore the four-factor categorisation has been applied to every segment of road in determining the final likelihood, consequence and risk values.
- 3.35 To determine an overall risk for RTCs in each road categorisation, it was first necessary to translate the raw analysis into a score out of five for both likelihood and consequence:

Figure 3-5: Assigning Likelihood and Consequence Scores

Likelihood

Likelihood Score	Annual Incidents per 1,000 km		Total Road Length (km)	Proportion of Road Length
	Minimum	Maximum		
1	8.4	65.1	141,071	38.4%
2	67.5	151.7	110,221	30.0%
3	152.1	443.5	79,380	21.6%
4	444.7	1,164.3	32,499	8.8%
5	1,172.8	2,630.6	4,260	1.2%

Consequence

Consequence Score	Consequence Value		Total Road Length (km)	Proportion of Road Length
	Minimum	Maximum		
1	1.9%	7.6%	144,372	39.3%
2	7.7%	14.3%	106,616	29.0%
3	14.5%	14.9%	77,797	21.2%
4	15.3%	19.0%	34,101	9.3%
5	19.5%	28.3%	4,877	1.3%

Note: Consequence Value = the proportion of H/M/L incidents, weighted 10/1/0

- Likelihood = the annual rate of incidents per 1,000km of road (see Figure 3-5)
 - Consequence = based on the proportion of H/M/L incidents vs. all road categorisations, weighted 10/1/0 (so, heavily influenced by High consequence RTCs, see Figure 3-5)
- 3.36 The two values are then multiplied together (equally weighted) to give a risk score (potentially ranging from 1 to 25) for all road categorisations, which is then translated into a risk category from Very High to Very Low (see Figure 3-6).
- 3.37 Across the road categorisations, 20,391 kms of roads (5.5% of the road network) are classed as Very High risk (ie, the categorisations with a risk score of 12 or more). Based on total road length, the two most common road categorisations with Very High risk are:
- A Road Primary|Single Carriageway|60|R2 (4,436 kms of road)
 - A Road|Single Carriageway|60|R2 (4,353 kms of road)
- 3.38 These are reflective of the general profile of risk – the highest scoring road categorisations are single carriageways with higher speed limits. At the other end of the scale, Very Low risk roads are predominantly single carriageway local roads with 20mph or 30mph speed limits.
- 3.39 A worked example is discussed in Section 4 – the resultant risk mapping for the area around Reading was found to be representative of local knowledge and was tested for two FRs, with officers agreeing that the picture was reflective of their individual services.

Influencing Factors

- 3.40 NFCC/ORH used Random Forest Modelling (as described in Section 2) to evaluate any potential linkages between the demographic data sources and the likelihood and consequence of RTCs, based on the home driver LSOA.
- 3.41 Unlike the Dwelling Fire methodology, the statistical modelling for likelihood did not produce any pertinent findings, and when focusing on High consequence incidents only, this becomes even weaker. Some of the factors tentatively linked to higher rates of RTCs include:
- IMD indices for Income, Education and Social Barriers (more deprived => more RTCs)
 - Proportion of households with degree qualification (higher => lower RTCs)
 - Proportion of households with full-time students (higher => lower RTCs)
 - People employed in skilled trade occupations (higher => more RTCs)
- 3.42 The last two points are potentially linked to the prevalence of car journeys made by people living in such LSOAs, and it is very difficult to unpick these relationships without complete data on road usage (which is not available by LSOA).
- 3.43 While there are some weak positive relationships between some factors and the overall likelihood of RTCs, these were not strong enough to factor into the overall methodology.

Figure 3-6: Calculating and Evaluating the Risk Score

Risk Score

		Likelihood Score				
		1	2	3	4	5
Consequence Score	1	1	2	3	4	5
	2	2	4	6	8	10
	3	3	6	9	12	15
	4	4	8	12	16	20
	5	5	10	15	20	25

Risk Category

		Likelihood Score				
		1	2	3	4	5
Consequence Score	1	Very Low	Very Low	Low	Low	Medium
	2	Very Low	Low	Medium	High	High
	3	Low	Medium	High	Very High	Very High
	4	Low	High	Very High	Very High	Very High
	5	Medium	High	Very High	Very High	Very High

Total Road Length (km) by Risk Score

		Likelihood Score				
		1	2	3	4	5
Consequence Score	1	5,225	87,433	32,993	14,799	3,923
	2	52,583	13,770	22,837	17,089	336
	3	73,910	18	3,770	99	0
	4	8,913	9,001	15,343	513	0
	5	440	0	4,436	0	0

Risk Category	Total Road Length (km)
Very Low	145,240
Low	144,385
Medium	27,218
High	30,197
Very High	20,391

Proportion of Total Road Length by Risk Score

		Likelihood Score				
		1	2	3	4	5
Consequence Score	1	1.4%	23.8%	9.0%	4.0%	1.1%
	2	14.3%	3.7%	6.2%	4.7%	0.1%
	3	20.1%	0.0%	1.0%	0.0%	0.0%
	4	2.4%	2.4%	4.2%	0.1%	0.0%
	5	0.1%	0.0%	1.2%	0.0%	0.0%

Risk Category	Total Road Length (km)
Very Low	39.5%
Low	39.3%
Medium	7.4%
High	8.2%
Very High	5.5%

4 Recommended Framework for RTC Risk

While the research and background analysis for RTCs was as complex as for Dwelling Fires, the resultant methodology for FRSs is much simpler in terms of the number of data sources and steps. However, a reasonable level of GIS expertise will be required to process the data.

The FRS will need to take the following steps to adhere to the risk methodology:

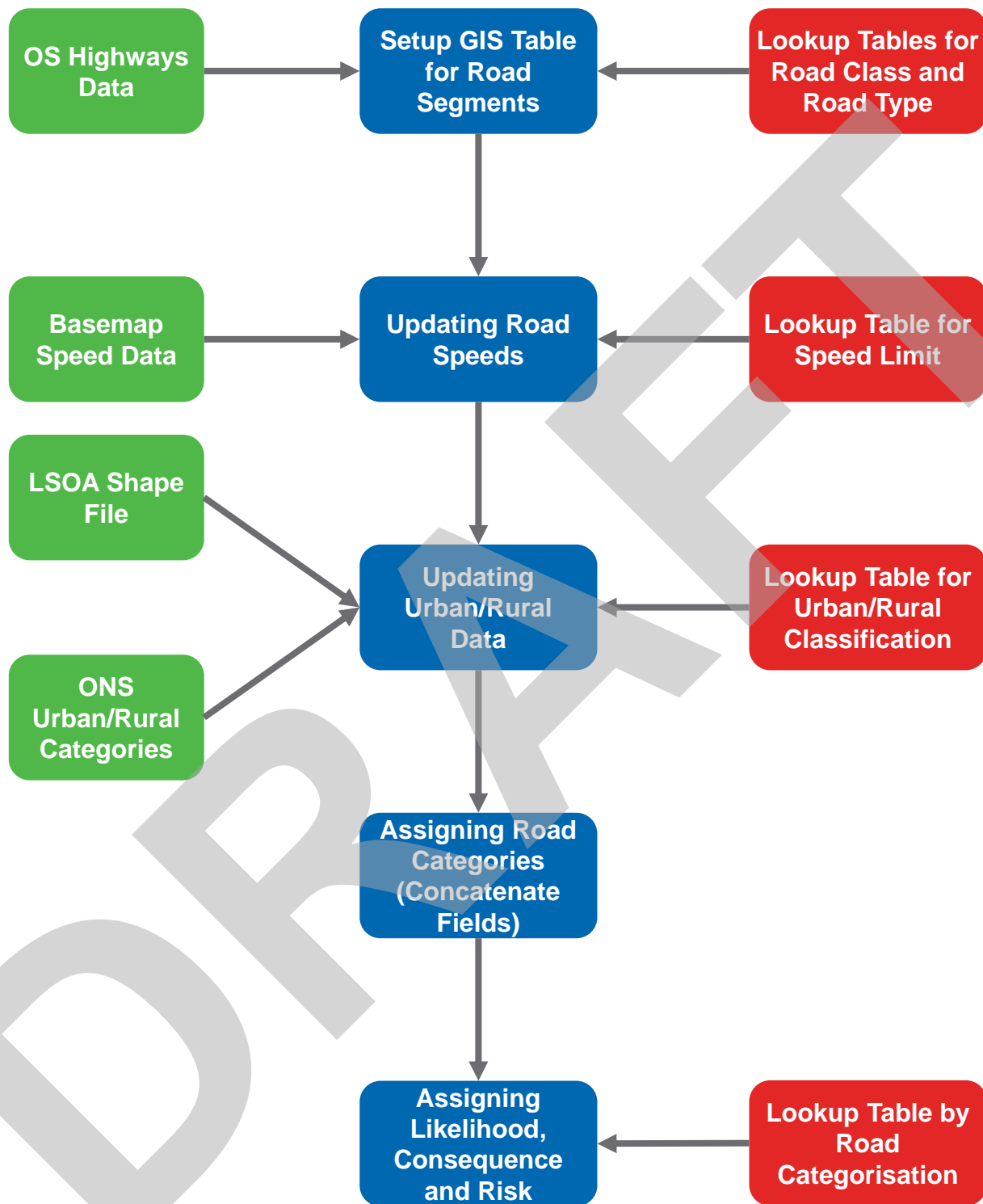
- Collect GIS data for every road segment in the service area
- Update this information using other data sources and lookup tables
- Assign a four-factor road categorisation to each road segment
- Use this categorisation to apply Likelihood, Consequence and Risk Scores
- Produce appropriate maps of the local road network
- Evaluate the process by comparing against historical incident locations

This risk approach should be viewed as a way to categorise the road network in terms of the expected profile of RTCs, with the tacit understanding that there will be local variations which may require specific interventions from the FRS.

Introduction

- 4.1 NFCC/ORH recognise that the key output of this research is a methodology that FRSs can follow, adopt and adapt in their local area. To satisfy this, it was necessary to translate a detailed and iterative research project into something that is appropriate and easily applicable for all FRSs.
- 4.2 While the research and background analysis for RTCs was as complex as for Dwelling Fires, the resultant methodology for FRSs is much simpler, for two key reasons:
- (a) The Dwelling Fire methodology provided two options for calculating risk; LSOA and UPRN. For RTCs, the nature of the geography and the incident locations mean that the only approach is to evaluate likelihood and consequence against the road network.
 - (b) There were 12 key influencing factors associated with the likelihood of Dwelling Fires (and a similar number for consequence), however the research into RTCs found only weak relationships with some deprivation measures. As such, there is no requirement in this methodology to collect and manage data from multiple public sources to determine risk for RTCs.
- 4.3 This draft report provides an outline of the steps that an FRS can take to calculate the likelihood, consequence and risk for RTCs in its area (see Figure 4-1). The methodology combines the statistical assessment of historical incidents (from the national IRS and Stats19 data) with SME input on the consequence impacts of incidents.

Figure 4-1: RTC Risk Methodology



Key:

Data Source

Methodology Step

Lookup Tables

- 4.4 Unlike the OBF methodology, it is not advisable to adjust the scoring outcomes to take account of local knowledge of individual properties or locations. Instead, FRSs should use RTC incident data as an overlay to examine local incident hotspots and seek to understand the reasoning and potential mitigating measures.
- 4.5 While this is a simpler methodology in terms of the number of data sources and steps, it will require a reasonable level of GIS expertise to process the data. To support the methodology, a step-by-step worked example has been produced, including maps for likelihood, consequence and risk, for the area around Reading (see Appendix C).

Data Collection

- 4.6 There are two main elements to the data collection for determining RTC risk within an FRS:
- (a) GIS data for all road segments, primarily based on OS Highways data with some added data fields.
 - (b) A series of lookup tables to calculate likelihood, consequence and risk, which are provided in this report.
- 4.7 For most FRSs, there will be around 100,000 to 200,000 road segments in the service area that form the basis for the analysis, however this will be considerably more in the metropolitan FRSs with larger populations. As the data is primarily GIS-based, the FRS will need access to a suitable GIS package to process the data spatially (for example, ArcGIS, QGIS or MapInfo).
- 4.8 The **OS Highways data** (see Appendix A6) includes many fields of information for every segment of road in the UK, with over 6.5 million records. The Highways data is available to all FRSs through the Public Sector Geospatial Agreement (PSGA), and further information is available on the OS website: <https://beta.ordnancesurvey.co.uk/products/os-mastermap-highways-network-roads>.
- 4.9 The key data fields from the OS Highways data are: *TOID* (the OS unique identifier), *RouteHierarchy* (the road class, for example, A road, B road, etc) and *FormOfWay* (the road type, for example, junction or single carriageway). In addition, the following fields may be useful for further analysis by the FRS or labelling roads: *RoadClassificationNumber*, *RoadName1* and *Length*.
- 4.10 It is recommended that a copy of the GIS file is saved, with only these six fields for running the likelihood, consequence and risk analysis (see Appendix C1).
- 4.11 For this project, NFCC had to purchase **road speed data** for the UK from Basemap: <https://basemap.co.uk/speed-data>. The dataset provided the posted road speed limit for every OS TOID (see Section 2 for discussion on potential other sources for speed-related datasets).

Updating the GIS Data

Simplifying Road Fields

- 4.12 From the OS Highways data to the risk analysis in this methodology, NFCC/ORH have adjusted the classification of the following fields:

Figure 4-2: Lookup Table for Road Class

OS: Route Hierarchy	NFCC: Road Class
A Road	A Road
A Road Primary	A Road Primary
B Road	B Road
B Road Primary	B Road
Local Access Road	Local Access Road
Local Road	Local Road
Minor Road	Minor Road
Motorway	Motorway
Restricted Local Access Road	zzExcluded
Restricted Secondary Access Road	zzExcluded
Secondary Access Road	Secondary Access Road
Unknown	zzExcluded

Figure 4-3: Lookup Table for Road Type

OS: Form of Way	NFCC: Road Type
Dual Carriageway	Dual Carriageway
Enclosed Traffic Area	Enclosed Traffic Area
Guided Busway	zOther
Layby	zOther
Roundabout	Roundabout
Shared Use Carriageway	zOther
Single Carriageway	Single Carriageway
Slip Road	Slip Road
Track	zzExcluded
Traffic Island Link	Traffic Island Link
Traffic Island Link At Junction	Traffic Island Link At Junction
Unknown	zzExcluded

Figure 4-4: Lookup Table for Speed Limit

Basemap: Speed	NFCC: Speed Limit
2	20
5	20
8	20
9	20
10	20
15	20
20	20
25	30
30	30
40	40
50	50
60	60
70	70
Unknown	zzExcluded

- **RouteHierarchy**: This is referred to as **Road Class** in the NFCC/ORH analysis. Restricted access and unknown roads have been removed, and B Roads and Primary B Roads grouped together (see Figure 4-2).
- **FormOfWay**: This is referred to as **Road Type** in the NFCC/ORH analysis. Tracks and unknown roads have been removed, and the least common categories listed as 'zOther' (see Figure 4-3).

4.13 NFCC/ORH recommend creating two new fields in the GIS table for 'Road Class' and 'Road Type'. These should be populated using the relevant lookup tables (see Figures 4-2 and 4-3). Once this step is completed (see Appendix C2), the user may opt to delete all records where the lookup value is given as 'zzExcluded'.

Updating Road Speeds

- 4.14 The OS Highways data and Basemap speed data should both include the TOID that can be used to link the two datasets.
- 4.15 The user should add a new column ('Basemap Speed') to the main GIS table and update this by using a query whereby the OS and Basemap data are linked on the TOID (see Appendix C3).
- 4.16 As with the Road Class and Road Type, there is a small adjustment here to address some of the lesser used road speed categories. The user should create a new column in the main GIS table ('Speed Limit') and update this using the lookup table (see Figure 4-4).

Updating Urban/Rural Data

- 4.17 The analysis undertaken has demonstrated that the level of rurality influences both likelihood and consequence, however this data is not part of the OS Highways data and therefore needs to be added to the GIS table in a three-step process.
- 4.18 The first step is to add the LSOA code to each road segment. Most FRSs will already hold a suitable shape file for all LSOAs in their area, which includes the LSOA code. If not, these are available from: <https://www.data.gov.uk/dataset/fa883558-22fb-4a1a-8529-cffdee47d500/lower-layer-super-output-area-isoa-boundaries>. Using a GIS lookup (where the LSOA shape file contains a road segment), the user should create a new column in the roads table ('LSOA code') and update this with the LSOA code from the LSOA file (see Appendix C4).
- 4.19 Next, the user will need to download the ONS classification of LSOAs: <https://www.ons.gov.uk/methodology/geography/geographicalproducts/ruralurbanclassifications/2011ruralurbanclassification>, which gives an urban/rural classification to every LSOA. Once imported as a table into the GIS software, the user should create a new column in the roads table ('ONS UR') and update this with the ONS classification (see Appendix C4).
- 4.20 Finally, the NFCC/ORH methodology uses a simplified version of the ONS classification with only four categories (see Figure 4-5). Using this lookup table, the user should create a new column in the roads table ('Urban Rural') and update this accordingly (see Appendix C4).

Assigning Road Categories

- 4.21 From the analysis it can be seen that road class, type, speed and the urban/rural category all affect likelihood and consequence to varying extents, and that the combination of these factors

Figure 4-5: Lookup Table for Urban/Rural Category

ONS: Code	ONS: Description	NFCC: UR Code	NFCC: UR Description
A1	Urban major conurbation	U1	Urban conurbations
B1	Urban minor conurbation		
C1	Urban city and town	U2	Urban towns
C2	Urban city and town in a sparse setting		
D1	Rural town and fringe	R1	Rural towns
D2	Rural town and fringe in a sparse setting		
E1	Rural village and dispersed	R2	Rural villages
E2	Rural village and dispersed in a sparse setting		
F1	Rural hamlets and isolated dwellings		
F2	Rural hamlets and isolated dwellings in a sparse setting		

DRAFT

is key. Therefore a four-factor categorisation has been applied to every segment of road in determining the final likelihood, consequence and risk values.

- 4.22 The user should create a new column in the roads table ('Road Categorisation') and populate this by concentrating the data from the following four fields that the user has created: Road Class, Road Type, Speed Limit and Urban Rural. A special character, such as the pipe symbol "|", has been used to demarcate the fields, for example, *Motorway|Slip Road|70|U2* (see Appendix C5).
- 4.23 If there are any fields that contain 'zzExcluded' records, these should not be given a final road categorisation. As suggested above, the user may opt to delete these records from the GIS roads table. Most of the excluded data will be associated with tracks and restricted access roads, but the user should check this is the case before deleting any records.

Assigning Likelihood, Consequence and Risk

- 4.24 The likelihood, consequence and risk calculations are all based on NFCC/ORH's analysis of the national data, so the process of adding this information to the roads table is the same for every FRS (see Appendix C6). The user will need to add five final columns to the GIS table:
- Likelihood Value
 - Consequence Value
 - Likelihood Score
 - Consequence Score
 - Risk Score
- 4.25 These fields can all be updated using the lookup table provided in this report (see Appendix C7). The Likelihood and Consequence Values are not essential but may add to the FRS's understanding of the methodology. The Likelihood and Consequence Scores are defined in Section 3 (see Figure 3-5) and are scores from 1 to 5 derived from the value columns; the Risk Score is the Likelihood and Consequence Scores multiplied together.

Mapping Outcomes

- 4.26 NFCC/ORH are in the process of creating mapping files that will be provided to all FRSs in the coming weeks. There are a few exceptions due to data availability.

Creating Road Maps

- 4.27 Using the final three columns, the user can produce thematic maps for the Likelihood, Consequence and Risk Scores for all roads in the FRS. For Likelihood and Consequence there are five categories (1 to 5 – exclude any incomplete records from the mapping); a blue to red scale has been used to represent these (see Figure 3-5 and Appendices C8a and C8b).
- 4.28 The Risk Scores are from 1 to 25, so this will require a thematic map based on the range of scores (see Figure 3-6 and Appendix C8c):
- Very Low = 1 to 2

- Low = 3 to 4
- Medium = 5 to 7
- High = 8 to 11
- Very High = 12 to 25

Evaluating the Process

- 4.29 To test the Likelihood and Consequence Scores the raw Stat19 data was used to extract coordinates for all RTCs in the area. For Likelihood, all incident locations are overlaid and there is a general alignment between higher likelihood roads and denser clusters of RTCs (see Appendix **C8d**). For Consequence, only those incidents involving a fatality are overlaid; while this is a much-reduced dataset, there is evidence here of the higher risk roads having more fatal RTCs (see Appendix **C8e**).
- 4.30 This Stats19 data is freely accessible, although the FRS may choose to instead use data from its own incident recording system. There will not be a perfect alignment; however, in testing the methodology across three different geographies, it has been noted that the Likelihood, Consequence and Risk Scores are reflective of the local road network and FRS activity.
- 4.31 There are likely to be some incident 'hotspots' where specific locations have a very high number of RTCs, which cannot be predicted using the nationwide methodology. This risk approach should be viewed as a way to categorise the road network in terms of the expected profile of RTCs, with the tacit understanding that there will be local variations which may require specific interventions from the FRS.

Appendices

A	Background Information
B	RTC Analysis Findings
C	RTC Risk Methodology



NFCC
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PLAN. PREPARE. PERFORM.

National Fire Chiefs Council / ORH

Developing a National Risk Methodology

Other Building Fires: Draft Report (V2)

17 March 2023
ORH/NFCC/2

A Background Information

A1 About ORH

A2 Glossary of Terms

A3 IRS Data Fields

A4 Stats19 Data Fields

A5 National Data on Potential Risk Factors

A5a Data Sources

A5b Sample Field List

A6 OS Highways Data Fields



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About ORH

ORH helps emergency services around the world to optimise resource use and respond in the most effective and efficient way.

We have set the benchmark for emergency service planning, with a proven approach combining rigorous scientific analysis with experienced, insightful consultancy. Our expert team uses sophisticated modelling techniques to identify opportunities for improvement and uncover hidden capacity. Simulating future scenarios ensures that solutions are objective, evidence-based and quantified.

Every organisation faces a unique set of challenges, so remaining independent and flexible allows us to deliver an appropriate solution every time. The outputs of our work enable clients to make robust, data-driven decisions and explain them clearly to stakeholders.

ORH's approach is always tailored to the needs of the client. Above all, we are committed to getting it right, for the good of our clients and the people who rely on their services.

We work with fire services to define and communicate the risks across their area. Once understood, the next challenge is how to match resources to risk in an appropriate manner. Our approach also helps services to use their resources effectively and efficiently on a live basis.

Over the past ten years ORH has worked with 30 fire and rescue services in the UK and internationally. Our studies support organisations in their planning by identifying and appraising options for better service delivery. These studies involve many aspects of fire service provision, including evaluating alternative delivery models, optimising station location, identifying and quantifying local risk cover and coverage, contingency planning and estate strategy development.

What We Do

ANALYSIS

ORH's experts use sophisticated analytical techniques to develop a comprehensive understanding of the relationship between demand for a service and utilisation of resources. Internal service data can be combined with external sources, such as travel times, population or socio-demographic data, to provide a detailed quantitative profile of service provision.

SOFTWARE

ORH has supplied software to a variety of different services, tailored to the needs of individual clients. Our software solutions range from programs to assist dispatchers with instant decision-making in Control, to complex models designed to aid appraisal of different planning options for long-term service delivery. ORH also provides comprehensive training and ongoing support.

MODELLING

Over the last two decades, ORH has developed a suite of powerful, bespoke computer models, based on OR techniques. These are used by our consultants to improve the cost-effectiveness of a service and to inform forward planning. Our approach combines both optimisation and simulation models, which enables the assessment of a wide range of options and ensures our clients can respond confidently to the many challenges they face.

CONSULTANCY

ORH consultants have gained a wealth of experience of working with public sector organisations and work closely with clients to ensure that planning solutions meet their needs and are robust and sustainable. The ORH ethos is to keep an open mind, in order to derive optimal solutions adapted to each **service's unique** circumstances.

Glossary of TermsRTC Draft Report (V2)

Term	Abbreviation	Description/Comments
Domestic Dwelling Fire	DDF	NFCC/ORH methodology for DDFs was published in March 2023.
Stats19		RTC incident data available from Department for Transport (DfT).
Community Risk Programme	CRP	The NFCC CRP aims to reduce community risk and vulnerability by delivering a set of national tools and guidance to improve risk management planning.
Other Building Fire	OBF	NFCC/ORH methodology for OBFs is currently going through a consultation phase.
Lower-layer Super Output Area	LSOA	Small areas designed to be of a similar population size (approximately 1,500 residents); there are 32,844 LSOAs in England. Used to collect national data on population and demographics.
Unique Property Reference Number	UPRN	Unique identifier for every addressable location across the UK. Used in the DDF and OBF risk methodologies.
OS Highways Data		Provided by Ordnance Survey (OS) this includes data for each road segment in England, Scotland and Wales, including road length and classification.
Basemap Speed Data		Provider of road speed data for each road segment, which could be linked to the OS Highways Data
Incident Recording System	IRS	The Home Office provided IRS data for all incidents attended by FRSs in England. After initial analysis, the IRS data did not form part of the RTC risk methodology.
Road Traffic Collision	RTC	The NFCC/ORH analysis focuses on RTCs in the Stats19 Data where a minimal threshold of incident severity was met (389,613 RTC incidents for the six-year sample period).
Urban/Rural Classification		Based on Office of National Statistics data that provides an urban/rural classification for each LSOA in England and Wales. NFCC/ORH simplified the data into four categories.
Road Class		Based on OS Highways Data (Route Hierarchy), for example, A Road, B Road, etc.
Road Type		Based on OS Highways Data (Form Of Way), for example, single carriageway.
Road Speed		Based on Basemap Speed Data, for example, 30mph, 40mph, etc.
Likelihood		The rate of RTCs per 1,000km of roads (of a certain classification).
Four-factor Categorisation		NFCC/ORH applied this to every segment of road to determine the final likelihood, consequence and risk values, based on Road Class, Road Type, Road Speed and Urban/Rural Classification.
Consequence		High/Medium/Low classification of RTCs based on 10 data fields within the Stats19 Data.
Risk		Defined as the product of Likelihood and Consequence - for RTCs, the final risk score is out of 25.

This project has now completed its first phase and has produced:

- A national definition of risk in the context of Community Risk Management Planning (CRMP)
- A strategic level CRMP framework, as the basis for an FRSS
- A glossary of risk-related terms

Upon completion of phase 1, it was recognised that there is a need to develop the detail behind the key components of the strategic framework to make these products more useable. This will include a methodology (or methodologies) which will allow a consistent risk-based approach to risk management planning. These methodologies will be developed to enable fire and rescue services of all sizes and governance arrangements to make use of them when carrying out their own local risk management planning work.

We are now entering phase 2 of this project which will commence in January 2021.

Phase 2 will explore the details behind the components of the strategic risk assessment framework developed in phase 1 primarily in regard to:

- Hazardous events
- Risk groups
- Likelihood
- Consequence
- Risk Metric
- Risk Criteria

The programme is supported by key stakeholders from the fire sector including HMICFRS, the Fire Services Management Committee, the Home Office and the Fire Brigades Union.

Phase 2 of this project is expected to be complete by January 2022.

Non Fire Incidents: IRS Data

1 April 2014 to 31 March 2020

Non Fire Incidents	Non Fire Vehicle Responses
territory_frs	FRS_INCIDENT_NO
AT_CALL_OVER_BORDER_FRS_INCIDENT_NO	PUB_INCIDENT_ID
AT_CALL_MOBILISE_INCIDENT_TYPE_DESCRIPTION	VEHICLE_TYPE_DESCRIPTION
incident_type_t0102_d	RCC_CALLSIGN
property_type_detailed_d	FRS_CALLSIGN
SPECIAL_SERVICE_TYPE_DESCRIPTION	NO_OF_CREW
fire0901_category_ss_d	DATETIME_MOBILISED
UNIQUE_PROPERTY_REF_NO	DATETIME_MOBILE
RTC_MARKER	DATETIME_AT_SCENE
EVACUATION_WITH_ASSISTANCE	DATETIME_AVAILABLE
EVACUATION_FRS_ASSISTANCE_DESCRIPTION	DEPLOYED_FROM_FLAG
TOC	DEPLOYED_FROM_FRS_ID
NO_EVACUATIONS	DEPLOYED_FROM_STATION_ID
VEHICLES_ATTENDING	
XCoord	
YCoord	
NO_OF_SMALL_VEHICLES	
NO_OF_LARGE_VEHICLES	
NO_OF_TWO_WHEELED_VEHICLES	
EVACUATION_WITHOUT_ASSISTANCE	
EVACUATION_FRS_ASSISTANCE_DESCRIPTION_V2	
Property_Sub_Level	

Stats19 Data Fields

1 April 2014 to 31 March 2020

Accident Fields	Vehicle Fields	Casualty Fields
status	status	status
accident_index	accident_index	accident_index
accident_year	accident_year	accident_year
accident_reference	accident_reference	accident_reference
location_easting_osgr	vehicle_reference	vehicle_reference
location_northing_osgr	vehicle_type	casualty_reference
longitude	towing_and_articulation	casualty_class
latitude	vehicle_manoeuvre	sex_of_casualty
police_force	vehicle_direction_from	age_of_casualty
accident_severity	vehicle_direction_to	age_band_of_casualty
number_of_vehicles	vehicle_location_restricted_lane	casualty_severity
number_of_casualties	junction_location	pedestrian_location
date	skidding_and_overturning	pedestrian_movement
day_of_week	hit_object_in_carriageway	car_passenger
time	vehicle_leaving_carriageway	bus_or_coach_passenger
local_authority_district	hit_object_off_carriageway	pedestrian_road_maintenance_worker
local_authority_ons_district	first_point_of_impact	casualty_type
local_authority_highway	vehicle_left_hand_drive	casualty_home_area_type
first_road_class	journey_purpose_of_driver	casualty_imd_decile
first_road_number	sex_of_driver	
road_type	age_of_driver	
speed_limit	age_band_of_driver	
junction_detail	engine_capacity_cc	
junction_control	propulsion_code	
second_road_class	age_of_vehicle	
second_road_number	generic_make_model	
pedestrian_crossing_human_control	driver_imd_decile	
pedestrian_crossing_physical_facilities	driver_home_area_type	
light_conditions		
weather_conditions		
road_surface_conditions		
special_conditions_at_site		
carriageway_hazards		
urban_or_rural_area		
did_police_officer_attend_scene_of_accident		
trunk_road_flag		
lsoa_of_accident_location		

Public Data Sources Used

Data	Source	Description	Online Source	Release Date
Mid-year Population Estimates	Office for National Statistics	Number of people by age and gender; median age	https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/lowersuperoutputareamidyearpopulationestimates	Sep-20
Standard Area Measurements	Office for National Statistics	Geographic area of LSOA	https://geoportal.statistics.gov.uk/datasets/5a94044d113a4bd5bd895975d6612b05/about	Jan-18
Local Characteristics (2011 Census)	ONS / Nomis	100s of data tables from census: living arrangements, car ownership, ethnicity, nationality, language, religion, health problems, tenure, qualifications, travel to work, occupation	http://www.nomisweb.co.uk/census/2011/local_characteristics	Jan-14
Index of Multiple Deprivation	MHCLG	IMD scores and deciles for net position and sub domain	https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019	Sep-19
Council Tax Bands	Valuation Office Agency	Housing stock by age, council tax band and property type	https://www.gov.uk/government/statistics/council-tax-stock-of-properties-2019	Sep-19
Urban Rural Classification	Office for National Statistics	The 2011 rural-urban classification (RUC) of lower layer super output areas in England and Wales is based on the 2011	https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/lowersuperoutputareamidyearpopulationestimates	Mar-19
Energy Performance Certificates	Ministry of Housing, Communities & Local Government	Building characteristics such as Age, energy Performance and Tenure	https://epc.opendatacommunities.org	Jun-21
Ordnance Survey Property Locations	Ordnance Survey	Household types and Location	NA (OS shared this data with NFCC/ORH as part of the PoC project)	Jun-21

Field List and Origin

Field	Source
Average Household Size	Census
Percentage of Households Private Renting	Census
Percentage of Households Social Renting	Census
Percentage of Households Own / Shared Ownership	Census
Percentage of Households with Full Time Students	Census
Percentage Who Cannot Speak English Well	Census
Percentage of Households with one or Fewer Rooms than Required	Census
Percentage aged 0 - 4	Census
Percentage aged 25 - 44	Census
Percentage aged 45 - 64	Census
Percentage aged 5 - 14	Census
Percentage aged 65 - 89	Census
Percentage aged 90+	Census
Percentage in Providing Unpaid Care	Census
Percentage Employed in Accommodation / Food	Census
Percentage Employed in Admit / Support	Census
Percentage Employed in Agriculture / Forestry / Fishing	Census
Percentage Employed Full Time	Census
Percentage Employed Part Time	Census
Percentage Unemployed	Census
Percentage Employed in Education Sector	Census
Percentage Employed in Utilities	Census
Percentage Employed in Finance / Insurance / Real Estate	Census
Percentage Employed in Human Health / Social Work	Census
Percentage Employed in Human Scientific Technology	Census
Percentage Employed in Mining / Quarrying / Construction	Census
Percentage Employed in Public Admin / Defense	Census
Percentage Employed in Transport / Service Industries	Census
Percentage Employed in Motor Vehicle Repair	Census
Percentage Divorced / Separated	Census
Percentage Married / Civil Partnership	Census
Percentage Full Time Students	Census
Percentage Single	Census
Percentage Use Private Transport to Work	Census
Percentage Use Public Transport to Work	Census
Percentage Use Walk / Cycle to Work	Census
Total in Managed Communal Establishments	Census
Total in Communal Establishments	Census
Total Employed the Week Before Census	Census
Total with Bad Health	Census
Total Households in Caravan / Mobile Structure	Census
Total Households	Census
Total Day to Day Activity Limited a little	Census
Total Day to Day Activity Limited a little - Working Age	Census
Total Day to Day Activity Limited a Lot	Census
Total Day to Day Activity Limited a Lot - Working Age	Census
Total Day to Day Activity Not Limited	Census
Total Day to Day Activity Not Limited - Working Age	Census
Total Households with Dependent Children Aged 0 - 4	Census
Total Households with Dependent Children Any Age	Census
Total in Establishment of Unknown Type	Census
Total in Fair Health	Census
Total Females Working 31 - 48 Hours	Census
Total Females Working 49 Hours+	Census
Total Females Working 15 Hours or Fewer	Census
Total Females Working 16 - 30 Hours	Census
Total Females	Census
Total Households in Flat - Part of Commercial Building	Census
Total Households in Flat - Converted or Shared Housing	Census
Total Households in Flat - Purpose Built	Census
Total Full Time Students Employed	Census
Total Full Time Students Unemployed	Census
Total Full Time Students Economically Inactive	Census
Total Working 31 - 48 Hours	Census
Total Working 49 Hours+	Census
Total in Good Health	Census
ONS LSOA Group	Census
Total Highest Level of Qualification - Apprenticeship	Census
Total Highest Level of Qualification - Level 1	Census
Total Highest Level of Qualification - Level 2	Census
Total Highest Level of Qualification - Level 3	Census
Total Highest Level of Qualification - Level 4+	Census
Total Highest Level of Qualification - Other Qualifications	Census
Total Household Spaces with at Least one Usual Resident	Census
Total Household Spaces with No Usual Residents	Census
Total Males Working 31 - 48 Hours	Census
Total Males Working 49 Hours+	Census
Total Males working 15 Hours or Fewer	Census

Field	Source
Total Males Working 16 - 30 Hours	Census
Total Males	Census
Total in Medical / Care Establishment - Care Home	Census
Total in Medical / Care Establishment - Childrens Home	Census
Total in Medical / Care Establishment - General Hospital	Census
Total in Medical / Care Establishment - Mental Health Hospital	Census
Total in Medical / Care Establishment - Other Hospital	Census
Total in Medical / Care Establishment - Other	Census
Total in Medical / Care Establishment - Care Home with Nursing	Census
Total in Medical / Care Establishment - Care Home with No Nursing	Census
Total in Medical / Care Establishment - Registered Social Landlord	Census
Total Households No Adults Employed	Census
Total Households No Adults Employed - No Dependent Children	Census
Total Households No Adults Employed - Dependent Children	Census
Total Households No Car / Van	Census
Total No Qualifications	Census
Total Households with One Person Long-term Health Problem or Disability - Disability 1	Census
Total Households with One Person Long-term Health Problem or Disability - Disability 2	Census
Total Households with One Person Long-term Health Problem or Disability - Disability 3	Census
Total Other Establishments	Census
Total Working 15 Hours or Fewer	Census
Total Working 16 to 30 Hours	Census
Total Full Time Students Aged 16 / 17	Census
Total Full Time Students Aged 18+	Census
Total Households - Shared Dwelling with Three+ Household Spaces	Census
Total Households - Shared Dwelling with Two Household Spaces	Census
Standard Illness Ratio	Census
Census LSOA Supergroup Name	Census
Total Households - Unshared Dwelling	Census
Total In Very Bad Health	Census
Total In Good Health	Census
Total Households in Detached Properties	Census
Total Households in Semi-Detached Properties	Census
Total Households in Terraced Properties	Census
Total Female Population	Census
Total Households with at Least One Usual Resident	Census
Total Male Population	Census
Total Properties	Census
IMD Barriers to Housing and Services Rank	MHCLG
IMD Crime Rank	MHCLG
IMD Education, Skills and Training Rank	MHCLG
IMD Employment Rank	MHCLG
IMD Health Deprivation and Disability Rank	MHCLG
IMD Overall Rank	MHCLG
IMD Income Rank	MHCLG
IMD Living Environment Rank	MHCLG
Total Jobseekers Aged 19 - 24 in 2019	ONS
Total Jobseekers All Ages in 2019	ONS
Total Employees 2019	ONS
Total in Employment 2019	ONS
Total in Full Time Employment 2019	ONS
Total in Part Time Employment 2019	ONS
LSOA Area	ONS
Total Female Population Aged 0 - 19	ONS
Total Female Population Aged 20 - 64	ONS
Total Female Population Aged 65+	ONS
Total Male Population Aged 0 - 19	ONS
Total Male Population Aged 20 - 64	ONS
Total Male Population Aged 65+	ONS
LSOA Population Density	ONS
Total Population Aged 0 - 19	ONS
Total Population Aged 20 - 64	ONS
Total Population Aged 65+	ONS
LSOA Urban / Rural Classification	ONS
Total Properties - Tax band A	Valuation Agency
Total Properties - Tax band B	Valuation Agency
Total Properties - Tax band C	Valuation Agency
Total Properties - Tax band D	Valuation Agency
Total Properties - Tax band E	Valuation Agency
Total Properties - Tax band F	Valuation Agency
Total Properties - Tax band G	Valuation Agency
Total Properties - Tax band H	Valuation Agency
Total Properties - Tax band I	Valuation Agency
Total Population 2019	ONS
Age of Property	EPC
Tenure of Property	EPC
Energy Performance of Property	EPC
Property Type	OS

Ordnance Survey Highways Data Fields

OS Column Name
id
OBJECTID
TOID
identifier
identifierVersionId
beginLifespanVersion
fictitious
validFrom
reasonForChange
roadClassification
routeHierarchy
formOfWay
trunkRoad
primaryRoute
roadClassificationNumber
roadName1
roadName2
roadName1_Language
roadName2_Language
operationalState
provenance
directionality
length
matchStatus
alternateIdentifier1
alternateIdentifier2
alternateIdentifier3
alternateIdentifier4
alternateIdentifier5
startGradeSeparation
endGradeSeparation
roadStructure
cycleFacility
roadWidthMinimum
roadWidthAverage
elevationGainInDirection
elevationGainOppositeDirection
startNode
endNode
edge_length
SHAPE_Length

B **RTC Analysis Findings**

B1 **IRS Analysis of RTCs**

- B1a** Number of RTC Incidents by FRS and Sub-type
- B1b** Proportion of RTC Incidents by FRS and Sub-type

B2 **Analysis of RTC Likelihood**

- B2a** Road Class and Road Type
- B2b** Road Class and Speed Limit
- B2c** Road Class and Urban/Rural Category
- B2d** Road Type and Speed Limit
- B2e** Road Type and Urban/Rural Category
- B2f** Speed Limit and Urban/Rural Category

B3 **Analysis of RTC Likelihood: Four-factor Categorisation**

B4 **High Consequence RTC Analysis: Speed Limit and Urban/Rural Category**

B5 **Analysis of RTC Consequence: Four-factor Categorisation**

B6 **Analysis of RTC Consequence by FRS**

IRS Analysis: Number of RTC Incidents by FRS and Sub-type

1 April 2014 to 31 March 2020

FRS	Advice only	Extrication of person/s	Make scene safe	Medical assistance only	Other	Release of person/s	Stand by - no action	Wash down road	Make vehicle safe	Total
Avon	57	411	1,067	147	67	198	175	383	971	3,476
Bedfordshire	75	475	681	174	31	169	220	5	799	2,629
Buckinghamshire	131	735	1,100	242	25	258	244	9	497	3,241
Cambridgeshire	47	689	414	201	84	358	516	4	380	2,693
Cheshire	50	556	304	173	9	174	415	3	481	2,165
Cleveland	19	252	425	117	14	85	171	545	408	2,036
Cornwall	28	397	684	72	12	174	131	31	745	2,274
Cumbria	36	462	348	53	10	166	105	10	455	1,645
Derbyshire	40	778	677	148	6	249	139	35	1,067	3,139
Devon & Somerset	60	1,159	1,792	175	74	475	330	27	2,859	6,951
Dorset & Wiltshire	142	956	1,274	229	64	386	306	27	918	4,302
Durham	39	504	224	161	11	137	152	97	644	1,969
East Sussex	43	421	1,096	123	42	247	221	45	696	2,934
Essex	131	1,400	1,943	339	76	634	714	220	1,985	7,442
Gloucestershire	57	438	202	63	30	175	113	35	399	1,512
Greater Manchester	181	1,203	1,975	421	101	640	548	23	2,687	7,779
Hampshire	119	1,143	2,431	278	32	325	484	55	298	5,165
Hereford & Worcester	40	493	542	45	37	273	112	13	2,329	3,884
Hertfordshire	130	739	1,053	358	24	255	250	2	326	3,137
Humberside	44	638	477	143	23	246	262	91	880	2,804
Isle Of Wight	7	122	144	10	3	31	13	2	39	371
Kent	152	1,114	2,904	502	60	581	639	1	769	6,722
Lancashire	50	692	942	167	44	367	373	9	917	3,561
Leicestershire	73	840	873	196	34	305	155	16	1,667	4,159
Lincolnshire	11	892	565	210	273	498	239	3	644	3,335
London	652	1,782	11,398	1,492	199	1,823	1,649	3,012	3,736	25,743
Merseyside	123	443	1,289	126	55	219	411	39	945	3,650
Norfolk	121	1,052	2,189	546	81	385	209	15	1,789	6,387
North Yorkshire	79	638	711	189	34	223	323	31	340	2,568
Northamptonshire	106	642	720	186	47	281	226	11	854	3,073
Northumberland	34	302	221	86	3	69	143	15	289	1,162
Nottinghamshire	51	758	546	100	55	259	98	47	1,229	3,143
Oxfordshire	128	570	973	140	43	184	138	7	425	2,608
Royal Berkshire	68	597	899	203	48	131	79	5	617	2,647
Shropshire	33	369	6	1	182	2	1	5	1,206	1,805
South Yorkshire	30	799	376	215	35	262	122	4	299	2,142
Staffordshire	123	786	1	0	557	0	2	12	2,470	3,951
Suffolk	18	552	348	127	48	249	203	3	291	1,839
Surrey	85	707	4,113	385	45	316	570	36	385	6,642
Tyne & Wear	31	426	280	181	25	212	191	51	644	2,041
Warwickshire	39	642	204	100	25	120	274	15	579	1,998
West Midlands	378	1,656	2	2	1,556	2	0	63	10,895	14,554
West Sussex	61	478	1,643	101	29	258	243	10	285	3,108
West Yorkshire	49	1,229	667	235	83	267	459	5	778	3,772
Total	3,971	31,937	50,723	9,162	4,336	12,668	12,368	5,077	51,916	182,158

Note: Special_Service_Type_Description is used to derive the Sub-type for RTCs

IRS Analysis: Proportion of RTC Incidents by FRS and Sub-type

1 April 2014 to 31 March 2020

FRS	Advice only	Extrication of person/s	Make scene safe	Medical assistance only	Other	Release of person/s	Stand by - no action	Wash down road	Make vehicle safe	Total
Avon	2%	12%	31%	4%	2%	6%	5%	11%	28%	100%
Bedfordshire	3%	18%	26%	7%	1%	6%	8%	0%	30%	100%
Buckinghamshire	4%	23%	34%	7%	1%	8%	8%	0%	15%	100%
Cambridgeshire	2%	26%	15%	7%	3%	13%	19%	0%	14%	100%
Cheshire	2%	26%	14%	8%	0%	8%	19%	0%	22%	100%
Cleveland	1%	12%	21%	6%	1%	4%	8%	27%	20%	100%
Cornwall	1%	17%	30%	3%	1%	8%	6%	1%	33%	100%
Cumbria	2%	28%	21%	3%	1%	10%	6%	1%	28%	100%
Derbyshire	1%	25%	22%	5%	0%	8%	4%	1%	34%	100%
Devon & Somerset	1%	17%	26%	3%	1%	7%	5%	0%	41%	100%
Dorset & Wiltshire	3%	22%	30%	5%	1%	9%	7%	1%	21%	100%
Durham	2%	26%	11%	8%	1%	7%	8%	5%	33%	100%
East Sussex	1%	14%	37%	4%	1%	8%	8%	2%	24%	100%
Essex	2%	19%	26%	5%	1%	9%	10%	3%	27%	100%
Gloucestershire	4%	29%	13%	4%	2%	12%	7%	2%	26%	100%
Greater Manchester	2%	15%	25%	5%	1%	8%	7%	0%	35%	100%
Hampshire	2%	22%	47%	5%	1%	6%	9%	1%	6%	100%
Hereford & Worcester	1%	13%	14%	1%	1%	7%	3%	0%	60%	100%
Hertfordshire	4%	24%	34%	11%	1%	8%	8%	0%	10%	100%
Humberside	2%	23%	17%	5%	1%	9%	9%	3%	31%	100%
Isle Of Wight	2%	33%	39%	3%	1%	8%	4%	1%	11%	100%
Kent	2%	17%	43%	7%	1%	9%	10%	0%	11%	100%
Lancashire	1%	19%	26%	5%	1%	10%	10%	0%	26%	100%
Leicestershire	2%	20%	21%	5%	1%	7%	4%	0%	40%	100%
Lincolnshire	0%	27%	17%	6%	8%	15%	7%	0%	19%	100%
London	3%	7%	44%	6%	1%	7%	6%	12%	15%	100%
Merseyside	3%	12%	35%	3%	2%	6%	11%	1%	26%	100%
Norfolk	2%	16%	34%	9%	1%	6%	3%	0%	28%	100%
North Yorkshire	3%	25%	28%	7%	1%	9%	13%	1%	13%	100%
Northamptonshire	3%	21%	23%	6%	2%	9%	7%	0%	28%	100%
Northumberland	3%	26%	19%	7%	0%	6%	12%	1%	25%	100%
Nottinghamshire	2%	24%	17%	3%	2%	8%	3%	1%	39%	100%
Oxfordshire	5%	22%	37%	5%	2%	7%	5%	0%	16%	100%
Royal Berkshire	3%	23%	34%	8%	2%	5%	3%	0%	23%	100%
Shropshire	2%	20%	0%	0%	10%	0%	0%	0%	67%	100%
South Yorkshire	1%	37%	18%	10%	2%	12%	6%	0%	14%	100%
Staffordshire	3%	20%	0%	0%	14%	0%	0%	0%	63%	100%
Suffolk	1%	30%	19%	7%	3%	14%	11%	0%	16%	100%
Surrey	1%	11%	62%	6%	1%	5%	9%	1%	6%	100%
Tyne & Wear	2%	21%	14%	9%	1%	10%	9%	2%	32%	100%
Warwickshire	2%	32%	10%	5%	1%	6%	14%	1%	29%	100%
West Midlands	3%	11%	0%	0%	11%	0%	0%	0%	75%	100%
West Sussex	2%	15%	53%	3%	1%	8%	8%	0%	9%	100%
West Yorkshire	1%	33%	18%	6%	2%	7%	12%	0%	21%	100%
Total	2%	18%	28%	5%	2%	7%	7%	3%	29%	100%

Note: Special_Service_Type_Description is used to derive the Sub-type for RTCs

Likelihood Analysis: Road Class and Road Type

1 April 2014 to 31 March 2020

Annual Number of Accidents

Road Type	Road Class						Total
	Motorway	A Road Primary	A Road	B Road	Local Road	Minor Road	
Dual Carriageway	3,714	5,573	2,080	314	72	401	12,161
Enclosed Traffic Area	0	0	0	0	2	0	91
Roundabout	21	1,118	720	158	23	177	2,218
Single Carriageway	1	5,640	8,776	6,276	10,380	13,456	44,878
Slip Road	618	268	551	82	51	138	1,711
Traffic Island Link	0	125	246	98	31	148	649
Traffic Island Link At Junction	2	494	855	453	395	889	3,108
zOther	0	0	0	1	65	1	121
Total	4,355	13,218	13,226	7,382	11,020	15,209	64,936

Road Length

Road Type	Road Class						Total
	Motorway	A Road Primary	A Road	B Road	Local Road	Minor Road	
Dual Carriageway	6,310	11,404	3,259	551	319	900	22,777
Enclosed Traffic Area	0	0	0	0	10	0	726
Roundabout	12	614	568	187	276	356	2,031
Single Carriageway	3	11,060	16,972	22,088	138,333	135,675	333,617
Slip Road	973	426	878	127	105	236	2,764
Traffic Island Link	0	136	267	139	124	274	952
Traffic Island Link At Junction	1	398	781	521	932	1,261	3,978
zOther	0	0	0	1	182	1	587
Total	7,299	24,039	22,725	23,613	140,281	138,703	367,431

Accidents per 1,000 km

Road Type	Road Class						Total
	Motorway	A Road Primary	A Road	B Road	Local Road	Minor Road	
Dual Carriageway	588.5	488.7	638.0	570.9	226.0	445.4	533.9
Enclosed Traffic Area	-	-	-	-	189.9	-	125.1
Roundabout	1,806.5	1,819.3	1,267.7	845.8	83.9	496.3	1,091.6
Single Carriageway	520.1	509.9	517.1	284.1	75.0	99.2	134.5
Slip Road	634.6	628.9	626.9	643.0	485.6	582.9	619.3
Traffic Island Link	-	917.6	921.3	705.5	250.2	540.4	681.6
Traffic Island Link At Junction	2,049.9	1,238.4	1,093.8	869.1	424.0	705.0	781.2
zOther	-	-	-	1,293.3	359.8	819.9	205.4
Total	596.7	549.8	582.0	312.6	78.6	109.6	176.7

Likelihood Analysis: Road Class and Speed Limit

1 April 2014 to 31 March 2020

Annual Number of Accidents

Road Class	Speed Limit							Total
	20	30	40	50	60	70	70	
Motorway	1	20	41	99	36	4,158	4,355	
A Road Primary	301	3,266	2,129	1,552	2,818	3,154	13,218	
A Road	1,428	6,416	2,033	1,024	1,852	474	13,226	
B Road	576	3,568	941	408	1,862	27	7,382	
Local Road	4,056	6,745	73	11	133	1	11,020	
Minor Road	1,611	8,186	1,010	172	4,196	35	15,209	
Local Access Road	68	249	10	3	45	1	375	
Secondary Access Road	62	89	1	0	0	0	152	
Total	8,102	28,539	6,237	3,268	10,941	7,849	64,936	

Road Length

Road Class	Speed Limit							Total
	20	30	40	50	60	70	70	
Motorway	1	35	43	106	52	7,062	7,299	
A Road Primary	85	3,030	2,988	2,840	7,341	7,756	24,039	
A Road	647	7,795	3,929	2,481	6,830	1,044	22,725	
B Road	653	7,761	2,842	1,366	10,939	52	23,613	
Local Road	32,509	97,349	643	77	9,699	4	140,281	
Minor Road	3,986	36,716	4,707	790	92,423	82	138,703	
Local Access Road	769	3,487	129	22	1,608	7	6,023	
Secondary Access Road	1,651	3,078	5	0	14	0	4,749	
Total	40,300	159,251	15,285	7,683	128,906	16,006	367,431	

Accidents per 1,000 km

Road Class	Speed Limit							Total
	20	30	40	50	60	70	70	
Motorway	943.6	579.5	957.5	937.2	686.1	588.8	596.7	
A Road Primary	3,556.7	1,077.9	712.4	546.2	383.8	406.6	549.8	
A Road	2,207.6	823.1	517.6	412.7	271.1	454.0	582.0	
B Road	882.8	459.7	331.1	298.5	170.2	525.6	312.6	
Local Road	124.8	69.3	113.6	135.9	13.7	294.4	78.6	
Minor Road	404.2	223.0	214.5	217.2	45.4	419.5	109.6	
Local Access Road	87.8	71.4	77.6	134.3	27.9	95.8	62.2	
Secondary Access Road	37.3	29.0	151.9	0.0	24.3	-	32.0	
Total	201.0	179.2	408.1	425.3	84.9	490.4	176.7	

Likelihood Analysis: Road Class and Urban/Rural Category

1 April 2014 to 31 March 2020

Annual Number of Accidents

Urban / Rural Category	Road Class										Total
	Motorway	A Road Primary	A Road	B Road	Local Road	Minor Road	Local Access Road	Secondary Access Road			
U1	1,041	4,023	5,274	1,920	5,368	4,159	113	57			21,954
U2	1,386	3,924	4,734	2,506	4,903	5,805	159	85			23,502
R1	680	1,568	1,096	958	484	1,661	37	10			6,492
R2	1,248	3,703	2,122	1,998	265	3,584	66	2			12,987
Total	4,355	13,218	13,226	7,382	11,020	15,209	375	152			64,936

Road Length

Urban / Rural Category	Road Class										Total
	Motorway	A Road Primary	A Road	B Road	Local Road	Minor Road	Local Access Road	Secondary Access Road			
U1	1,436	3,569	4,418	2,544	41,141	8,758	891	1,775			64,532
U2	1,987	6,446	7,477	5,177	65,474	22,538	2,098	2,437			113,632
R1	1,199	3,833	3,144	3,861	16,976	18,867	978	432			49,288
R2	2,677	10,192	7,686	12,030	16,691	88,541	2,056	106			139,979
Total	7,299	24,039	22,725	23,613	140,281	138,703	6,023	4,749			367,431

Accidents per 1,000 km

Urban / Rural Category	Road Class										Total
	Motorway	A Road Primary	A Road	B Road	Local Road	Minor Road	Local Access Road	Secondary Access Road			
U1	724.8	1,127.3	1,193.7	754.5	130.5	474.8	127.3	31.8			340.2
U2	697.9	608.8	633.1	484.0	74.9	257.6	75.8	34.7			206.8
R1	567.2	409.0	348.6	248.1	28.5	88.0	37.5	22.0			131.7
R2	466.1	363.3	276.1	166.1	15.9	40.5	32.0	14.1			92.8
Total	596.7	549.8	582.0	312.6	78.6	109.6	62.2	32.0			176.7

Likelihood Analysis: Road Type and Speed Limit

1 April 2014 to 31 March 2020

Annual Number of Accidents

Road Type	Speed Limit							Total
	20	30	40	50	60	70	Total	
Dual Carriageway	374	2,174	1,668	1,007	323	6,615	12,161	
Enclosed Traffic Area	18	66	2	1	5	0	91	
Roundabout	45	750	551	176	333	364	2,218	
Single Carriageway	7,105	22,765	3,422	1,829	9,750	7	44,878	
Slip Road	37	423	167	133	114	836	1,711	
Traffic Island Link	85	449	77	17	21	0	649	
Traffic Island Link At Junction	405	1,849	349	104	374	27	3,108	
zOther	34	64	1	1	21	0	121	
Total	8,102	28,539	6,237	3,268	10,941	7,849	64,936	

Road Length

Road Type	Speed Limit							Total
	20	30	40	50	60	70	Total	
Dual Carriageway	280	2,839	2,696	1,819	854	14,290	22,777	
Enclosed Traffic Area	131	515	15	1	64	0	726	
Roundabout	84	950	421	111	310	156	2,031	
Single Carriageway	39,272	150,924	11,319	5,400	126,684	18	333,617	
Slip Road	38	513	227	212	267	1,507	2,764	
Traffic Island Link	100	656	123	27	45	0	952	
Traffic Island Link At Junction	327	2,546	473	103	495	32	3,978	
zOther	68	307	12	10	186	3	587	
Total	40,300	159,251	15,285	7,683	128,906	16,006	367,431	

Accidents per 1,000 km

Road Type	Speed Limit							Total
	20	30	40	50	60	70	Total	
Dual Carriageway	1,336.0	765.8	618.7	553.3	378.6	462.9	533.9	
Enclosed Traffic Area	137.2	127.5	110.8	710.4	75.2	-	125.1	
Roundabout	530.9	788.9	1,309.4	1,581.7	1,076.6	2,332.7	1,091.6	
Single Carriageway	180.9	150.8	302.4	338.7	77.0	361.9	134.5	
Slip Road	986.5	825.2	737.3	628.8	427.1	554.9	619.3	
Traffic Island Link	844.6	684.5	622.9	646.6	453.6	2,003.2	681.6	
Traffic Island Link At Junction	1,236.5	726.2	737.8	1,007.2	754.4	830.8	781.2	
zOther	492.3	207.3	101.4	130.6	111.0	48.0	205.4	
Total	201.0	179.2	408.1	425.3	84.9	490.4	176.7	

Likelihood Analysis: Road Type and Urban/Rural Category

1 April 2014 to 31 March 2020

Annual Number of Accidents

Road Type	Urban / Rural Category					Total
	U1	U2	R1	R2	Total	
Dual Carriageway	4,160	4,307	1,283	2,411	12,161	
Enclosed Traffic Area	29	47	10	5	91	
Roundabout	657	1,097	196	268	2,218	
Single Carriageway	14,803	15,775	4,606	9,694	44,878	
Slip Road	638	660	156	258	1,711	
Traffic Island Link	324	264	25	36	649	
Traffic Island Link At Junction	1,318	1,301	208	281	3,108	
zOther	27	51	9	34	121	
Total	21,954	23,502	6,492	12,987	64,936	

Road Length

Road Type	Urban / Rural Category					Total
	U1	U2	R1	R2	Total	
Dual Carriageway	5,233	8,067	3,029	6,448	22,777	
Enclosed Traffic Area	173	353	92	108	726	
Roundabout	467	1,099	222	244	2,031	
Single Carriageway	56,408	100,337	45,015	131,857	333,617	
Slip Road	755	1,093	358	558	2,764	
Traffic Island Link	344	440	88	80	952	
Traffic Island Link At Junction	1,087	2,052	405	434	3,978	
zOther	65	192	79	252	587	
Total	64,532	113,632	49,288	139,979	367,431	

Accidents per 1,000 km

Road Type	Urban / Rural Category					Total
	U1	U2	R1	R2	Total	
Dual Carriageway	794.9	533.8	423.6	374.0	533.9	
Enclosed Traffic Area	168.3	133.2	106.6	44.8	125.1	
Roundabout	1,406.8	998.5	882.4	1,098.2	1,091.6	
Single Carriageway	262.4	157.2	102.3	73.5	134.5	
Slip Road	844.5	604.0	435.1	462.4	619.3	
Traffic Island Link	939.9	599.2	287.7	455.5	681.6	
Traffic Island Link At Junction	1,212.3	634.2	512.8	647.5	781.2	
zOther	413.0	266.7	112.3	134.5	205.4	
Total	340.2	206.8	131.7	92.8	176.7	

Likelihood Analysis: Speed Limit and Urban/Rural Category

1 April 2014 to 31 March 2020

Annual Number of Accidents

Urban / Rural Category	Speed Limit					Total
	20	30	40	50	60	
U1	5,915	11,824	1,894	706	303	21,954
U2	2,031	13,322	2,541	964	1,847	23,502
R1	119	1,902	611	452	2,123	6,492
R2	37	1,492	1,192	1,146	6,668	12,987
Total	8,102	28,539	6,237	3,268	10,941	64,936

Road Length

Urban / Rural Category	Speed Limit					Total
	20	30	40	50	60	
U1	21,659	36,187	2,712	980	1,100	1,894
U2	15,803	75,589	5,374	2,001	9,821	5,045
R1	1,982	22,934	2,067	1,231	18,238	2,836
R2	856	24,541	5,133	3,471	99,747	6,232
Total	40,300	159,251	15,285	7,683	128,906	16,006

Accidents per 1,000 km

Urban / Rural Category	Speed Limit					Total
	20	30	40	50	60	
U1	273.1	326.7	698.3	719.7	275.7	693.5
U2	128.5	176.2	472.9	481.9	188.0	554.4
R1	59.9	82.9	295.5	366.9	116.4	453.6
R2	43.6	60.8	232.2	330.2	66.8	393.5
Total	201.0	179.2	408.1	425.3	84.9	490.4

Likelihood Analysis: Four-Factor Classification of Road Segments

1 April 2014 to 31 March 2020

Road Class	Road Type	Speed Limit	U/R Category	Four-Factor Classification	Length (km)	Annual RTCs	RTCs per 1,000km
Minor Road	Single Carriageway	60	R2	Minor Road Single Carriageway 60 R2	73,910	2,527	34.2
Local Road	Single Carriageway	30	U2	Local Road Single Carriageway 30 U2	50,480	3,409	67.5
Local Road	Single Carriageway	30	U1	Local Road Single Carriageway 30 U1	22,708	2,356	103.8
Local Road	Single Carriageway	20	U1	Local Road Single Carriageway 20 U1	17,644	2,684	152.1
Local Road	Single Carriageway	30	R1	Local Road Single Carriageway 30 R1	13,668	391	28.6
Local Road	Single Carriageway	20	U2	Local Road Single Carriageway 20 U2	12,651	1,139	90.1
Minor Road	Single Carriageway	30	U2	Minor Road Single Carriageway 30 U2	12,208	3,455	283.0
Minor Road	Single Carriageway	60	R1	Minor Road Single Carriageway 60 R1	11,912	776	65.1
Minor Road	Single Carriageway	30	R2	Minor Road Single Carriageway 30 R2	11,676	621	53.2
Local Road	Single Carriageway	30	R2	Local Road Single Carriageway 30 R2	9,019	158	17.5
B Road	Single Carriageway	60	R2	B Road Single Carriageway 60 R2	8,309	1,192	143.5
Local Road	Single Carriageway	60	R2	Local Road Single Carriageway 60 R2	6,861	77	11.2
Minor Road	Single Carriageway	60	U2	Minor Road Single Carriageway 60 U2	5,794	666	115.0
Minor Road	Single Carriageway	30	R1	Minor Road Single Carriageway 30 R1	5,553	600	108.0
Minor Road	Single Carriageway	30	U1	Minor Road Single Carriageway 30 U1	5,229	2,319	443.5
A Road Primary	Single Carriageway	60	R2	A Road Primary Single Carriageway 60 R2	4,436	1,439	324.3
A Road	Single Carriageway	60	R2	A Road Single Carriageway 60 R2	4,353	970	222.9
A Road Primary	Dual Carriageway	70	R2	A Road Primary Dual Carriageway 70 R2	3,212	1,018	316.9
B Road	Single Carriageway	30	U2	B Road Single Carriageway 30 U2	2,589	1,340	517.6
Motorway	Dual Carriageway	70	R2	Motorway Dual Carriageway 70 R2	2,443	1,119	458.1
A Road	Single Carriageway	30	U2	A Road Single Carriageway 30 U2	2,417	1,798	743.8
A Road Primary	Dual Carriageway	70	U2	A Road Primary Dual Carriageway 70 U2	2,415	1,014	420.0
Minor Road	Single Carriageway	40	R2	Minor Road Single Carriageway 40 R2	2,028	243	119.6
A Road	Single Carriageway	30	U1	A Road Single Carriageway 30 U1	1,787	2,095	1,172.8
Minor Road	Single Carriageway	20	U1	Minor Road Single Carriageway 20 U1	1,668	930	557.4
B Road	Single Carriageway	60	R1	B Road Single Carriageway 60 R1	1,665	348	209.0
Secondary Access Road	Single Carriageway	30	U2	Secondary Access Road Single Carriageway 30 U2	1,657	51	30.8
Local Road	Single Carriageway	60	R1	Local Road Single Carriageway 60 R1	1,651	25	15.3
B Road	Single Carriageway	30	R2	B Road Single Carriageway 30 R2	1,615	265	164.1
Motorway	Dual Carriageway	70	U2	Motorway Dual Carriageway 70 U2	1,614	1,112	689.1
Local Road	Single Carriageway	20	U2	Local Road Single Carriageway 20 U2	1,466	452	308.6
B Road	Single Carriageway	20	R1	B Road Single Carriageway 20 R1	1,425	47	33.0
B Road	Single Carriageway	30	U1	B Road Single Carriageway 30 U1	1,420	976	687.4
A Road Primary	Dual Carriageway	70	R1	A Road Primary Dual Carriageway 70 R1	1,388	474	341.5
B Road	Single Carriageway	30	R1	B Road Single Carriageway 30 R1	1,301	335	257.4
Minor Road	Single Carriageway	40	U2	Minor Road Single Carriageway 40 U2	1,290	327	253.3
B Road	Single Carriageway	40	R2	B Road Single Carriageway 40 R2	1,184	269	226.9
A Road Primary	Single Carriageway	60	R1	A Road Primary Single Carriageway 60 R1	1,182	427	361.2
A Road	Single Carriageway	60	R1	A Road Single Carriageway 60 R1	1,150	319	277.1
Local Access Road	Single Carriageway	30	U2	Local Access Road Single Carriageway 30 U2	1,150	65	56.5
Motorway	Dual Carriageway	70	U1	Motorway Dual Carriageway 70 U1	1,091	764	700.3
Motorway	Dual Carriageway	70	R1	Motorway Dual Carriageway 70 R1	1,050	599	570.5
A Road	Single Carriageway	50	R2	A Road Single Carriageway 50 R2	1,042	353	339.2
Local Road	Single Carriageway	60	U2	Local Road Single Carriageway 60 U2	1,037	22	20.9

Note: Only road classifications with more than 1,000km of roads are shown in this table

High Consequence Analysis: Speed Limit and Urban/Rural Category

1 April 2014 to 31 March 2020

Annual Number of High Consequence Accidents

Urban / Rural	Road Speed						Total
	20	30	40	50	60	70	
U1 - Urban conurbations	195	571	124	48	26	84	1,048
U2 - Urban towns	76	623	165	82	190	214	1,348
R1 - Rural towns	6	120	57	52	264	111	609
R2 - Rural villages	3	109	116	140	846	237	1,451
Total	279	1,423	461	322	1,325	647	4,456

Road Length

Urban / Rural	Road Speed						Total
	20	30	40	50	60	70	
U1 - Urban conurbations	21,659	36,187	2,712	980	1,100	1,894	64,532
U2 - Urban towns	15,803	75,589	5,374	2,001	9,821	5,045	113,632
R1 - Rural towns	1,982	22,934	2,067	1,231	18,238	2,836	49,288
R2 - Rural villages	856	24,541	5,133	3,471	99,747	6,232	139,979
Total	40,300	159,251	15,285	7,683	128,906	16,006	367,431

High Consequence Accidents per 1,000 km

Urban / Rural	Road Speed						Total
	20	30	40	50	60	70	
U1 - Urban conurbations	9.0	15.8	45.7	49.0	23.5	44.5	16.2
U2 - Urban towns	4.8	8.2	30.7	40.8	19.3	42.4	11.9
R1 - Rural towns	3.0	5.2	27.3	42.0	14.5	39.1	12.4
R2 - Rural villages	2.9	4.5	22.6	40.4	8.5	38.1	10.4
Total	6.9	8.9	30.2	41.8	10.3	40.4	12.1

Proportion High Consequence

Urban / Rural	Road Speed						Total
	20	30	40	50	60	70	
U1 - Urban conurbations	3.3%	4.8%	6.5%	6.8%	8.5%	6.4%	4.8%
U2 - Urban towns	3.7%	4.7%	6.5%	8.5%	10.3%	7.7%	5.7%
R1 - Rural towns	5.1%	6.3%	9.3%	11.4%	12.4%	8.6%	9.4%
R2 - Rural villages	6.7%	7.3%	9.7%	12.2%	12.7%	9.7%	11.2%
Total	3.4%	5.0%	7.4%	9.8%	12.1%	8.2%	6.9%

Likelihood Analysis: Four-Factor Classification of Road Segments

1 April 2014 to 31 March 2020

Road Class	Road Type	Speed Limit	U/R Category	Four-Factor Classification	Length (km)	Annual RTCs by Consequence			Proportion of RTCs by Consequence		
						High	Medium	Low	% High	% Medium	% Low
Minor Road	Single Carriageway	60	R2	Minor Road Single Carriageway 60 R2	73,910	273	930	1,325	10.8%	36.8%	52.4%
Local Road	Single Carriageway	30	U2	Local Road Single Carriageway 30 U2	50,480	148	742	2,519	4.3%	21.8%	73.9%
Local Road	Single Carriageway	30	U1	Local Road Single Carriageway 30 U1	22,708	105	525	1,726	4.5%	22.3%	73.3%
Local Road	Single Carriageway	20	U1	Local Road Single Carriageway 20 U1	17,644	97	564	2,023	3.6%	21.0%	75.4%
Local Road	Single Carriageway	30	R1	Local Road Single Carriageway 30 R1	13,668	22	83	285	5.7%	21.3%	73.0%
Local Road	Single Carriageway	20	U2	Local Road Single Carriageway 20 U2	12,651	43	235	861	3.8%	20.6%	75.6%
Minor Road	Single Carriageway	30	U2	Minor Road Single Carriageway 30 U2	12,208	160	816	2,480	4.6%	23.6%	71.8%
Minor Road	Single Carriageway	60	R1	Minor Road Single Carriageway 60 R1	11,912	83	285	409	10.7%	36.7%	52.7%
Minor Road	Single Carriageway	30	R2	Minor Road Single Carriageway 30 R2	11,676	45	181	396	7.2%	29.1%	63.8%
Local Road	Single Carriageway	30	R2	Local Road Single Carriageway 30 R2	9,019	11	46	100	7.2%	29.3%	63.5%
B Road	Single Carriageway	60	R2	B Road Single Carriageway 60 R2	8,309	161	466	565	13.5%	39.1%	47.4%
Local Road	Single Carriageway	60	R2	Local Road Single Carriageway 60 R2	6,861	9	27	41	11.8%	35.1%	53.2%
Minor Road	Single Carriageway	60	U2	Minor Road Single Carriageway 60 U2	5,794	66	246	355	9.9%	36.9%	53.2%
Minor Road	Single Carriageway	30	R1	Minor Road Single Carriageway 30 R1	5,553	37	158	405	6.2%	26.3%	67.5%
Minor Road	Single Carriageway	30	U1	Minor Road Single Carriageway 30 U1	5,229	123	543	1,653	5.3%	23.4%	71.3%
A Road Primary	Single Carriageway	60	R2	A Road Primary Single Carriageway 60 R2	4,436	231	506	703	16.0%	35.1%	48.8%
A Road	Single Carriageway	60	R2	A Road Single Carriageway 60 R2	4,353	135	367	468	13.9%	37.9%	48.3%
A Road Primary	Dual Carriageway	70	R2	A Road Primary Dual Carriageway 70 R2	3,212	113	378	527	11.1%	37.2%	51.8%
B Road	Single Carriageway	30	U2	B Road Single Carriageway 30 U2	2,589	68	309	963	5.1%	23.1%	71.8%
Motorway	Dual Carriageway	70	R2	Motorway Dual Carriageway 70 R2	2,443	105	389	626	9.4%	34.7%	55.9%
A Road	Single Carriageway	30	U2	A Road Single Carriageway 30 U2	2,417	97	399	1,302	5.4%	22.2%	72.4%
A Road Primary	Dual Carriageway	70	U2	A Road Primary Dual Carriageway 70 U2	2,415	97	343	575	9.6%	33.8%	56.7%
Minor Road	Single Carriageway	40	R2	Minor Road Single Carriageway 40 R2	2,028	23	85	135	9.6%	34.8%	55.6%
A Road	Single Carriageway	30	U1	A Road Single Carriageway 30 U1	1,787	105	452	1,539	5.0%	21.5%	73.4%
Minor Road	Single Carriageway	20	U1	Minor Road Single Carriageway 20 U1	1,668	31	195	703	3.4%	21.0%	75.7%
B Road	Single Carriageway	60	R1	B Road Single Carriageway 60 R1	1,665	46	128	175	13.1%	36.7%	50.1%
Secondary Access Road	Single Carriageway	30	U2	Secondary Access Road Single Carriageway 30 U2	1,657	3	10	39	4.9%	19.3%	75.8%
Local Road	Single Carriageway	60	R1	Local Road Single Carriageway 60 R1	1,651	4	9	13	13.8%	36.2%	50.0%
B Road	Single Carriageway	30	R2	B Road Single Carriageway 30 R2	1,615	18	77	171	6.7%	28.8%	64.4%
Motorway	Dual Carriageway	70	U2	Motorway Dual Carriageway 70 U2	1,614	79	362	672	7.1%	32.5%	60.4%
Minor Road	Single Carriageway	20	U2	Minor Road Single Carriageway 20 U2	1,466	19	96	337	4.2%	21.2%	74.5%
Local Road	Single Carriageway	20	R1	Local Road Single Carriageway 20 R1	1,425	3	11	33	6.4%	22.7%	70.9%
B Road	Single Carriageway	30	U1	B Road Single Carriageway 30 U1	1,420	50	233	693	5.1%	23.9%	71.0%
A Road Primary	Dual Carriageway	70	R1	A Road Primary Dual Carriageway 70 R1	1,388	50	163	261	10.5%	34.4%	55.0%
B Road	Single Carriageway	30	R1	B Road Single Carriageway 30 R1	1,301	21	89	225	6.3%	26.5%	67.2%
Minor Road	Single Carriageway	40	U2	Minor Road Single Carriageway 40 U2	1,290	27	91	209	8.2%	27.9%	63.8%
B Road	Single Carriageway	40	R2	B Road Single Carriageway 40 R2	1,184	27	91	151	10.0%	33.9%	56.1%
A Road Primary	Single Carriageway	60	R1	A Road Primary Single Carriageway 60 R1	1,182	68	133	226	15.8%	31.2%	52.9%
A Road	Single Carriageway	60	R1	A Road Single Carriageway 60 R1	1,150	48	105	167	14.9%	32.8%	52.3%
Local Access Road	Single Carriageway	30	U2	Local Access Road Single Carriageway 30 U2	1,150	4	13	48	5.9%	20.0%	74.1%
Motorway	Dual Carriageway	70	U1	Motorway Dual Carriageway 70 U1	1,091	45	222	497	5.9%	29.0%	65.0%
Motorway	Dual Carriageway	70	R1	Motorway Dual Carriageway 70 R1	1,050	48	198	353	8.0%	33.1%	58.9%
A Road	Single Carriageway	50	R2	A Road Single Carriageway 50 R2	1,042	47	125	182	13.2%	35.4%	51.4%
Local Road	Single Carriageway	60	U2	Local Road Single Carriageway 60 U2	1,037	2	8	12	10.0%	35.4%	54.6%

Note: Only road classifications with more than 1,000km of roads are shown in this table

Number, Proportion and Frequency of RTCs by FRS and NFCC Consequence

Stats19 Data, 1 April 2014 to 31 March 2020

FRS	Road Length (km)	Annual Number of Incidents				Proportion of Analysed Incidents				Accidents per 1,000km			
		High	Medium	Low	Total	High	Medium	Low	Total	High	Medium	Low	Total
Avon	5,517	39	190	591	821	4.8%	23.2%	72.1%	100%	7.1	34.5	107.2	148.7
Bedfordshire	3,299	55	256	570	881	6.2%	29.0%	64.7%	100%	16.6	77.5	172.9	267.0
Buckinghamshire	5,145	66	252	556	874	7.6%	28.8%	63.6%	100%	12.9	48.9	108.0	169.8
Cambridgeshire	6,399	96	320	693	1,108	8.6%	28.8%	62.6%	100%	14.9	49.9	108.4	173.2
Cheshire	7,627	92	338	792	1,221	7.5%	27.7%	64.8%	100%	12.0	44.3	103.8	160.1
Cleveland	2,874	27	113	263	402	6.6%	28.0%	65.3%	100%	9.3	39.2	91.4	139.9
Cornwall	7,834	68	256	418	742	9.2%	34.5%	56.3%	100%	8.7	32.7	53.4	94.8
Durham & Darlington	4,790	54	168	372	593	9.1%	28.3%	62.6%	100%	11.3	35.0	77.6	123.8
Cumbria	8,531	69	213	428	709	9.7%	30.0%	60.4%	100%	8.0	24.9	50.2	83.1
Derbyshire	6,879	88	294	704	1,086	8.1%	27.1%	64.9%	100%	12.7	42.7	102.4	157.8
Devon & Somerset	22,276	166	600	1,208	1,974	8.4%	30.4%	61.2%	100%	7.5	26.9	54.2	88.6
Dorset & Wiltshire	11,815	138	491	1,119	1,748	7.9%	28.1%	64.0%	100%	11.7	41.6	94.7	147.9
East Sussex	4,262	82	317	828	1,226	6.7%	25.8%	67.5%	100%	19.2	74.4	194.2	287.7
Essex	10,189	174	587	1,349	2,110	8.3%	27.8%	63.9%	100%	17.1	57.6	132.4	207.0
Gloucestershire	5,931	67	139	283	489	13.8%	28.4%	57.8%	100%	11.4	23.4	47.6	82.4
Greater Manchester	10,512	123	458	1,242	1,823	6.7%	25.1%	68.1%	100%	11.7	43.6	118.1	173.4
Hampshire	11,116	135	564	1,406	2,105	6.4%	26.8%	66.8%	100%	12.2	50.8	126.5	189.4
Hereford & Worcester	8,061	68	236	508	812	8.4%	29.0%	62.5%	100%	8.5	29.3	63.0	100.8
Hertfordshire	5,627	92	379	907	1,377	6.7%	27.5%	65.9%	100%	16.3	67.3	161.1	244.7
Humberside	6,901	93	358	833	1,283	7.2%	27.9%	64.9%	100%	13.4	51.9	120.7	186.0
Isle of Wight	924	11	61	111	182	5.8%	33.3%	60.9%	100%	11.4	65.6	119.9	196.9
Isles of Scilly	36	0	0	1	1	0.0%	14.3%	85.7%	100%	0.0	4.6	27.4	32.0
Kent	11,214	165	737	1,920	2,822	5.8%	26.1%	68.1%	100%	14.7	65.7	171.2	251.6
Lancashire	9,173	146	540	1,160	1,847	7.9%	29.3%	62.8%	100%	15.9	58.9	126.5	201.3
Leicestershire	6,567	71	281	686	1,038	6.9%	27.1%	66.0%	100%	10.9	42.8	104.4	158.1
Leicestershire	9,250	123	386	715	1,224	10.0%	31.5%	58.5%	100%	13.3	41.7	77.3	132.3
London Fire Brigade	16,420	341	1,988	7,459	9,787	3.5%	20.3%	76.2%	100%	20.7	121.1	454.3	596.1
Merseyside	5,550	78	331	811	1,220	6.4%	27.1%	66.5%	100%	14.1	59.6	146.2	219.8
Mid and West Wales	16,818	110	387	724	1,221	9.0%	31.7%	59.3%	100%	6.6	23.0	43.1	72.6
Norfolk	10,517	98	260	574	932	10.5%	27.9%	61.6%	100%	9.3	24.7	54.5	88.6
North Wales	9,801	81	203	370	654	12.4%	31.1%	56.5%	100%	8.3	20.7	37.7	66.7
North Yorkshire	10,585	97	343	634	1,073	9.0%	31.9%	59.1%	100%	9.1	32.4	59.9	101.4
Northamptonshire	5,223	63	161	416	640	9.8%	25.2%	65.1%	100%	12.0	30.9	79.7	122.5
Northumberland	5,418	49	131	226	405	12.0%	32.3%	55.7%	100%	9.0	24.1	41.6	74.7
Nottinghamshire	6,148	73	353	980	1,406	5.2%	25.1%	69.7%	100%	11.9	57.5	159.4	228.7
Oxfordshire	5,268	63	237	509	808	7.8%	29.3%	62.9%	100%	11.9	45.0	96.5	153.4
Royal Berkshire	4,522	42	216	556	815	5.2%	26.5%	68.3%	100%	9.4	47.8	123.0	180.2
Shropshire	6,557	45	149	294	487	9.3%	30.5%	60.2%	100%	6.9	22.6	44.8	74.3
South Wales	9,418	73	301	651	1,024	7.1%	29.3%	63.5%	100%	7.8	31.9	69.1	108.8
South Yorkshire	6,679	127	454	1,042	1,623	7.8%	28.0%	64.2%	100%	19.0	67.9	156.0	242.9
Staffordshire	7,923	63	261	724	1,048	6.0%	24.9%	69.1%	100%	8.0	33.0	91.4	132.3
Suffolk	7,416	65	216	506	786	8.3%	27.4%	64.3%	100%	8.8	29.1	68.2	106.0
Surrey	6,139	142	598	1,320	2,060	6.9%	29.0%	64.1%	100%	23.2	97.3	215.1	335.6
Tyne and Wear	5,219	54	262	781	1,097	5.0%	23.8%	71.2%	100%	10.4	50.1	149.7	210.2
Warwickshire	4,724	78	261	555	894	8.7%	29.2%	62.1%	100%	16.5	55.2	117.4	189.1
West Midlands	8,838	154	688	2,030	2,872	5.4%	23.9%	70.7%	100%	17.4	77.8	229.7	324.9
West Sussex	4,794	87	336	776	1,199	7.2%	28.0%	64.7%	100%	18.1	70.1	161.9	250.1
West Yorkshire	10,703	167	645	1,576	2,388	7.0%	27.0%	66.0%	100%	15.6	60.3	147.3	223.1
Total	367,431	4,456	17,308	43,172	64,936	6.9%	26.7%	66.5%	100%	12.1	47.1	117.5	176.7

C **RTC Risk Methodology**

C1 **Step 1: OS Data Collection**

C2 **Step 2: Simplifying Road Fields**

C3 **Step 3: Updating Road Speeds**

C4 **Step 4: Updating Urban/Rural Data**

C5 **Step 5: Assigning Road Categorisation**

C6 **Step 6: Assigning Likelihood, Consequence and Risk**

C7 **Four-factor Road Categorisation Lookup Table**

C8 **Mapped Example**

C8a Likelihood Score

C8b Consequence Score

C8c Risk Score

C8d Likelihood Score and All Stats19 Incidents

C8e Consequence Score and Stats19 Fatalities

Step 1: OS Data Collection

RTC Risk Methodology

Key data fields selected from the OS Highways data by road segment

OS Highways		OS Highways		OS Highways		OS Highways	
TOD	Route Hierarchy	Form	OS Highway Road Classification Number	OS Highway Road Name 1	OS Highways Length		
osgb4000000023265077	Minor Road	Single Carriageway		Pitfield Lane	1218.65		
osgb4000000023265204	Minor Road	Single Carriageway		Reading Road	651.57		
osgb4000000023265208	Local Road	Single Carriageway			721.11		
osgb4000000023265216	Restricted Local Access Road	Single Carriageway			481.99		
osgb4000000023265292	Minor Road	Single Carriageway	B3030	New Street	447.95		
osgb4000000023265386	B Road	Single Carriageway		Mole Road	290.73		
osgb4000000023266193	Minor Road	Single Carriageway		Woodcock Lane	393.35		
osgb4000000023266296	A Road	Single Carriageway	A330	Ascot Road	504.33		
osgb4000000023266422	Minor Road	Single Carriageway		Maidenhead Road	589.61		
osgb4000000023272677	Minor Road	Single Carriageway		Wall Lane	326.48		
osgb4000000023273417	B Road	Single Carriageway	B3272	Reading Road	273.77		
osgb4000000023274824	Minor Road	Single Carriageway		Old Chertsey Road	355.89		
osgb4000000023276230	Minor Road	Single Carriageway		Thornford Road	321.83		
osgb4000000023276292	Minor Road	Single Carriageway		Bowling Green Road	138.29		
osgb4000000023276494	Minor Road	Single Carriageway		Englefield Road	299.79		
osgb4000000023276550	Restricted Local Access Road	Single Carriageway			291.25		
osgb4000000023276568	Minor Road	Single Carriageway		Chapel Lane	206.86		
osgb4000000023302116	A Road	Dual Carriageway	A3095	Mill Lane	211.16		
osgb4000000023305435	A Road	Dual Carriageway	A30	London Road	186.46		
osgb4000000023354893	B Road	Traffic Island Link At Junction	B3022	St Leonards Road	48.7		
osgb4000000023381265	B Road	Slip Road	B3051	Ashford Hill Road	42.01		
osgb4000000023396793	Local Road	Single Carriageway		Meadowsweet Close	41.59		
osgb4000000023396835	A Road	Roundabout	A340		19.09		
osgb4000000023397555	A Road	Traffic Island Link At Junction	A329	Reading Road	35.01		
osgb4000000023397612	Local Road	Single Carriageway		Colyton Way	56.61		
osgb4000000023397621	Local Road	Single Carriageway		Waterside Drive	66.43		
osgb4000000023397771	B Road	Roundabout	B3349	Odiham Road	24.42		
osgb4000000023400135	Local Road	Traffic Island Link At Junction		Wharfedale Road	27.8		
osgb4000000023400500	Local Road	Dual Carriageway		Arlington Square	38.87		
osgb4000000023400976	A Road Primary	Dual Carriageway	A33		58.88		
osgb4000000023401423	A Road	Roundabout	A4	London Road	29.14		
osgb4000000023404408	Restricted Local Access Road	Single Carriageway			311.24		
osgb4000000023405903	Restricted Local Access Road	Single Carriageway		Broomfield Park	78.3		
osgb4000000023406162	Local Road	Single Carriageway		Lyndhurst Close	40.18		
osgb4000000023406719	Local Road	Single Carriageway		Snowden Close	79.96		
osgb4000000023406725	Local Road	Single Carriageway		Hemwood Road	35.14		

Note: Selection of six key fields for road links taken from OS Highways data

Step 2: Simplifying Road Fields

RTC Risk Methodology

Update Road Class and Road Type lookups based on the RouteHierarchy and FormOfWay columns

OS Highways		OS Highways		OS Highways		OS Highways		OS Highways		NFCC Lookup			
TOID	RouteHierarchy	FormOfWay	RoadClassificationNumber	RoadName1	Length	Road Class	Road Type	FormOfWay	Road Classification Number	Road Name 1	Length	Road Class	Road Type
osgb40000000023265077	Minor Road	Single Carriageway		Pitfield Lane	1218.65	Minor Road	Single Carriageway					Minor Road	Single Carriageway
osgb40000000023265204	Minor Road	Single Carriageway		Reading Road	651.57	Minor Road	Single Carriageway					Minor Road	Single Carriageway
osgb40000000023265208	Local Road	Single Carriageway			721.11	Local Road	Single Carriageway					Local Road	Single Carriageway
osgb40000000023265216	Restricted Local Access Road	Single Carriageway			441.99	zzExcluded	Single Carriageway					zzExcluded	Single Carriageway
osgb40000000023265292	Minor Road	Single Carriageway		New Street	447.95	Minor Road	Single Carriageway					Minor Road	Single Carriageway
osgb40000000023265386	B Road	Single Carriageway	B3030	Mole Road	290.73	B Road	Single Carriageway					B Road	Single Carriageway
osgb40000000023266193	Minor Road	Single Carriageway		Woodcock Lane	393.35	Minor Road	Single Carriageway					Minor Road	Single Carriageway
osgb40000000023266296	A Road	Single Carriageway	A330	Ascot Road	504.33	A Road	Single Carriageway					A Road	Single Carriageway
osgb40000000023266422	Minor Road	Single Carriageway		Maidenhead Road	589.61	Minor Road	Single Carriageway					Minor Road	Single Carriageway
osgb40000000023272677	Minor Road	Single Carriageway		Wall Lane	326.48	Minor Road	Single Carriageway					Minor Road	Single Carriageway
osgb40000000023273417	B Road	Single Carriageway	B3272	Reading Road	273.77	B Road	Single Carriageway					B Road	Single Carriageway
osgb40000000023274824	Minor Road	Single Carriageway		Old Chertsey Road	355.89	Minor Road	Single Carriageway					Minor Road	Single Carriageway
osgb40000000023276230	Minor Road	Single Carriageway		Thorntford Road	321.83	Minor Road	Single Carriageway					Minor Road	Single Carriageway
osgb40000000023276292	Minor Road	Single Carriageway		Bowling Green Road	138.29	Minor Road	Single Carriageway					Minor Road	Single Carriageway
osgb40000000023276494	Minor Road	Single Carriageway		Englefield Road	299.79	Minor Road	Single Carriageway					Minor Road	Single Carriageway
osgb40000000023276550	Restricted Local Access Road	Single Carriageway			291.25	zzExcluded	Single Carriageway					zzExcluded	Single Carriageway
osgb40000000023276568	Minor Road	Single Carriageway		Chapel Lane	206.86	Minor Road	Single Carriageway					Minor Road	Single Carriageway
osgb40000000023302116	A Road	Dual Carriageway	A3095	Mill Lane	211.16	A Road	Dual Carriageway					A Road	Dual Carriageway
osgb40000000023305435	A Road	Dual Carriageway	A30	London Road	186.46	A Road	Dual Carriageway					A Road	Dual Carriageway
osgb40000000023354893	B Road	Traffic Island Link At Junction	B3022	St Leonards Road	48.7	B Road	Traffic Island Link At Junction					B Road	Traffic Island Link At Junction
osgb40000000023381265	B Road	Slip Road	B3051	Ashford Hill Road	42.01	B Road	Slip Road					B Road	Slip Road
osgb40000000023396793	Local Road	Single Carriageway		Meadowsweet Close	41.59	Local Road	Single Carriageway					Local Road	Single Carriageway
osgb40000000023396835	A Road	Roundabout	A340		19.09	A Road	Roundabout					A Road	Roundabout
osgb40000000023397555	A Road	Traffic Island Link At Junction	A329	Reading Road	35.01	A Road	Traffic Island Link At Junction					A Road	Traffic Island Link At Junction
osgb40000000023397612	Local Road	Single Carriageway		Colyton Way	56.61	Local Road	Single Carriageway					Local Road	Single Carriageway
osgb40000000023397621	Local Road	Single Carriageway		Waterside Drive	66.43	Local Road	Single Carriageway					Local Road	Single Carriageway
osgb40000000023397771	B Road	Roundabout	B3349	Odiham Road	24.42	B Road	Roundabout					B Road	Roundabout
osgb40000000023400135	Local Road	Traffic Island Link At Junction		Wharfedale Road	27.8	Local Road	Traffic Island Link At Junction					Local Road	Traffic Island Link At Junction
osgb40000000023400500	Local Road	Dual Carriageway		Arlington Square	38.87	Local Road	Dual Carriageway					Local Road	Dual Carriageway
osgb40000000023400976	A Road Primary	Dual Carriageway	A33		58.88	A Road Primary	Dual Carriageway					A Road Primary	Dual Carriageway
osgb40000000023401423	A Road	Roundabout	A4	London Road	29.14	A Road	Roundabout					A Road	Roundabout
osgb40000000023404408	Restricted Local Access Road	Single Carriageway			311.24	zzExcluded	Single Carriageway					zzExcluded	Single Carriageway
osgb40000000023405903	Restricted Local Access Road	Single Carriageway		Broomfield Park	78.3	zzExcluded	Single Carriageway					zzExcluded	Single Carriageway
osgb40000000023406162	Local Road	Single Carriageway		Lyndhurst Close	40.18	Local Road	Single Carriageway					Local Road	Single Carriageway
osgb40000000023406719	Local Road	Single Carriageway		Snowden Close	79.96	Local Road	Single Carriageway					Local Road	Single Carriageway
osgb40000000023406725	Local Road	Single Carriageway		Hemwood Road	35.14	Local Road	Single Carriageway					Local Road	Single Carriageway

Note: Records to be excluded are highlighted in grey

NFCC/ORH

Step 3: Updating Road Speeds

RTC Risk Methodology

Update Road Speed using TOID to link OS Highways and Basemap data. Then update Speed Limit using lookup table (most records are the same)

OS Highways		NFCC Lookup	NFCC Lookup	Basemap	NFCC Lookup
TOID	Road Class	Road Type	Road Speed	Road Speed	Speed Limit
osgb4000000023265077	Minor Road	Single Carriageway		60	60
osgb4000000023265204	Minor Road	Single Carriageway		60	60
osgb4000000023265208	Local Road	Single Carriageway		60	60
osgb4000000023265216	zzExcluded	Single Carriageway		60	60
osgb4000000023265292	Minor Road	Single Carriageway		60	60
osgb4000000023265386	B Road	Single Carriageway		50	50
osgb4000000023266193	Minor Road	Single Carriageway		40	40
osgb4000000023266296	A Road	Single Carriageway		60	60
osgb4000000023266422	Minor Road	Single Carriageway		50	50
osgb4000000023272677	Minor Road	Single Carriageway		60	60
osgb4000000023273417	B Road	Single Carriageway		40	40
osgb4000000023274824	Minor Road	Single Carriageway		60	60
osgb4000000023276230	Minor Road	Single Carriageway		30	30
osgb4000000023276292	Minor Road	Single Carriageway		30	30
osgb4000000023276494	Minor Road	Single Carriageway		30	30
osgb4000000023276550	zzExcluded	Single Carriageway		60	60
osgb4000000023276568	Minor Road	Single Carriageway		30	30
osgb4000000023302116	A Road	Dual Carriageway		50	50
osgb4000000023305435	A Road	Dual Carriageway		30	30
osgb4000000023354893	B Road	Traffic Island Link At Junction		30	30
osgb4000000023381265	B Road	Slip Road		30	30
osgb4000000023396793	Local Road	Single Carriageway		30	30
osgb4000000023396835	A Road	Roundabout		40	40
osgb4000000023397555	A Road	Traffic Island Link At Junction		30	30
osgb4000000023397612	Local Road	Single Carriageway		30	30
osgb4000000023397621	Local Road	Single Carriageway		30	30
osgb4000000023397771	B Road	Roundabout		60	60
osgb4000000023400135	Local Road	Traffic Island Link At Junction		30	30
osgb4000000023400500	Local Road	Dual Carriageway		40	40
osgb4000000023400976	A Road Primary	Dual Carriageway		40	40
osgb4000000023401423	A Road	Roundabout		40	40
osgb4000000023404408	zzExcluded	Single Carriageway		30	30
osgb4000000023405903	zzExcluded	Single Carriageway		30	30
osgb4000000023406162	Local Road	Single Carriageway		20	20
osgb4000000023406719	Local Road	Single Carriageway		30	30
osgb4000000023406725	Local Road	Single Carriageway		30	30

Note: Records to be excluded are highlighted in grey, less important columns are hidden

NFCC/ORH

Step 4: Updating Urban/Rural Data

RTC Risk Methodology

1. Add LSOA Code for the LSOA that contains the road segment. 2. Update the ONS Classification from ONS data. 3. Update the UR Category from lookup table

OS Highways		NFCC Lookup		NFCC Lookup		NFCC Lookup		ONS		NFCC Lookup	
TOID	Road Class	Road Type	Speed Limit	LSOA Code	ONS Classification	UR Category	Speed Limit	LSOA Code	ONS Classification	UR Category	
osgb4000000023265077	Minor Road	Single Carriageway	60	E01016308	D1	R1	60	E01016308	D1	R1	
osgb4000000023265204	Minor Road	Single Carriageway	60	E01016257	E1	R2	60	E01016257	E1	R2	
osgb4000000023265208	Local Road	Single Carriageway	60	E01016264	E1	R2	60	E01016264	E1	R2	
osgb4000000023265216	zzExcluded	Single Carriageway	60	E01016264	E1	R2	60	E01016264	E1	R2	
osgb4000000023265292	Minor Road	Single Carriageway	60	E01022492	E1	R2	60	E01022492	E1	R2	
osgb4000000023265386	B Road	Single Carriageway	50	E01016610	C1	U2	50	E01016610	C1	U2	
osgb4000000023266193	Minor Road	Single Carriageway	40	E01030763	C1	U2	40	E01030763	C1	U2	
osgb4000000023266296	A Road	Single Carriageway	60	E01032727	C1	U2	60	E01032727	C1	U2	
osgb4000000023266422	Minor Road	Single Carriageway	50	E01016573	C1	U2	50	E01016573	C1	U2	
osgb4000000023272677	Minor Road	Single Carriageway	60	E01022493	E1	R2	60	E01022493	E1	R2	
osgb4000000023273417	B Road	Single Carriageway	40	E01022877	C1	U2	40	E01022877	C1	U2	
osgb4000000023274824	Minor Road	Single Carriageway	60	E01030763	C1	U2	60	E01030763	C1	U2	
osgb4000000023276230	Minor Road	Single Carriageway	30	E01022522	E1	R2	30	E01022522	E1	R2	
osgb4000000023276292	Minor Road	Single Carriageway	30	E01016283	C1	U2	30	E01016283	C1	U2	
osgb4000000023276494	Minor Road	Single Carriageway	30	E01016328	E1	R2	30	E01016328	E1	R2	
osgb4000000023276550	zzExcluded	Single Carriageway	60	E01016277	E1	R2	60	E01016277	E1	R2	
osgb4000000023276568	Minor Road	Single Carriageway	30	E01016263	D1	R1	30	E01016263	D1	R1	
osgb4000000023302116	A Road	Dual Carriageway	50	E01016209	C1	U2	50	E01016209	C1	U2	
osgb4000000023305435	A Road	Dual Carriageway	30	E01016603	C1	U2	30	E01016603	C1	U2	
osgb4000000023354893	B Road	Traffic Island Link At Junction	30	E01016550	C1	U2	30	E01016550	C1	U2	
osgb4000000023381265	B Road	Slip Road	30	E01022520	D1	R1	30	E01022520	D1	R1	
osgb4000000023396793	Local Road	Single Carriageway	30	E01016334	C1	U2	30	E01016334	C1	U2	
osgb4000000023396835	A Road	Roundabout	40	E01016254	E1	R2	40	E01016254	E1	R2	
osgb4000000023397555	A Road	Traffic Island Link At Junction	30	E01016316	C1	U2	30	E01016316	C1	U2	
osgb4000000023397612	Local Road	Single Carriageway	30	E01016316	C1	U2	30	E01016316	C1	U2	
osgb4000000023397621	Local Road	Single Carriageway	30	E01016316	C1	U2	30	E01016316	C1	U2	
osgb4000000023397771	B Road	Roundabout	60	E01022858	E1	R2	60	E01022858	E1	R2	
osgb4000000023400135	Local Road	Traffic Island Link At Junction	30	E01016702	C1	U2	30	E01016702	C1	U2	
osgb4000000023400500	Local Road	Dual Carriageway	40	E01016242	C1	U2	40	E01016242	C1	U2	
osgb4000000023400976	A Road Primary	Dual Carriageway	40	E01016391	C1	U2	40	E01016391	C1	U2	
osgb4000000023401423	A Road	Roundabout	40	E01016613	C1	U2	40	E01016613	C1	U2	
osgb4000000023404408	zzExcluded	Single Carriageway	30	E01016531	C1	U2	30	E01016531	C1	U2	
osgb4000000023405903	zzExcluded	Single Carriageway	30	E01016603	C1	U2	30	E01016603	C1	U2	
osgb4000000023406162	Local Road	Single Carriageway	20	E01016222	C1	U2	20	E01016222	C1	U2	
osgb4000000023406719	Local Road	Single Carriageway	30	E01016597	C1	U2	30	E01016597	C1	U2	
osgb4000000023406725	Local Road	Single Carriageway	30	E01016597	C1	U2	30	E01016597	C1	U2	

Note: Records to be excluded are highlighted in grey, less important columns are hidden

NFCC/ORH

Step 5: Assigning Road Categorisation

RTC Risk Methodology

Concentrate the data from Road Class, Road Type, Speed Limit and UR Category to give the Road Categorisation. Use the pipe symbol '|', to demarcate the fields.

OS Highways		NFCC Lookup	NFCC Lookup	NFCC Lookup	NFCC Lookup	NFCC Lookup	Concatenated Fields	
TOID	Road Class	Road Type	Road Type	Speed Limit	UR Category	UR Category	Road Categorisation	Road Categorisation
osgb4000000023265077	Minor Road	Single Carriageway	Single Carriageway	60	R1	R1	Minor Road Single Carriageway 60 R1	Minor Road Single Carriageway 60 R1
osgb4000000023265204	Minor Road	Single Carriageway	Single Carriageway	60	R2	R2	Minor Road Single Carriageway 60 R2	Minor Road Single Carriageway 60 R2
osgb4000000023265208	Local Road	Single Carriageway	Single Carriageway	60	R2	R2	Local Road Single Carriageway 60 R2	Local Road Single Carriageway 60 R2
osgb4000000023265216	zzExcluded	Single Carriageway	Single Carriageway	60	R2	R2	-	-
osgb4000000023265292	Minor Road	Single Carriageway	Single Carriageway	60	R2	R2	Minor Road Single Carriageway 60 R2	Minor Road Single Carriageway 60 R2
osgb4000000023265386	B Road	Single Carriageway	Single Carriageway	50	U2	U2	B Road Single Carriageway 50 U2	B Road Single Carriageway 50 U2
osgb4000000023266193	Minor Road	Single Carriageway	Single Carriageway	40	U2	U2	Minor Road Single Carriageway 40 U2	Minor Road Single Carriageway 40 U2
osgb4000000023266296	A Road	Single Carriageway	Single Carriageway	60	U2	U2	A Road Single Carriageway 60 U2	A Road Single Carriageway 60 U2
osgb4000000023266422	Minor Road	Single Carriageway	Single Carriageway	50	U2	U2	Minor Road Single Carriageway 50 U2	Minor Road Single Carriageway 50 U2
osgb4000000023272677	Minor Road	Single Carriageway	Single Carriageway	60	R2	R2	Minor Road Single Carriageway 60 R2	Minor Road Single Carriageway 60 R2
osgb4000000023273417	B Road	Single Carriageway	Single Carriageway	40	U2	U2	B Road Single Carriageway 40 U2	B Road Single Carriageway 40 U2
osgb4000000023274824	Minor Road	Single Carriageway	Single Carriageway	60	U2	U2	Minor Road Single Carriageway 60 U2	Minor Road Single Carriageway 60 U2
osgb4000000023276230	Minor Road	Single Carriageway	Single Carriageway	30	R2	R2	Minor Road Single Carriageway 30 R2	Minor Road Single Carriageway 30 R2
osgb4000000023276292	Minor Road	Single Carriageway	Single Carriageway	30	U2	U2	Minor Road Single Carriageway 30 U2	Minor Road Single Carriageway 30 U2
osgb4000000023276494	Minor Road	Single Carriageway	Single Carriageway	30	R2	R2	Minor Road Single Carriageway 30 R2	Minor Road Single Carriageway 30 R2
osgb4000000023276550	zzExcluded	Single Carriageway	Single Carriageway	60	R2	R2	-	-
osgb4000000023276568	Minor Road	Single Carriageway	Single Carriageway	30	R1	R1	Minor Road Single Carriageway 30 R1	Minor Road Single Carriageway 30 R1
osgb4000000023302116	A Road	Dual Carriageway	Dual Carriageway	50	U2	U2	A Road Dual Carriageway 50 U2	A Road Dual Carriageway 50 U2
osgb4000000023305435	A Road	Dual Carriageway	Dual Carriageway	30	U2	U2	A Road Dual Carriageway 30 U2	A Road Dual Carriageway 30 U2
osgb4000000023354893	B Road	Traffic Island Link At Junction	Traffic Island Link At Junction	30	U2	U2	B Road Traffic Island Link At Junction 30 U2	B Road Traffic Island Link At Junction 30 U2
osgb4000000023381265	B Road	Slip Road	Slip Road	30	R1	R1	B Road Slip Road 30 R1	B Road Slip Road 30 R1
osgb4000000023396793	Local Road	Single Carriageway	Single Carriageway	30	U2	U2	Local Road Single Carriageway 30 U2	Local Road Single Carriageway 30 U2
osgb4000000023396835	A Road	Roundabout	Roundabout	40	R2	R2	A Road Roundabout 40 R2	A Road Roundabout 40 R2
osgb4000000023397555	A Road	Traffic Island Link At Junction	Traffic Island Link At Junction	30	U2	U2	A Road Traffic Island Link At Junction 30 U2	A Road Traffic Island Link At Junction 30 U2
osgb4000000023397612	Local Road	Single Carriageway	Single Carriageway	30	U2	U2	Local Road Single Carriageway 30 U2	Local Road Single Carriageway 30 U2
osgb4000000023397621	Local Road	Single Carriageway	Single Carriageway	30	U2	U2	Local Road Single Carriageway 30 U2	Local Road Single Carriageway 30 U2
osgb4000000023397771	B Road	Roundabout	Roundabout	60	R2	R2	B Road Roundabout 60 R2	B Road Roundabout 60 R2
osgb4000000023400135	Local Road	Traffic Island Link At Junction	Traffic Island Link At Junction	30	U2	U2	Local Road Traffic Island Link At Junction 30 U2	Local Road Traffic Island Link At Junction 30 U2
osgb4000000023400500	Local Road	Dual Carriageway	Dual Carriageway	40	U2	U2	Local Road Dual Carriageway 40 U2	Local Road Dual Carriageway 40 U2
osgb4000000023400976	A Road Primary	Dual Carriageway	Dual Carriageway	40	U2	U2	A Road Primary Dual Carriageway 40 U2	A Road Primary Dual Carriageway 40 U2
osgb4000000023401423	A Road	Roundabout	Roundabout	40	U2	U2	A Road Roundabout 40 U2	A Road Roundabout 40 U2
osgb4000000023404408	zzExcluded	Single Carriageway	Single Carriageway	30	U2	U2	-	-
osgb4000000023405903	zzExcluded	Single Carriageway	Single Carriageway	30	U2	U2	-	-
osgb4000000023406162	Local Road	Single Carriageway	Single Carriageway	20	U2	U2	Local Road Single Carriageway 20 U2	Local Road Single Carriageway 20 U2
osgb4000000023406719	Local Road	Single Carriageway	Single Carriageway	30	U2	U2	Local Road Single Carriageway 30 U2	Local Road Single Carriageway 30 U2
osgb4000000023406725	Local Road	Single Carriageway	Single Carriageway	30	U2	U2	Local Road Single Carriageway 30 U2	Local Road Single Carriageway 30 U2

Note: Records to be excluded are highlighted in grey, less important columns are hidden

Likelihood, Consequence and Risk Scores by Road Categorisation
 RTC Risk Methodology

Road Categorisation	Total Road Length (km)	Likelihood Value	Consequence Value	Likelihood Score	Consequence Score	Risk Score	Risk Category
Minor Road Single Carriageway 60 R2	73,910.2	34.2	14.5%	1	3	3	Low
Local Road Single Carriageway 30 U2	50,479.7	67.5	6.5%	2	1	2	Very Low
Local Road Single Carriageway 30 U1	22,708.3	103.8	6.7%	2	1	2	Very Low
Local Road Single Carriageway 20 U1	17,644.4	152.1	5.7%	3	1	3	Low
Local Road Single Carriageway 30 R1	13,668.4	28.6	7.8%	1	2	2	Very Low
Local Road Single Carriageway 20 U2	12,651.1	90.1	5.8%	2	1	2	Very Low
Minor Road Single Carriageway 30 U2	12,208.3	283.0	7.0%	3	1	3	Low
Minor Road Single Carriageway 60 R1	11,911.7	65.1	14.3%	1	2	2	Very Low
Minor Road Single Carriageway 30 R2	11,676.0	53.2	10.1%	1	2	2	Very Low
Local Road Single Carriageway 30 R2	9,018.8	17.5	10.1%	1	2	2	Very Low
B Road Single Carriageway 60 R2	8,309.1	143.5	17.4%	2	4	8	High
Local Road Single Carriageway 60 R2	6,860.6	11.2	15.3%	1	4	4	Low
Minor Road Single Carriageway 60 U2	5,793.8	115.0	13.6%	2	2	4	Low
Minor Road Single Carriageway 30 R1	5,553.5	108.0	8.8%	2	2	4	Low
Minor Road Single Carriageway 30 U1	5,229.1	443.5	7.7%	3	2	6	Medium
A Road Primary Single Carriageway 60 R2	4,436.4	324.3	19.5%	3	5	12	Very High
A Road Single Carriageway 60 R2	4,353.3	222.9	17.7%	3	4	12	Very High
A Road Primary Dual Carriageway 70 R2	3,211.6	316.9	14.8%	3	3	9	High
B Road Single Carriageway 30 U2	2,589.4	517.6	7.4%	4	1	4	Low
Motoway Dual Carriageway 70 R2	2,442.9	458.1	12.8%	4	2	8	High
A Road Single Carriageway 30 U2	2,417.4	743.8	7.6%	4	1	4	Low
A Road Primary Dual Carriageway 70 U2	2,415.2	420.0	12.9%	3	2	6	Medium
Minor Road Single Carriageway 40 R2	2,028.4	119.6	13.0%	2	2	4	Low
A Road Single Carriageway 30 U1	1,786.6	1,172.8	7.2%	5	1	5	Medium
Minor Road Single Carriageway 20 U1	1,667.9	557.4	5.5%	4	1	4	Low
B Road Single Carriageway 60 R1	1,665.5	209.0	16.8%	3	4	12	Very High
Secondary Access Road Single Carriageway 30 U2	1,657.2	30.8	6.8%	1	1	1	Very Low
Local Road Single Carriageway 60 R1	1,650.8	15.3	17.4%	1	4	4	Low
B Road Single Carriageway 30 R2	1,615.5	164.1	9.6%	3	2	6	Medium
Motoway Dual Carriageway 70 U2	1,614.2	689.1	10.3%	4	2	8	High
Minor Road Single Carriageway 20 U2	1,465.8	308.6	6.4%	3	1	3	Low
Local Road Single Carriageway 20 R1	1,424.6	33.0	8.7%	1	2	2	Very Low
B Road Single Carriageway 30 U1	1,419.9	687.4	7.5%	4	1	4	Low
A Road Primary Dual Carriageway 70 R1	1,388.0	341.5	14.0%	3	2	6	Medium
B Road Single Carriageway 30 R1	1,300.7	257.4	9.0%	3	2	6	Medium
Minor Road Single Carriageway 40 U2	1,290.4	253.3	11.0%	3	2	6	Medium
B Road Single Carriageway 40 R2	1,183.9	226.9	13.4%	3	2	6	Medium
A Road Primary Single Carriageway 60 R1	1,182.1	361.2	19.0%	3	4	12	Very High
A Road Single Carriageway 60 R1	1,149.9	277.1	18.2%	3	4	12	Very High
Local Access Road Single Carriageway 30 U2	1,149.6	56.5	7.9%	1	2	2	Very Low
Motoway Dual Carriageway 70 U1	1,090.5	700.3	8.8%	4	2	8	High
Motoway Dual Carriageway 70 R1	1,050.0	570.5	11.3%	4	2	8	High
A Road Single Carriageway 50 R2	1,041.8	339.2	16.7%	3	4	12	Very High
Local Road Single Carriageway 60 U2	1,036.7	20.9	13.5%	1	2	1	Very Low
Secondary Access Road Single Carriageway 30 U1	966.7	31.0	6.6%	1	1	1	Very Low
Local Access Road Single Carriageway 60 R2	955.2	10.6	13.3%	1	2	2	Very Low
A Road Single Carriageway 40 U2	937.0	498.8	9.5%	4	2	8	High
A Road Primary Single Carriageway 50 R2	922.2	407.2	16.5%	3	4	12	Very High
A Road Primary Dual Carriageway 40 U1	866.8	784.1	8.7%	4	2	8	High
A Road Single Carriageway 40 R2	838.6	338.5	14.1%	3	2	6	Medium
A Road Single Carriageway 30 R2	816.7	266.9	10.8%	3	2	6	Medium
Secondary Access Road Single Carriageway 20 U1	807.0	32.8	5.3%	1	1	1	Very Low
Secondary Access Road Single Carriageway 20 U2	775.7	42.8	3.9%	1	1	1	Very Low
A Road Single Carriageway 30 R1	762.6	370.7	9.8%	3	2	6	Medium
A Road Single Carriageway 60 U2	752.6	343.5	17.4%	3	4	12	Very High
B Road Single Carriageway 50 R2	752.0	259.3	15.4%	3	4	12	Very High
B Road Single Carriageway 60 U2	746.0	278.8	16.0%	3	4	12	Very High
A Road Primary Single Carriageway 30 U2	726.5	844.1	7.3%	4	1	4	Low
B Road Single Carriageway 40 U2	707.1	381.4	11.7%	3	2	6	Medium
Minor Road Single Carriageway 40 R1	699.7	193.4	12.0%	3	2	6	Medium
A Road Primary Single Carriageway 60 U2	663.3	435.7	15.7%	4	4	12	Very High
Local Access Road Single Carriageway 30 R2	603.7	18.8	11.5%	1	2	2	Very Low
A Road Primary Single Carriageway 30 U1	592.6	1,786.4	6.9%	5	1	5	Medium
Minor Road Single Carriageway 60 U1	551.0	156.1	12.6%	3	2	6	Medium
A Road Primary Single Carriageway 40 R2	541.0	464.0	13.0%	4	2	8	High
A Road Dual Carriageway 30 U2	529.1	804.1	7.1%	4	1	4	Low
A Road Dual Carriageway 40 U2	525.2	518.2	8.2%	4	2	8	High
Minor Road Traffic Island Link At Junction 30 U2	513.4	620.7	6.3%	4	1	4	Low
Local Access Road Single Carriageway 30 R1	497.6	24.5	6.0%	1	1	1	Very Low
A Road Primary Dual Carriageway 40 U2	475.6	622.7	9.1%	4	2	8	High
A Road Primary Dual Carriageway 30 U1	475.5	1,164.3	6.9%	4	1	4	Low
A Road Primary Dual Carriageway 50 U2	463.1	527.3	9.7%	4	2	8	High
A Road Dual Carriageway 30 U1	458.1	1,036.6	7.2%	4	1	4	Low
Local Road Traffic Island Link At Junction 30 U2	447.1	350.8	7.1%	3	1	3	Low
A Road Primary Dual Carriageway 50 U1	446.2	809.1	9.2%	4	2	8	High
Local Road Single Carriageway 20 R2	426.7	17.6	5.8%	1	1	1	Very Low
B Road Single Carriageway 40 R1	425.6	282.3	13.6%	3	2	6	Medium
Local Access Road Single Carriageway 30 U1	424.1	97.5	6.6%	2	1	2	Very Low
A Road Primary Dual Carriageway 70 U1	424.0	632.0	12.7%	4	2	8	High
A Road Single Carriageway 40 R1	399.7	347.0	14.8%	3	3	9	High
A Road Single Carriageway 50 U2	398.1	398.1	15.7%	3	4	12	Very High
Minor Road Single Carriageway 50 R2	397.7	151.7	18.3%	2	4	8	High
Secondary Access Road Single Carriageway 30 R1	360.6	20.3	7.7%	1	2	2	Very Low
A Road Single Carriageway 40 U1	357.4	590.4	10.8%	4	2	8	High
A Road Primary Single Carriageway 40 U2	356.4	666.9	10.4%	4	2	8	High
A Road Single Carriageway 20 U1	353.2	2,586.7	4.5%	5	1	5	Medium
A Road Dual Carriageway 40 U1	346.9	573.2	9.7%	4	2	8	High
Minor Road Single Carriageway 20 R1	342.2	113.5	5.8%	2	1	2	Very Low
Minor Road Single Carriageway 40 U1	336.9	354.7	12.9%	3	2	6	Medium
B Road Single Carriageway 20 U1	318.3	1,077.2	5.6%	4	1	4	Low
A Road Primary Single Carriageway 30 R2	317.2	384.6	10.8%	3	2	6	Medium
Minor Road Dual Carriageway 30 U2	315.9	426.3	7.6%	3	1	3	Low
A Road Dual Carriageway 70 U2	306.8	377.5	11.8%	3	2	6	Medium
Motoway Slip Road 70 U2	302.8	712.9	8.5%	4	2	8	High
A Road Single Carriageway 50 R1	292.8	408.7	16.9%	3	4	12	Very High
Local Access Road Single Carriageway 20 U2	284.5	43.9	9.5%	1	2	2	Very Low
A Road Primary Single Carriageway 30 R1	283.3	464.8	10.1%	4	2	8	High
A Road Dual Carriageway 50 U2	281.0	397.9	9.3%	3	2	6	Medium
Local Access Road Enclosed Traffic Area 30 U2	279.7	134.7	6.7%	2	1	2	Very Low
Minor Road Single Carriageway 20 R2	272.4	64.2	12.4%	1	2	2	Very Low
B Road Single Carriageway 50 R1	269.4	273.5	16.0%	3	4	12	Very High
A Road Primary Single Carriageway 50 R1	259.3	420.3	15.6%	3	4	12	Very High
Minor Road Dual Carriageway 30 U1	251.8	517.6	7.7%	4	2	8	High
Local Road Single Carriageway 40 R2	249.6	40.7	18.9%	1	4	4	Low
A Road Primary Single Carriageway 50 U2	242.5	531.2	12.2%	4	2	8	High
Minor Road Traffic Island Link At Junction 30 U1	239.0	945.5	6.6%	4	1	4	Low
Local Access Road Single Carriageway 60 R1	238.1	8.4	28.3%	1	5	5	Medium
A Road Traffic Island Link At Junction 30 U2	230.5	831.7	5.4%	4	1	4	Low
B Road Single Carriageway 50 U2	222.6	361.6	17.1%	3	4	12	Very High
A Road Primary Dual Carriageway 30 U2	221.3	896.3	6.4%	4	1	4	Low
Motoway Slip Road 70 U1	220.9	629.1	8.4%	4	2	8	High
A Road Primary Dual Carriageway 60 R2	217.2	356.0	14.0%	3	2	6	Medium
A Road Primary Single Carriageway 40 R1	208.8	479.6	12.0%	4	2	8	High
Local Access Road Single Carriageway 20 U1	206.2	143.9	4.4%	2	1	2	Very Low
A Road Primary Dual Carriageway 60 U2	205.1	356.8	13.4%	3	2	6	Medium
Motoway Slip Road 70 R2	200.6	564.2	7.4%	4	1	4	Low
Local Road Traffic Island Link At Junction 30 U1	192.7	572.6	7.3%	4	1	4	Low
Local Road Single Carriageway 40 U2	186.3	99.3	7.8%	2	2	4	Low
B Road Single Carriageway 40 U1	185.0	472.9	11.6%	4	2	8	High

Likelihood, Consequence and Risk Scores by Road Categorisation
 RTC Risk Methodology

Road Categorisation	Total Road Length (km)	Likelihood Value	Consequence Value	Likelihood Score	Consequence Score	Risk Score	Risk Category
B Road/Traffic Island Link At Junction 30 U2	176.0	736.6	5.3%	4	1	4	Low
B Road/Single Carriageway 20 U2	170.9	656.5	4.7%	4	1	4	Low
Minor Road/Roundabout 30 U2	167.3	424.5	5.3%	3	1	3	Low
A Road/Traffic Island Link At Junction 30 U1	166.9	1,582.0	5.8%	5	1	5	Medium
A Road Primary/Dual Carriageway 50 R2	153.5	381.1	11.7%	3	2	6	Medium
Minor Road/Single Carriageway 50 R1	147.6	202.2	14.3%	3	2	6	Medium
A Road/Slip Road 70 U2	145.6	456.6	7.7%	4	2	8	High
B Road/Dual Carriageway 30 U1	145.1	747.9	6.1%	4	1	4	Low
A Road/Roundabout 30 U2	142.9	1,176.5	5.3%	5	1	5	Medium
A Road Primary/Dual Carriageway 50 R1	141.7	437.6	9.9%	3	2	6	Medium
Minor Road/Single Carriageway 50 U2	139.7	243.3	17.2%	3	4	12	Very High
Local Access Road z Other 60 R2	137.9	119.7	18.5%	2	4	8	High
Local Road/Dual Carriageway 30 U2	136.0	167.9	7.4%	3	1	3	Low
A Road Primary/Single Carriageway 40 U1	135.6	761.1	9.6%	4	2	8	High
Local Road/Roundabout 30 U2	134.9	80.3	6.0%	2	1	2	Very Low
Local Access Road/Single Carriageway 60 U2	132.0	29.0	27.0%	1	5	5	Medium
Motorway/Slip Road 70 R1	128.7	578.9	7.6%	4	1	4	Low
A Road/Slip Road 70 R2	126.5	366.3	11.2%	3	2	6	Medium
B Road/Dual Carriageway 30 U2	123.8	669.0	6.0%	4	1	4	Low
A Road/Dual Carriageway 70 R2	120.6	313.8	18.5%	3	4	12	Very High
Minor Road/Traffic Island Link 30 U2	119.3	511.2	6.9%	4	1	4	Low
Local Access Road/Enclosed Traffic Area 30 U1	114.0	166.6	10.4%	3	2	6	Medium
A Road/Dual Carriageway 70 R1	110.3	394.3	13.8%	3	2	6	Medium
Local Road/Single Carriageway 60 U1	108.4	43.0	17.1%	1	4	4	Low
Local Access Road z Other 30 R2	98.4	157.6	17.4%	3	4	12	Very High
A Road/Roundabout 40 U2	98.0	1,248.9	4.7%	5	1	5	Medium
A Road/Dual Carriageway 50 U1	97.1	554.2	9.5%	4	2	8	High
Secondary Access Road/Single Carriageway 30 R2	93.8	10.7	3.3%	1	1	1	Very Low
A Road Primary/Slip Road 70 U2	93.0	569.9	6.9%	4	1	4	Low
A Road Primary/Dual Carriageway 60 R1	92.7	370.3	10.2%	3	2	6	Medium
A Road/Single Carriageway 60 U1	92.3	391.9	14.6%	3	3	9	High
Local Road/Single Carriageway 40 R1	91.4	43.7	11.7%	1	2	2	Very Low
Minor Road/Dual Carriageway 40 U2	89.9	444.7	8.1%	4	2	8	High
B Road/Traffic Island Link At Junction 30 U1	88.5	1,182.7	6.8%	5	1	5	Medium
A Road/Single Carriageway 50 U1	88.4	520.4	12.0%	4	2	8	High
A Road Primary/Dual Carriageway 60 U1	88.4	465.9	10.4%	4	2	8	High
A Road/Single Carriageway 20 U2	88.0	1,079.4	4.4%	4	1	4	Low
Local Road z Other 30 U2	86.5	277.4	5.3%	3	1	3	Low
A Road Primary/Roundabout 40 U2	86.2	1,498.1	5.3%	5	1	5	Medium
A Road/Traffic Island Link At Junction 40 U2	83.9	750.5	7.3%	4	1	4	Low
A Road/Slip Road 70 R1	82.4	384.5	7.9%	3	2	6	Medium
A Road/Slip Road 30 U1	81.2	1,339.0	7.5%	5	1	5	Medium
A Road/Traffic Island Link 30 U2	80.8	888.6	5.7%	4	1	4	Low
B Road/Single Carriageway 60 U1	78.8	359.8	12.6%	3	2	6	Medium
Local Road/Traffic Island Link At Junction 20 U1	78.4	871.4	6.4%	4	1	4	Low
B Road/Single Carriageway 40 U2	77.9	385.2	6.8%	3	1	3	Low
A Road/Traffic Island Link 30 U1	77.8	1,131.4	7.1%	4	1	4	Low
A Road Primary/Traffic Island Link At Junction 30 U2	75.0	1,034.9	8.1%	4	2	8	High
Minor Road/Traffic Island Link At Junction 60 R2	74.5	604.1	14.0%	4	2	8	High
Minor Road/Traffic Island Link At Junction 40 U2	73.9	509.8	7.3%	4	1	4	Low
Local Road/Dual Carriageway 30 U1	73.0	223.7	4.1%	3	1	3	Low
A Road/Roundabout 30 U1	71.2	1,706.2	5.0%	5	1	5	Medium
Minor Road/Traffic Island Link 30 U1	70.8	670.7	10.0%	4	2	8	High
A Road/Dual Carriageway 20 U1	70.7	2,630.6	4.7%	5	1	5	Medium
Local Access Road/Single Carriageway 20 R2	70.2	16.6	20.0%	1	5	5	Medium
A Road/Dual Carriageway 60 U2	69.9	321.8	8.9%	3	2	6	Medium
Local Access Road/Enclosed Traffic Area 30 R1	69.2	89.2	1.9%	2	1	2	Very Low
B Road/Dual Carriageway 40 U1	68.9	500.5	11.4%	4	2	8	High
A Road/Slip Road 30 U2	68.7	835.0	8.2%	4	2	8	High
A Road Primary/Single Carriageway 60 U1	68.5	518.2	14.0%	4	2	8	High
Minor Road/Roundabout 30 U1	68.0	673.7	4.0%	4	1	4	Low
Secondary Access Road/Single Carriageway 20 R1	64.7	30.9	11.7%	1	2	2	Very Low
A Road Primary/Roundabout 60 R2	64.6	1,376.7	5.7%	5	1	5	Medium
Minor Road/Traffic Island Link At Junction 30 R1	64.6	379.1	7.7%	3	2	6	Medium
A Road Primary/Roundabout 30 U2	63.2	1,668.6	6.1%	5	1	5	Medium
A Road/Dual Carriageway 50 R2	63.1	293.1	16.9%	3	4	12	Very High
A Road Primary/Single Carriageway 50 U1	62.6	468.7	14.9%	4	3	12	Very High
Minor Road/Slip Road 30 U2	62.2	739.5	8.9%	4	2	8	High
B Road/Roundabout 30 U2	61.1	839.6	5.1%	4	1	4	Low
Minor Road/Traffic Island Link At Junction 20 U1	59.2	1,088.7	4.2%	4	1	4	Low
A Road Primary/Traffic Island Link At Junction 60 R2	58.8	952.1	8.2%	4	2	8	High
A Road Primary/Roundabout 60 U2	58.1	1,345.2	6.2%	5	1	5	Medium
A Road Primary/Slip Road 70 R2	56.8	387.6	6.8%	3	1	3	Low
Local Road/Single Carriageway 40 U1	56.4	354.9	7.1%	3	1	3	Low
A Road Primary/Traffic Island Link At Junction 30 U1	55.7	2,538.9	8.8%	5	2	10	High
Local Access Road/Enclosed Traffic Area 20 U2	55.7	119.6	16.3%	2	4	8	High
Local Access Road/Enclosed Traffic Area 20 U1	55.7	173.6	6.0%	3	1	3	Low
B Road/Single Carriageway 20 R1	55.6	321.4	7.7%	3	2	6	Medium
Local Road/Traffic Island Link At Junction 30 R1	54.6	171.0	8.2%	3	2	6	Medium
Local Road/Roundabout 30 U1	54.2	104.6	2.1%	2	1	2	Very Low
B Road/Traffic Island Link At Junction 40 U2	53.1	715.6	8.6%	4	2	8	High
Local Road/Traffic Island Link 30 U2	51.9	176.6	11.6%	3	2	6	Medium
Motorway/Dual Carriageway 50 U1	51.0	1,022.2	5.7%	4	1	4	Low
Minor Road/Single Carriageway 50 U1	50.7	341.9	18.7%	3	4	12	Very High
B Road/Traffic Island Link 30 U2	50.2	706.6	8.0%	4	2	8	High
A Road/Dual Carriageway 70 U1	49.4	794.9	9.3%	4	2	8	High
Minor Road/Dual Carriageway 20 U1	49.3	794.9	5.3%	4	1	4	Low
Minor Road/Slip Road 30 U1	48.9	844.5	7.1%	4	1	4	Low
Local Road/Traffic Island Link At Junction 20 U2	48.5	634.2	5.8%	4	1	4	Low
A Road Primary/Dual Carriageway 40 R2	47.9	374.0	12.8%	3	2	6	Medium
A Road/Dual Carriageway 60 R2	47.2	374.0	16.3%	3	4	12	Very High
Local Access Road z Other 30 U2	46.0	266.7	6.9%	3	1	3	Low
A Road/Slip Road 40 U2	46.0	604.0	9.1%	4	2	8	High
Local Road/Slip Road 30 U2	45.8	604.0	6.9%	4	1	4	Low
Local Access Road/Enclosed Traffic Area 30 R2	45.7	44.8	10.2%	1	2	2	Very Low
A Road Primary/Roundabout 40 U1	45.6	1,406.8	9.2%	5	2	10	High
Minor Road/Traffic Island Link At Junction 60 U2	45.4	634.2	13.6%	4	2	8	High
Local Access Road/Single Carriageway 20 R1	45.4	102.3	7.5%	2	1	2	Very Low
Local Access Road/Single Carriageway 40 R2	44.0	73.5	12.8%	2	2	4	Low
A Road/Slip Road 60 R2	43.3	462.4	16.3%	4	4	16	Very High
Minor Road/Traffic Island Link At Junction 30 R2	42.8	647.5	10.2%	4	2	8	High
A Road Primary/Roundabout 70 U2	42.0	998.5	10.8%	4	2	8	High
A Road Primary/Roundabout 30 U1	41.9	1,406.8	7.1%	5	1	5	Medium
Local Access Road/Enclosed Traffic Area 60 R2	41.3	44.8	16.3%	1	4	4	Low
Local Road/Dual Carriageway 20 U1	40.8	794.9	5.3%	4	1	4	Low
A Road/Slip Road 50 U2	40.7	604.0	11.3%	4	2	8	High
Local Access Road z Other 30 R1	40.6	112.3	8.8%	2	2	4	Low
A Road/Slip Road 40 U1	40.6	844.5	9.2%	4	2	8	High
A Road/Slip Road 50 U2	40.3	604.0	13.6%	4	2	8	High
A Road/Slip Road 70 U1	40.1	844.5	9.3%	4	2	8	High
B Road/Single Carriageway 20 R2	39.6	73.5	10.0%	2	2	4	Low
A Road/Traffic Island Link At Junction 20 U1	39.4	1,212.3	5.3%	5	1	5	Medium
A Road/Traffic Island Link At Junction 60 R2	39.1	647.5	16.3%	4	4	16	Very High
A Road Primary/Single Carriageway 20 U1	38.8	262.4	5.3%	3	1	3	Low
A Road Primary/Dual Carriageway 40 R1	38.5	423.6	12.2%	3	2	6	Medium
A Road/Dual Carriageway 40 R1	38.5	423.6	12.2%	3	2	6	Medium
A Road Primary/Roundabout 60 R1	37.6	882.4	15.8%	4	4	16	Very High
A Road Primary/Traffic Island Link At Junction 60 U2	37.5	634.2	13.6%	4	2	8	High
Minor Road/Dual Carriageway 70 U2	37.2	533.8	10.8%	4	2	8	High

Likelihood, Consequence and Risk Scores by Road Categorisation
 RTC Risk Methodology

Road Categorisation	Total Road Length (km)	Likelihood Value	Consequence Value	Likelihood Score	Consequence Score	Risk Score	Risk Category
A Road Primary/Traffic Island Link At Junction 40 U2	37.1	634.2	9.1%	4	2	8	High
A Road/Dual Carriageway 60 R1	37.0	423.6	15.8%	3	4	12	Very High
B Road/Traffic Island Link 30 U1	36.7	939.9	7.1%	4	1	4	Low
A Road/Slip Road 50 U1	36.6	844.5	9.5%	4	2	8	High
Local Access Road/Traffic Island Link At Junction 30 U2	36.5	634.2	6.9%	4	1	4	Low
A Road Primary/Slip Road 70 R1	36.4	435.1	11.8%	3	2	6	Medium
Local Road/Single Carriageway 50 R2	35.9	73.5	15.7%	2	4	8	High
Local Road/Traffic Island Link At Junction 30 R2	35.8	647.5	10.2%	4	2	8	High
Minor Road/Traffic Island Link At Junction 60 R1	35.8	512.8	15.8%	4	4	16	Very High
A Road/Dual Carriageway 50 R1	35.7	423.6	14.6%	3	3	9	High
A Road/Roundabout 40 U1	35.7	1,406.8	9.2%	5	2	10	High
Local Road/Other 20 U2	35.3	266.7	5.8%	3	1	3	Low
Minor Road/Traffic Island Link At Junction 20 U2	34.2	634.2	5.8%	4	1	4	Low
A Road Primary/Slip Road 30 U1	33.9	844.5	7.1%	4	1	4	Low
A Road/Roundabout 50 U2	33.4	998.5	13.6%	4	2	8	High
B Road/Single Carriageway 50 U1	33.2	262.4	9.5%	3	2	6	Medium
A Road/Traffic Island Link At Junction 60 U2	32.9	634.2	13.6%	4	2	8	High
A Road/Traffic Island Link At Junction 40 U1	32.7	1,212.3	9.2%	5	2	10	High
Local Access Road/Single Carriageway 40 U2	32.2	157.2	9.1%	3	2	6	Medium
A Road Primary/Traffic Island Link At Junction 60 R1	31.8	512.8	15.8%	4	4	16	Very High
B Road/Traffic Island Link At Junction 60 R2	30.8	647.5	16.3%	4	4	16	Very High
B Road/Traffic Island Link At Junction 30 R1	30.4	512.8	8.8%	4	2	8	High
Local Access Road/Other 60 R1	30.3	112.3	15.8%	2	4	8	High
A Road Primary/Traffic Island Link 30 U1	30.2	939.9	7.1%	4	1	4	Low
B Road/Roundabout 40 U2	30.1	998.5	9.1%	4	2	8	High
Local Road/Other 20 U1	29.7	413.0	5.3%	3	1	3	Low
Minor Road/Roundabout 40 U2	29.6	998.5	9.1%	4	2	8	High
Minor Road/Dual Carriageway 40 U1	29.2	794.9	9.2%	4	2	8	High
A Road Primary/Traffic Island Link 30 U2	28.3	599.2	6.9%	4	1	4	Low
A Road Primary/Slip Road 50 U2	28.1	604.0	11.3%	4	2	8	High
Local Road/Dual Carriageway 20 U2	28.0	533.8	5.8%	4	1	4	Low
Local Road/Slip Road 30 U1	27.7	844.5	7.1%	4	1	4	Low
A Road/Dual Carriageway 40 R2	27.5	374.0	12.8%	3	2	6	Medium
Minor Road/Dual Carriageway 20 U2	27.2	533.8	5.8%	4	1	4	Low
A Road/Slip Road 60 R1	27.1	435.1	15.8%	3	4	12	Very High
A Road Primary/Roundabout 70 R2	27.1	1,098.2	13.2%	4	2	8	High
A Road Primary/Roundabout 50 U2	26.9	998.5	11.3%	4	2	8	High
A Road/Roundabout 60 R2	26.7	1,098.2	16.3%	4	4	16	Very High
Local Road/Other 30 U1	26.5	413.0	7.1%	3	1	3	Low
Local Road/Traffic Island Link 30 U1	25.8	939.9	7.1%	4	1	4	Low
B Road/Roundabout 30 U1	25.7	1,406.8	7.1%	5	1	5	Medium
A Road/Roundabout 50 U2	25.3	998.5	11.3%	4	2	8	High
A Road/Traffic Island Link At Junction 30 R1	24.9	512.8	8.8%	4	2	8	High
A Road Primary/Slip Road 60 R2	24.9	462.4	16.3%	4	4	16	Very High
A Road/Traffic Island Link 40 U2	24.7	599.2	9.1%	4	2	8	High
A Road/Traffic Island Link At Junction 60 R1	24.5	512.8	15.8%	4	4	16	Very High
A Road Primary/Slip Road 40 U1	24.4	844.5	9.2%	4	2	8	High
Minor Road/Traffic Island Link 20 U1	24.1	939.9	5.3%	4	1	4	Low
B Road/Slip Road 30 U1	23.5	844.5	7.1%	4	1	4	Low
Local Road/Roundabout 20 U1	23.4	1,406.8	5.3%	5	1	5	Medium
A Road Primary/Slip Road 70 U1	23.2	844.5	9.3%	4	2	8	High
A Road Primary/Slip Road 50 U1	23.1	844.5	9.5%	4	2	8	High
A Road Primary/Slip Road 60 U2	22.6	604.0	13.6%	4	2	8	High
Local Access Road/Single Carriageway 60 U1	22.3	262.4	11.7%	3	2	6	Medium
Local Road/Traffic Island Link At Junction 40 U2	22.1	634.2	9.1%	4	2	8	High
B Road/Traffic Island Link At Junction 20 U1	22.0	1,212.3	5.3%	5	1	5	Medium
B Road/Slip Road 30 U2	21.7	604.0	6.9%	4	1	4	Low
Local Road/Roundabout 20 U2	21.6	998.5	5.8%	4	1	4	Low
A Road/Single Carriageway 20 R1	20.3	102.3	7.5%	2	1	2	Very Low
A Road/Roundabout 70 U2	20.1	998.5	10.8%	4	2	8	High
B Road/Traffic Island Link At Junction 60 R1	19.9	512.8	15.8%	4	4	16	Very High
A Road/Roundabout 60 R1	19.9	882.4	15.8%	4	4	16	Very High
Local Road/Traffic Island Link 20 U1	19.7	939.9	5.3%	4	1	4	Low
B Road/Dual Carriageway 50 U2	18.3	533.8	11.3%	4	2	8	High
Motorway/Slip Road 50 U1	18.3	844.5	9.5%	4	2	8	High
A Road Primary/Slip Road 30 U2	18.0	604.0	6.9%	4	1	4	Low
Local Road/Roundabout 30 R1	17.7	882.4	8.8%	4	2	8	High
A Road Primary/Roundabout 40 R2	17.6	1,098.2	12.8%	4	2	8	High
A Road Primary/Dual Carriageway 20 U1	17.6	794.9	5.3%	4	1	4	Low
A Road/Traffic Island Link At Junction 40 R1	17.4	512.8	12.2%	4	2	8	High
Minor Road/Roundabout 30 R1	17.3	882.4	8.8%	4	2	8	High
B Road/Traffic Island Link At Junction 60 U2	17.2	634.2	13.6%	4	2	8	High
A Road/Dual Carriageway 20 U2	17.1	533.8	5.8%	4	1	4	Low
A Road/Single Carriageway 20 R2	17.1	73.5	10.0%	2	2	4	Low
A Road/Traffic Island Link At Junction 50 U2	16.7	634.2	11.3%	4	2	8	High
A Road Primary/Roundabout 40 R1	16.5	882.4	12.2%	4	2	8	High
Minor Road/Traffic Island Link At Junction 40 U1	16.4	1,212.3	9.2%	5	2	10	High
Minor Road/Slip Road 40 U2	16.4	604.0	9.1%	4	2	8	High
Local Access Road/Other 60 U2	16.3	266.7	13.6%	3	2	6	Medium
A Road/Traffic Island Link At Junction 40 R2	16.0	647.5	12.8%	4	2	8	High
A Road Primary/Slip Road 40 U2	15.9	604.0	9.1%	4	2	8	High
B Road/Dual Carriageway 50 U1	15.6	794.9	9.5%	4	2	8	High
Local Access Road/Traffic Island Link At Junction 30 U1	15.2	1,212.3	7.1%	5	1	5	Medium
Motorway/Dual Carriageway 40 U1	15.2	794.9	9.2%	4	2	8	High
A Road Primary/Roundabout 70 U1	15.0	1,406.8	9.3%	5	2	10	High
A Road Primary/Traffic Island Link At Junction 30 R1	14.6	512.8	8.8%	4	2	8	High
A Road/Traffic Island Link 40 U1	14.6	939.9	9.2%	4	2	8	High
Minor Road/Traffic Island Link 30 R1	14.5	287.7	8.8%	3	2	6	Medium
Local Road/Single Carriageway 50 R1	14.4	102.3	14.6%	2	3	6	Medium
A Road/Traffic Island Link 20 U1	14.4	939.9	5.3%	4	1	4	Low
Minor Road/Slip Road 60 R2	14.1	462.4	16.3%	4	4	16	Very High
B Road/Dual Carriageway 70 U2	14.1	533.8	10.8%	4	2	8	High
Minor Road/Traffic Island Link At Junction 40 R1	14.0	512.8	12.2%	4	2	8	High
Minor Road/Traffic Island Link At Junction 40 R2	14.0	647.5	12.8%	4	2	8	High
A Road Primary/Traffic Island Link At Junction 40 R2	13.7	647.5	12.8%	4	2	8	High
Local Road/Roundabout 30 R2	13.7	1,098.2	10.2%	4	2	8	High
Local Road/Single Carriageway 50 U2	13.7	157.2	11.3%	3	2	6	Medium
Minor Road/Dual Carriageway 40 R2	13.6	374.0	12.8%	3	2	6	Medium
Motorway/Dual Carriageway 60 U2	13.4	533.8	13.6%	4	2	8	High
B Road/Traffic Island Link At Junction 30 R2	13.3	647.5	10.2%	4	2	8	High
B Road/Traffic Island Link At Junction 40 U1	13.3	1,212.3	9.2%	5	2	10	High
A Road Primary/Traffic Island Link 60 R2	13.2	455.5	16.3%	4	4	16	Very High
Minor Road/Dual Carriageway 60 R2	13.2	374.0	16.3%	3	4	12	Very High
A Road/Roundabout 40 R1	13.0	882.4	12.2%	4	2	8	High
Local Access Road/Single Carriageway 40 R1	13.0	102.3	12.2%	2	2	4	Low
Local Access Road/Dual Carriageway 30 U1	12.9	794.9	7.1%	4	1	4	Low
Minor Road/Dual Carriageway 30 R2	12.9	374.0	10.2%	3	2	6	Medium
B Road/Dual Carriageway 20 U1	12.5	794.9	5.3%	4	1	4	Low
Local Road/Dual Carriageway 30 R1	12.5	423.6	8.8%	3	2	6	Medium
A Road/Dual Carriageway 60 U1	12.4	794.9	11.7%	4	2	8	High
A Road Primary/Roundabout 70 R1	12.3	882.4	11.8%	4	2	8	High
A Road Primary/Traffic Island Link At Junction 40 U1	12.3	1,212.3	9.2%	5	2	10	High
A Road Primary/Traffic Island Link At Junction 40 R1	12.3	512.8	12.2%	4	2	8	High
Minor Road/Traffic Island Link 40 U2	12.2	599.2	9.1%	4	2	8	High
Minor Road/Roundabout 60 U2	12.1	998.5	13.6%	4	2	8	High
B Road/Slip Road 70 U2	12.0	604.0	10.8%	4	2	8	High
Motorway/Slip Road 50 U2	12.0	604.0	11.3%	4	2	8	High
Minor Road/Slip Road 60 U2	11.9	604.0	13.6%	4	2	8	High
A Road/Roundabout 40 R2	11.9	1,098.2	12.8%	4	2	8	High

Likelihood, Consequence and Risk Scores by Road Categorisation
 RTC Risk Methodology

Road Categorisation	Total Road Length (km)	Likelihood Value	Consequence Value	Likelihood Score	Consequence Score	Risk Score	Risk Category
A Road/Roundabout[30]R1	11.8	882.4	8.8%	4	2	8	High
A Road/Traffic Island Link At Junction[30]R2	11.7	647.5	10.2%	4	2	8	High
Motorway/Dual Carriageway[50]U2	11.5	533.8	11.3%	4	2	8	High
B Road/Slip Road[40]U2	11.5	604.0	9.1%	4	2	8	High
B Road/Traffic Island Link At Junction[40]R1	11.4	512.8	12.2%	4	2	8	High
B Road/Traffic Island Link At Junction[40]R2	11.2	647.5	12.8%	4	2	8	High
A Road Primary/Roundabout[30]R1	11.2	882.4	8.8%	4	2	8	High
A Road Primary/Roundabout[50]R1	11.0	882.4	14.6%	4	3	12	Very High
A Road Primary/Roundabout[50]R2	11.0	1,098.2	15.7%	4	4	16	Very High
A Road Primary/Slip Road[60]R1	11.0	435.1	15.8%	3	4	12	Very High
A Road/Traffic Island Link[30]R1	10.9	287.7	8.8%	3	2	6	Medium
B Road/Traffic Island Link[40]U2	10.9	599.2	9.1%	4	2	8	High
Minor Road/Traffic Island Link[20]U2	10.8	599.2	5.8%	4	1	4	Low
Minor Road/Slip Road[70]U2	10.8	604.0	10.8%	4	2	8	High
A Road Primary/Traffic Island Link[40]U2	10.8	599.2	9.1%	4	2	8	High
Minor Road/Dual Carriageway[60]U2	10.5	533.8	13.6%	4	2	8	High
A Road Primary/Single Carriageway[20]U2	10.4	157.2	5.8%	3	1	3	Low
Local Access Road/Enclosed Traffic Area[20]R2	10.4	44.8	10.0%	1	2	2	Very Low
Minor Road/Roundabout[30]R2	10.3	1,098.2	10.2%	4	2	8	High
Minor Road/Dual Carriageway[30]R1	10.3	423.6	8.8%	3	2	6	Medium
B Road/Traffic Island Link[30]R1	10.3	287.7	8.8%	3	2	6	Medium
Motorway/Slip Road[30]R2	10.2	462.4	10.2%	4	2	8	High
Motorway/Slip Road[60]U2	10.2	604.0	13.6%	4	2	8	High
Local Road/Dual Carriageway[30]R2	10.1	374.0	10.2%	3	2	6	Medium
Local Access Road/Enclosed Traffic Area[60]R1	10.1	106.6	15.8%	2	4	8	High
Motorway/Slip Road[40]U1	9.8	844.5	9.2%	4	2	8	High
Local Access Road/Enclosed Traffic Area[60]U2	9.7	133.2	13.6%	2	2	4	Low
Local Road/Traffic Island Link[20]U2	9.7	599.2	5.8%	4	1	4	Low
A Road/Slip Road[30]R1	9.6	435.1	8.8%	3	2	6	Medium
A Road Primary/Roundabout[60]U1	9.5	1,406.8	11.7%	5	2	10	High
Motorway/Slip Road[40]U2	9.5	604.0	9.1%	4	2	8	High
Motorway/Slip Road[30]U1	9.3	844.5	7.1%	4	1	4	Low
A Road Primary/Traffic Island Link At Junction[50]U2	9.2	634.2	11.3%	4	2	8	High
A Road Primary/Roundabout[50]U1	9.2	1,406.8	9.5%	5	2	10	High
A Road/Dual Carriageway[30]R1	9.0	423.6	8.8%	3	2	6	Medium
A Road/Slip Road[30]R2	9.0	462.4	10.2%	4	2	8	High
Motorway/Slip Road[60]R2	9.0	462.4	16.3%	4	4	16	Very High
B Road/Roundabout[40]U1	9.0	1,406.8	9.2%	5	2	10	High
B Road/Roundabout[30]R1	9.0	882.4	8.8%	4	2	8	High
A Road Primary/Traffic Island Link At Junction[50]R2	9.0	647.5	15.7%	4	4	16	Very High
Local Road/Traffic Island Link At Junction[60]R2	9.0	647.5	16.3%	4	4	16	Very High
Minor Road/Roundabout[20]U2	8.9	998.5	5.8%	4	1	4	Low
A Road/Traffic Island Link At Junction[50]R2	8.8	647.5	15.7%	4	4	16	Very High
A Road Primary/Dual Carriageway[30]R1	8.8	423.6	8.8%	3	2	6	Medium
Local Access Road/Single Carriageway[40]U1	8.6	262.4	9.2%	3	2	6	Medium
A Road Primary/Traffic Island Link[30]R1	8.5	287.7	8.8%	3	2	6	Medium
B Road/Traffic Island Link At Junction[20]U2	8.5	634.2	5.8%	4	1	4	Low
A Road Primary/Traffic Island Link[40]R2	8.5	455.5	12.8%	4	2	8	High
B Road/Dual Carriageway[50]R1	8.5	423.6	14.6%	3	3	9	High
A Road/Roundabout[70]U1	8.5	1,406.8	9.3%	5	2	10	High
B Road/Slip Road[40]U1	8.5	844.5	9.2%	4	2	8	High
Minor Road/Dual Carriageway[40]R1	8.3	423.6	12.2%	3	2	6	Medium
Motorway/Dual Carriageway[60]U1	8.3	794.9	11.7%	4	2	8	High
Minor Road/Roundabout[20]U1	8.3	1,406.8	5.3%	5	1	5	Medium
Motorway/Slip Road[30]R1	8.3	435.1	8.8%	3	2	6	Medium
Local Access Road/Enclosed Traffic Area[20]R1	8.2	106.6	7.5%	2	1	2	Very Low
Local Road/Traffic Island Link At Junction[60]U2	8.2	634.2	13.6%	4	2	8	High
A Road Primary/Traffic Island Link At Junction[30]R2	8.0	647.5	10.2%	4	2	8	High
B Road/Dual Carriageway[60]R2	8.0	374.0	16.3%	3	4	12	Very High
Local Access Road/Enclosed Traffic Area[40]R2	8.0	44.8	12.8%	1	2	2	Very Low
A Road/Slip Road[20]U1	8.0	844.5	5.3%	4	1	4	Low
B Road/Roundabout[60]R1	7.9	882.4	15.8%	4	4	16	Very High
Local Road/Traffic Island Link At Junction[40]U1	7.9	1,212.3	9.2%	5	2	10	High
Minor Road/Slip Road[40]U1	7.8	844.5	9.2%	4	2	8	High
B Road/Traffic Island Link[20]U1	7.8	939.9	5.3%	4	1	4	Low
Local Road/Traffic Island Link[30]R1	7.7	287.7	8.8%	3	2	6	Medium
A Road/Slip Road[50]R1	7.4	435.1	14.6%	3	3	9	High
B Road/Roundabout[60]U2	7.4	998.5	13.6%	4	2	8	High
A Road/Roundabout[60]U1	7.4	1,406.8	11.7%	5	2	10	High
B Road/Dual Carriageway[60]U2	7.3	533.8	13.6%	4	2	8	High
Secondary Access Road/Single Carriageway[60]R2	7.2	73.5	16.3%	2	4	8	High
Minor Road/Roundabout[60]R2	7.2	1,098.2	16.3%	4	4	16	Very High
B Road/Slip Road[50]U2	7.1	604.0	11.3%	4	2	8	High
Local Access Road/Other[40]R2	7.1	134.5	12.8%	2	2	4	Low
A Road/Roundabout[50]U1	7.1	1,406.8	9.5%	5	2	10	High
Local Access Road/Traffic Island Link At Junction[20]U2	7.1	634.2	5.8%	4	1	4	Low
B Road/Dual Carriageway[60]R1	7.0	423.6	15.8%	3	4	12	Very High
A Road/Roundabout[50]R2	7.0	1,098.2	15.7%	4	4	16	Very High
A Road Primary/Roundabout[30]R2	7.0	1,098.2	10.2%	4	2	8	High
Local Road/Slip Road[20]U1	6.9	844.5	5.3%	4	1	4	Low
Local Road/Traffic Island Link At Junction[60]R1	6.8	512.8	15.8%	4	4	16	Very High
Minor Road/Roundabout[40]U1	6.8	1,406.8	9.2%	5	2	10	High
Minor Road/Dual Carriageway[50]U2	6.8	533.8	11.3%	4	2	8	High
Minor Road/Traffic Island Link At Junction[50]U2	6.7	634.2	11.3%	4	2	8	High
Local Access Road/Other[50]R2	6.7	134.5	15.7%	2	4	8	High
A Road/Slip Road[50]R2	6.7	462.4	15.7%	4	4	16	Very High
B Road/Dual Carriageway[40]R2	6.7	374.0	12.8%	3	2	6	Medium
Minor Road/Slip Road[30]R1	6.6	435.1	8.8%	3	2	6	Medium
Motorway/Slip Road[60]U1	6.6	844.5	11.7%	4	2	8	High
Minor Road/Slip Road[50]U1	6.6	844.5	9.5%	4	2	8	High
Minor Road/Dual Carriageway[50]R2	6.6	374.0	15.7%	3	4	12	Very High
A Road/Roundabout[70]R1	6.6	882.4	11.8%	4	2	8	High
B Road/Traffic Island Link At Junction[50]U2	6.6	634.2	11.3%	4	2	8	High
A Road Primary/Traffic Island Link[40]U1	6.5	939.9	9.2%	4	2	8	High
A Road/Dual Carriageway[30]R2	6.5	374.0	10.2%	3	2	6	Medium
Minor Road/Slip Road[70]R2	6.5	462.4	13.2%	4	2	8	High
A Road/Traffic Island Link At Junction[60]U1	6.4	1,212.3	11.7%	5	2	10	High
B Road/Dual Carriageway[40]R1	6.4	423.6	12.2%	3	2	6	Medium
Minor Road/Slip Road[20]U1	6.3	844.5	5.3%	4	1	4	Low
Minor Road/Slip Road[30]R2	6.3	462.4	10.2%	4	2	8	High
B Road/Roundabout[60]R2	6.3	1,098.2	16.3%	4	4	16	Very High
Minor Road/Slip Road[70]U1	6.2	844.5	9.3%	4	2	8	High
B Road/Slip Road[60]U2	6.2	604.0	13.6%	4	2	8	High
A Road/Traffic Island Link At Junction[20]U2	6.1	634.2	5.8%	4	1	4	Low
B Road/Dual Carriageway[50]R2	6.1	374.0	15.7%	3	4	12	Very High
A Road/Traffic Island Link[30]R2	6.0	455.5	10.2%	4	2	8	High
A Road/Slip Road[40]R2	6.0	462.4	12.8%	4	2	8	High
A Road/Traffic Island Link[40]R2	6.0	455.5	12.8%	4	2	8	High
A Road/Roundabout[70]R2	5.9	1,098.2	13.2%	4	2	8	High
A Road/Slip Road[40]R1	5.9	435.1	12.2%	3	2	6	Medium
B Road/Slip Road[60]R2	5.8	462.4	16.3%	4	4	16	Very High
Local Access Road/Other[30]U1	5.8	413.0	7.1%	3	1	3	Low
Minor Road/Traffic Island Link[30]R2	5.8	455.5	10.2%	4	2	8	High
A Road Primary/Traffic Island Link[40]R1	5.7	287.7	12.2%	3	2	6	Medium
Local Access Road/Single Carriageway[50]R2	5.7	73.5	15.7%	2	4	8	High
Local Access Road/Traffic Island Link[30]U2	5.7	599.2	6.9%	4	1	4	Low
Local Access Road/Roundabout[30]U2	5.6	998.5	6.9%	4	1	4	Low
Local Access Road/Dual Carriageway[30]U2	5.5	533.8	6.9%	4	1	4	Low
A Road/Traffic Island Link At Junction[50]R1	5.5	512.8	14.6%	4	3	12	Very High

Likelihood, Consequence and Risk Scores by Road Categorisation
 RTC Risk Methodology

Road Categorisation	Total Road Length (km)	Likelihood Value	Consequence Value	Likelihood Score	Consequence Score	Risk Score	Risk Category
B Road Dual Carriageway 20 U2	5.5	533.8	5.8%	4	1	4	Low
A Road Traffic Island Link 40 R1	5.5	287.7	12.2%	3	2	6	Medium
A Road Primary Traffic Island Link At Junction 20 U1	5.4	1,212.3	5.3%	5	1	5	Medium
Local Road Single Carriageway 50 U1	5.4	262.4	9.5%	3	2	6	Medium
A Road Traffic Island Link 60 R2	5.2	455.5	16.3%	4	4	16	Very High
Local Road Dual Carriageway 40 U2	5.2	533.8	9.1%	4	2	8	High
B Road Dual Carriageway 30 R1	5.1	423.6	8.8%	3	2	6	Medium
B Road Traffic Island Link At Junction 50 R2	5.1	647.5	15.7%	4	4	16	Very High
Local Access Road Traffic Island Link At Junction 20 U1	5.1	1,212.3	5.3%	5	1	5	Medium
A Road Roundabout 30 R2	5.1	1,098.2	10.2%	4	2	8	High
Minor Road Slip Road 50 U2	5.1	604.0	11.3%	4	2	8	High
Minor Road Roundabout 60 R1	5.0	882.4	15.8%	4	4	16	Very High
A Road Traffic Island Link At Junction 70 R2	5.0	647.5	13.2%	4	2	8	High
A Road Primary Slip Road 60 U1	5.0	844.5	11.7%	4	2	8	High
Local Access Road Traffic Island Link At Junction 30 R1	4.9	512.8	8.8%	4	2	8	High
Minor Road Slip Road 60 U1	4.9	844.5	11.7%	4	2	8	High
A Road Primary Traffic Island Link At Junction 50 R1	4.9	512.8	14.6%	4	3	12	Very High
Minor Road Traffic Island Link At Junction 50 R2	4.8	647.5	15.7%	4	4	16	Very High
A Road Roundabout 20 U1	4.8	1,406.8	5.3%	5	1	5	Medium
A Road Traffic Island Link 50 R2	4.8	455.5	15.7%	4	4	16	Very High
Minor Road Roundabout 40 R1	4.6	882.4	12.2%	4	2	8	High
Secondary Access Road Single Carriageway 60 R1	4.6	102.3	15.8%	2	4	8	High
A Road Traffic Island Link At Junction 50 U1	4.6	1,212.3	9.5%	5	2	10	High
A Road Primary Dual Carriageway 30 R2	4.5	374.0	10.2%	3	2	6	Medium
B Road Slip Road 50 U1	4.5	844.5	9.5%	4	2	8	High
B Road Traffic Island Link At Junction 50 R1	4.5	512.8	14.6%	4	3	12	Very High
Minor Road Slip Road 60 R1	4.4	435.1	15.8%	3	4	12	Very High
Motorway Dual Carriageway 50 R2	4.4	374.0	15.7%	3	4	12	Very High
A Road Traffic Island Link At Junction 70 U2	4.4	634.2	10.8%	4	2	8	High
Motorway Roundabout 70 U2	4.4	998.5	10.8%	4	2	8	High
B Road Roundabout 40 R1	4.4	882.4	12.2%	4	2	8	High
A Road Primary Traffic Island Link 50 R2	4.4	455.5	15.7%	4	4	16	Very High
B Road Slip Road 60 R1	4.4	435.1	15.8%	3	4	12	Very High
B Road Slip Road 70 U1	4.3	844.5	9.3%	4	2	8	High
A Road Primary Traffic Island Link At Junction 60 U1	4.2	1,212.3	11.7%	5	2	10	High
B Road Roundabout 30 R2	4.2	1,098.2	10.2%	4	2	8	High
Local Access Road Dual Carriageway 20 U2	4.2	533.8	5.8%	4	1	4	Low
A Road Primary Traffic Island Link 60 R1	4.1	287.7	15.8%	3	4	12	Very High
A Road Roundabout 50 R1	4.0	882.4	14.6%	4	3	12	Very High
Secondary Access Road Single Carriageway 20 R2	4.0	73.5	10.0%	2	2	4	Low
A Road Slip Road 60 U1	4.0	844.5	11.7%	4	2	8	High
A Road Single Carriageway 70 R1	4.0	102.3	11.8%	2	2	4	Low
Local Road Slip Road 20 U2	4.0	604.0	5.8%	4	1	4	Low
Minor Road Roundabout 40 R2	3.9	1,098.2	12.8%	4	2	8	High
A Road Primary Traffic Island Link 30 R2	3.9	455.5	10.2%	4	1	4	High
Motorway Slip Road 30 U2	3.9	604.0	6.9%	4	1	4	Low
Motorway Slip Road 50 R2	3.8	462.4	15.7%	4	4	16	Very High
Local Road Traffic Island Link At Junction 20 R1	3.8	512.8	7.5%	4	1	4	Low
Local Road Slip Road 40 U2	3.8	604.0	9.1%	4	2	8	High
A Road Primary Single Carriageway 20 R1	3.8	102.3	7.5%	2	1	2	Very Low
Local Road Enclosed Traffic Area 30 U2	3.8	133.2	6.9%	2	1	2	Very Low
Local Road Slip Road 30 R2	3.7	462.4	10.2%	4	2	8	High
Local Access Road Traffic Island Link At Junction 30 R2	3.7	647.5	10.2%	4	2	8	High
Local Road Traffic Island Link 30 R2	3.7	455.5	10.2%	4	2	8	High
B Road Roundabout 20 U1	3.7	1,406.8	5.3%	5	1	5	Medium
B Road Traffic Island Link 30 R2	3.6	455.5	10.2%	4	2	8	High
B Road Roundabout 40 R2	3.6	1,098.2	12.8%	4	2	8	High
B Road Traffic Island Link 40 U1	3.6	939.9	9.2%	4	2	8	High
B Road Dual Carriageway 70 R2	3.6	374.0	13.2%	3	2	6	Medium
Minor Road Traffic Island Link At Junction 60 U1	3.6	1,212.3	11.7%	5	2	10	High
B Road Dual Carriageway 30 R2	3.6	374.0	10.2%	3	2	6	Medium
Local Road Traffic Island Link At Junction 40 R1	3.5	512.8	12.2%	4	2	8	High
Local Access Road Dual Carriageway 30 R2	3.4	374.0	10.2%	3	2	6	Medium
B Road Traffic Island Link 40 R2	3.4	455.5	12.8%	4	2	8	High
Local Road Slip Road 30 R1	3.3	435.1	8.8%	3	2	6	Medium
Minor Road Traffic Island Link At Junction 70 U2	3.3	634.2	10.8%	4	2	8	High
Minor Road Dual Carriageway 70 R2	3.3	374.0	13.2%	3	2	6	Medium
A Road Traffic Island Link 50 U2	3.2	599.2	11.3%	4	2	8	High
A Road Primary Traffic Island Link 50 U2	3.2	599.2	11.3%	4	2	8	High
A Road Primary Traffic Island Link 60 U2	3.2	599.2	13.6%	4	2	8	High
Local Road Traffic Island Link At Junction 40 R2	3.2	647.5	12.8%	4	2	8	High
Local Access Road Roundabout 20 U2	3.2	998.5	5.8%	4	1	4	Low
Minor Road Dual Carriageway 50 U1	3.1	794.9	9.5%	4	2	8	High
Minor Road Dual Carriageway 60 R1	3.1	423.6	15.8%	3	4	12	Very High
Minor Road Traffic Island Link At Junction 50 R1	3.1	512.8	14.6%	4	3	12	Very High
A Road Primary Single Carriageway 20 R2	3.1	73.5	10.0%	2	2	4	Low
Local Road Dual Carriageway 60 R2	3.1	374.0	16.3%	3	4	12	Very High
B Road Roundabout 70 U2	3.1	998.5	10.8%	4	2	8	High
Local Road Dual Carriageway 40 R2	3.1	374.0	12.8%	3	2	6	Medium
Motorway Dual Carriageway 50 R1	3.1	423.6	14.6%	3	3	9	High
Local Road Slip Road 40 U1	3.0	844.5	9.2%	4	2	8	High
Motorway Roundabout 70 U1	3.0	1,406.8	9.3%	5	2	10	High
A Road Primary Single Carriageway 70 U2	3.0	157.2	10.8%	3	2	6	Medium
Minor Road Dual Carriageway 70 R1	3.0	423.6	11.8%	3	2	6	Medium
A Road Traffic Island Link 60 R1	3.0	287.7	15.8%	3	4	12	Very High
Local Access Road Roundabout 30 U1	3.0	1,406.8	7.1%	5	1	5	Medium
Local Access Road Enclosed Traffic Area 40 R1	2.9	106.6	12.2%	2	2	4	Low
Minor Road Traffic Island Link At Junction 50 U1	2.9	1,212.3	9.5%	5	2	10	High
Local Access Road Enclosed Traffic Area 40 U2	2.9	133.2	9.1%	2	2	4	Low
Minor Road Slip Road 20 U2	2.8	604.0	5.8%	4	1	4	Low
B Road Traffic Island Link 20 U2	2.8	599.2	5.8%	4	1	4	Low
Motorway Slip Road 40 R1	2.8	435.1	12.2%	3	2	6	Medium
Minor Road Traffic Island Link At Junction 70 R2	2.7	647.5	13.2%	4	2	8	High
A Road Single Carriageway 70 R2	2.7	73.5	13.2%	2	2	4	Low
B Road Slip Road 40 R2	2.7	462.4	12.8%	4	2	8	High
A Road Primary Traffic Island Link At Junction 50 U1	2.7	1,212.3	9.5%	5	2	10	High
Local Access Road Slip Road 30 U1	2.7	844.5	7.1%	4	1	4	Low
B Road Traffic Island Link 40 R1	2.6	287.7	12.2%	3	2	6	Medium
Minor Road Slip Road 40 R2	2.6	462.4	12.8%	4	2	8	High
B Road Roundabout 50 U2	2.6	998.5	11.3%	4	2	8	High
A Road Traffic Island Link 60 U2	2.6	599.2	13.6%	4	2	8	High
Local Road Roundabout 40 U2	2.6	998.5	9.1%	4	2	8	High
A Road Slip Road 20 U2	2.5	604.0	5.8%	4	1	4	Low
Motorway Roundabout 70 R2	2.5	1,098.2	13.2%	4	2	8	High
A Road Primary Single Carriageway 70 R2	2.5	73.5	13.2%	2	2	4	Low
A Road Traffic Island Link 20 U2	2.5	599.2	5.8%	4	1	4	Low
Minor Road Traffic Island Link 60 R2	2.5	455.5	16.3%	4	4	16	Very High
Local Access Road Slip Road 60 U2	2.5	604.0	13.6%	4	2	8	High
A Road Primary Slip Road 50 R2	2.5	462.4	15.7%	4	4	16	Very High
Local Access Road Traffic Island Link At Junction 60 R2	2.5	647.5	16.3%	4	4	16	Very High
A Road Traffic Island Link 50 R1	2.5	287.7	14.6%	3	3	9	High
Local Road Traffic Island Link At Junction 20 R2	2.4	647.5	10.0%	4	2	8	High
Minor Road Dual Carriageway 60 U1	2.4	794.9	11.7%	4	2	8	High
Local Road Other 30 R1	2.4	112.3	8.8%	2	2	4	Low
B Road Dual Carriageway 70 U1	2.4	794.9	9.3%	4	2	8	High
Local Access Road Traffic Island Link 30 U1	2.4	939.9	7.1%	4	1	4	Low
Motorway Slip Road 40 R2	2.4	462.4	12.8%	4	2	8	High
Minor Road Traffic Island Link 40 R2	2.4	455.5	12.8%	4	2	8	High
Minor Road Traffic Island Link 40 R1	2.4	287.7	12.2%	3	2	6	Medium

Likelihood, Consequence and Risk Scores by Road Categorisation

RTC Risk Methodology

Road Categorisation	Total Road Length (km)	Likelihood Value	Consequence Value	Likelihood Score	Consequence Score	Risk Score	Risk Category
Minor Road/Traffic Island Link[40]U1	2.3	939.9	9.2%	4	2	8	High
A Road Primary/Slip Road[40]R1	2.3	435.1	12.2%	3	2	6	Medium
Local Road/Traffic Island Link At Junction[50]U2	2.3	634.2	11.3%	4	2	8	High
Motorway/Dual Carriageway[40]U2	2.2	533.8	9.1%	4	2	8	High
Motorway/Slip Road[60]R1	2.2	435.1	15.8%	3	4	12	Very High
Local Access Road/Dual Carriageway[20]U1	2.2	794.9	5.3%	4	1	4	Low
A Road Primary/Traffic Island Link[50]R1	2.2	287.7	14.6%	3	3	9	High
Minor Road/Traffic Island Link[60]U2	2.2	599.2	13.6%	4	2	8	High
Local Access Road/Roundabout[30]R1	2.2	882.4	8.8%	4	2	8	High
Local Access Road/Slip Road[70]U2	2.2	604.0	10.8%	4	2	8	High
Local Access Road/Slip Road[30]U2	2.2	604.0	6.9%	4	1	4	Low
B Road/Slip Road[30]R1	2.2	435.1	8.8%	3	2	6	Medium
B Road/Dual Carriageway[60]U1	2.1	794.9	11.7%	4	2	8	High
B Road/Traffic Island Link At Junction[60]U1	2.1	1,212.3	11.7%	5	2	10	High
Minor Road/Traffic Island Link At Junction[20]R1	2.1	512.8	7.5%	4	1	4	Low
Local Access Road/Other[40]U2	2.1	266.7	9.1%	3	2	6	Medium
Local Access Road/Single Carriageway[50]U2	2.1	157.2	11.3%	3	2	6	Medium
B Road/Slip Road[70]R2	2.1	462.4	13.2%	4	2	8	High
Local Access Road/Traffic Island Link At Junction[40]U2	2.1	634.2	9.1%	4	2	8	High
Local Road/Traffic Island Link[20]R1	2.1	287.7	7.5%	3	1	3	Low
B Road/Slip Road[60]U1	2.0	844.5	11.7%	4	2	8	High
B Road/Dual Carriageway[70]R1	2.0	423.6	11.8%	3	2	6	Medium
Secondary Access Road/Single Carriageway[40]U2	2.0	157.2	9.1%	3	2	6	Medium
B Road/Traffic Island Link At Junction[50]U1	2.0	1,212.3	9.5%	5	2	10	High
B Road/Traffic Island Link[60]R2	2.0	455.5	16.3%	4	4	16	Very High
Minor Road/Dual Carriageway[50]R1	2.0	423.6	14.6%	3	3	9	High
Local Road/Roundabout[20]R1	2.0	882.4	7.5%	4	1	4	Low
B Road/Slip Road[20]U1	1.9	844.5	5.3%	4	1	4	Low
Local Access Road/Other[40]R1	1.9	112.3	12.2%	2	2	4	Low
A Road Primary/Traffic Island Link At Junction[70]R2	1.9	647.5	13.2%	4	2	8	High
Local Access Road/Other[50]U2	1.9	266.7	11.3%	3	2	6	Medium
A Road Primary/Traffic Island Link At Junction[70]U2	1.9	634.2	10.8%	4	2	8	High
Minor Road/Traffic Island Link[60]R1	1.8	287.7	15.8%	3	4	12	Very High
A Road/Roundabout[20]U2	1.8	998.5	5.8%	4	1	4	Low
A Road/Traffic Island Link At Junction[70]R1	1.8	512.8	11.8%	4	2	8	High
A Road/Traffic Island Link[50]U1	1.8	939.9	9.5%	4	2	8	High
Motorway/Dual Carriageway[30]U1	1.8	794.9	7.1%	4	1	4	Low
Minor Road/Slip Road[70]R1	1.8	435.1	11.8%	3	2	6	Medium
Local Access Road/Slip Road[60]R2	1.8	462.4	16.3%	4	4	16	Very High
Minor Road/Traffic Island Link At Junction[70]R1	1.7	512.8	11.8%	4	2	8	High
Local Access Road/Single Carriageway[50]R1	1.7	102.3	14.6%	2	3	6	Medium
Secondary Access Road/Single Carriageway[40]R1	1.7	102.3	12.2%	2	2	4	Low
A Road Primary/Slip Road[40]R2	1.7	462.4	12.8%	4	2	8	High
B Road/Traffic Island Link At Junction[70]U2	1.6	634.2	10.8%	4	2	8	High
B Road/Roundabout[50]R1	1.6	882.4	14.6%	4	3	12	Very High
B Road/Slip Road[70]R1	1.6	435.1	11.8%	3	2	6	Medium
Local Road/Traffic Island Link At Junction[60]U1	1.6	1,212.3	11.7%	5	2	10	High
Local Road/Traffic Island Link At Junction[50]U1	1.6	1,212.3	9.5%	5	2	10	High
B Road/Roundabout[50]R2	1.6	1,098.2	15.7%	4	4	16	Very High
Local Access Road/Roundabout[30]R2	1.6	1,098.2	10.2%	4	2	8	High
Secondary Access Road/Single Carriageway[60]U2	1.5	157.2	13.6%	3	2	6	Medium
Minor Road/Roundabout[70]U2	1.5	998.5	10.8%	4	2	8	High
Local Access Road/Dual Carriageway[30]R1	1.5	423.6	8.8%	3	2	6	Medium
Minor Road/Traffic Island Link At Junction[20]R2	1.5	647.5	10.0%	4	2	8	High
A Road/Traffic Island Link At Junction[70]U1	1.5	1,212.3	9.3%	5	2	10	High
Local Road/Dual Carriageway[60]U2	1.5	533.8	13.6%	4	2	8	High
Local Access Road/Enclosed Traffic Area[60]U1	1.5	168.3	11.7%	3	2	6	Medium
B Road/Slip Road[30]R2	1.5	462.4	10.2%	4	2	8	High
Local Access Road/Other[70]U2	1.5	266.7	10.8%	3	2	6	Medium
Local Road/Roundabout[60]U2	1.5	998.5	13.6%	4	2	8	High
A Road Primary/Traffic Island Link[20]U1	1.5	939.9	5.3%	4	1	4	Low
Local Access Road/Slip Road[30]R2	1.5	462.4	10.2%	4	2	8	High
A Road Primary/Slip Road[50]R1	1.4	435.1	14.6%	3	3	9	High
B Road/Slip Road[50]R2	1.4	462.4	15.7%	4	4	16	Very High
Minor Road/Single Carriageway[70]R2	1.4	73.5	13.2%	2	2	4	Low
Minor Road/Slip Road[50]R1	1.4	435.1	14.6%	3	3	9	High
Motorway/Slip Road[50]R1	1.4	435.1	14.6%	3	3	9	High
Local Road/Dual Carriageway[20]R2	1.4	374.0	10.0%	3	2	6	Medium
Local Access Road/Other[70]R1	1.4	112.3	11.8%	2	2	4	Low
Local Road/Dual Carriageway[60]R1	1.3	423.6	15.8%	3	4	12	Very High
Local Road/Roundabout[20]R2	1.3	1,098.2	10.0%	4	2	8	High
B Road/Roundabout[20]U2	1.3	998.5	5.8%	4	1	4	Low
Local Access Road/Traffic Island Link At Junction[60]U2	1.3	634.2	13.6%	4	2	8	High
Local Access Road/Traffic Island Link At Junction[60]R1	1.3	512.8	15.8%	4	4	16	Very High
B Road/Traffic Island Link At Junction[70]R2	1.3	647.5	13.2%	4	2	8	High
B Road/Roundabout[70]R2	1.3	1,098.2	13.2%	4	2	8	High
Local Road/Enclosed Traffic Area[60]R2	1.3	44.8	16.3%	1	4	4	Low
Local Access Road/Other[50]R1	1.3	112.3	14.6%	2	3	6	Medium
B Road/Roundabout[50]U1	1.2	1,406.8	9.5%	5	2	10	High
Local Access Road/Traffic Island Link[20]U1	1.2	939.9	5.3%	4	1	4	Low
Secondary Access Road/Single Carriageway[40]R2	1.2	73.5	12.8%	2	2	4	Low
Minor Road/Roundabout[60]U1	1.2	1,406.8	11.7%	5	2	10	High
Minor Road/Traffic Island Link At Junction[70]U1	1.2	1,212.3	9.3%	5	2	10	High
Local Access Road/Traffic Island Link[20]U2	1.1	599.2	5.8%	4	1	4	Low
A Road Primary/Traffic Island Link At Junction[70]R1	1.1	512.8	11.8%	4	2	8	High
Minor Road/Slip Road[50]R2	1.1	462.4	15.7%	4	4	16	Very High
Local Road/Dual Carriageway[40]R1	1.1	423.6	12.2%	3	2	6	Medium
Motorway/Single Carriageway[60]U2	1.1	157.2	13.6%	3	2	6	Medium
B Road/Traffic Island Link[60]R1	1.1	287.7	15.8%	3	4	12	Very High
Local Road/Enclosed Traffic Area[30]U1	1.1	168.3	7.1%	3	1	3	Low
Local Access Road/Dual Carriageway[20]R1	1.1	423.6	7.5%	3	1	3	Low
Local Road/Slip Road[60]R1	1.0	435.1	15.8%	3	4	12	Very High
Local Road/Other[60]U2	1.0	266.7	13.6%	3	2	6	Medium
Local Road/Single Carriageway[70]R2	1.0	73.5	13.2%	2	2	4	Low
Minor Road/Roundabout[50]U2	1.0	998.5	11.3%	4	2	8	High
B Road/Slip Road[40]R1	1.0	435.1	12.2%	3	2	6	Medium
B Road/Traffic Island Link[60]U2	1.0	599.2	13.6%	4	2	8	High
Minor Road/Slip Road[40]R1	1.0	435.1	12.2%	3	2	6	Medium
Local Access Road/Roundabout[20]U1	1.0	1,406.8	5.3%	5	1	5	Medium
Local Road/Dual Carriageway[20]R1	1.0	423.6	7.5%	3	1	3	Low
Local Road/Slip Road[70]U2	0.9	604.0	10.8%	4	2	8	High
Local Road/Slip Road[50]U1	0.9	844.5	9.5%	4	2	8	High
A Road Primary/Slip Road[20]U2	0.9	604.0	5.8%	4	1	4	Low
Local Road/Slip Road[60]R2	0.9	462.4	16.3%	4	4	16	Very High
Local Road/Roundabout[60]R1	0.9	882.4	15.8%	4	4	16	Very High
B Road/Slip Road[20]U2	0.9	604.0	5.8%	4	1	4	Low
Local Road/Enclosed Traffic Area[30]R1	0.9	106.6	8.8%	2	2	4	Low
Minor Road/Single Carriageway[70]U2	0.9	157.2	10.8%	3	2	6	Medium
Local Access Road/Traffic Island Link[30]R2	0.8	455.5	10.2%	4	2	8	High
Local Access Road/Other[20]R2	0.8	134.5	10.0%	2	2	4	Low
A Road/Single Carriageway[70]U2	0.8	157.2	10.8%	3	2	6	Medium
Motorway/Dual Carriageway[40]R1	0.8	423.6	12.2%	3	2	6	Medium
B Road/Traffic Island Link[50]U2	0.8	599.2	11.3%	4	2	8	High
Local Access Road/Dual Carriageway[60]R1	0.8	423.6	15.8%	3	4	12	Very High
Local Road/Roundabout[60]R2	0.8	1,098.2	16.3%	4	4	16	Very High
Local Access Road/Traffic Island Link At Junction[20]R2	0.8	647.5	10.0%	4	2	8	High
Local Access Road/Traffic Island Link At Junction[40]U1	0.8	1,212.3	9.2%	5	2	10	High
A Road Primary/Traffic Island Link At Junction[20]U2	0.8	634.2	5.8%	4	1	4	Low
Motorway/Roundabout[70]R1	0.8	882.4	11.8%	4	2	8	High

Likelihood, Consequence and Risk Scores by Road Categorisation
 RTC Risk Methodology

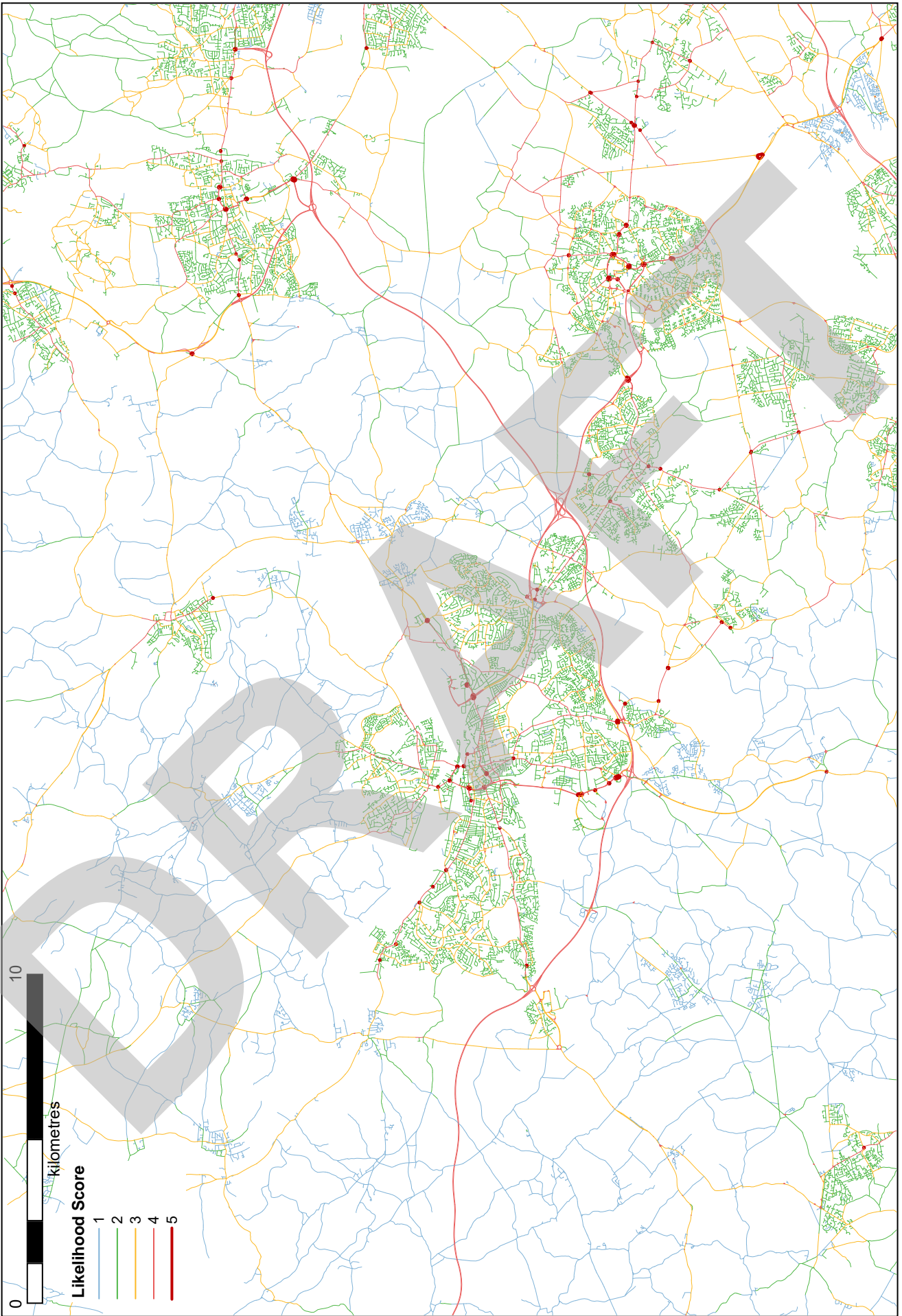
Road Categorisation	Total Road Length (km)	Likelihood Value	Consequence Value	Likelihood Score	Consequence Score	Risk Score	Risk Category
Local Access Road/Slip Road/70/U1	0.8	844.5	9.3%	4	2	8	High
B Road/Roundabout/70/R1	0.8	882.4	11.8%	4	2	8	High
Local Access Road/Enclosed Traffic Area/40/U1	0.8	168.3	9.2%	3	2	6	Medium
A Road Primary/Traffic Island Link/50/U1	0.8	939.9	9.5%	4	2	8	High
Local Road/Traffic Island Link At Junction/50/R1	0.8	512.8	14.6%	4	3	12	Very High
Local Access Road/Single Carriageway/50/U1	0.8	262.4	9.5%	3	2	6	Medium
B Road/Traffic Island Link At Junction/70/U1	0.7	1,212.3	9.3%	5	2	10	High
B Road/Traffic Island Link/50/R2	0.7	455.5	15.7%	4	4	16	Very High
Local Road/Traffic Island Link/20/R2	0.7	455.5	10.0%	4	2	8	High
Local Access Road/Other/60/U1	0.7	413.0	11.7%	3	2	6	Medium
Local Road/Slip Road/50/U2	0.7	604.0	11.3%	4	2	8	High
Local Road/Traffic Island Link/60/R2	0.7	455.5	16.3%	4	4	16	Very High
Local Access Road/Traffic Island Link At Junction/20/R1	0.7	512.8	7.5%	4	1	4	Low
Local Access Road/Traffic Island Link/30/R1	0.7	287.7	8.8%	3	2	6	Medium
Local Access Road/Slip Road/20/U2	0.7	604.0	5.8%	4	1	4	Low
Minor Road/Roundabout/50/R1	0.7	882.4	14.6%	4	3	12	Very High
Local Access Road/Enclosed Traffic Area/50/R2	0.7	44.8	15.7%	1	4	4	Low
A Road Primary/Traffic Island Link/60/U1	0.7	939.9	11.7%	4	2	8	High
Local Road/Enclosed Traffic Area/20/U2	0.6	133.2	5.8%	2	1	2	Very Low
Local Road/Traffic Island Link At Junction/50/R2	0.6	647.5	15.7%	4	4	16	Very High
Minor Road/Roundabout/20/R1	0.6	882.4	7.5%	4	1	4	Low
Local Access Road/Other/20/U2	0.6	266.7	5.8%	3	1	3	Low
B Road/Traffic Island Link At Junction/20/R1	0.6	512.8	7.5%	4	1	4	Low
Local Road/Slip Road/60/U2	0.6	604.0	13.6%	4	2	8	High
Local Access Road/Other/70/R2	0.6	134.5	13.2%	2	2	4	Low
Local Access Road/Dual Carriageway/20/R2	0.6	374.0	10.0%	3	2	6	Medium
Local Access Road/Traffic Island Link At Junction/40/R2	0.6	647.5	12.8%	4	2	8	High
Local Road/Traffic Island Link At Junction/70/R2	0.6	647.5	13.2%	4	2	8	High
Secondary Access Road/Single Carriageway/40/U1	0.6	262.4	9.2%	3	2	6	Medium
Local Road/Traffic Island Link/40/U2	0.6	599.2	9.1%	4	2	8	High
Local Access Road/Dual Carriageway/60/R2	0.6	374.0	16.3%	3	4	12	Very High
A Road Primary/Slip Road/20/U1	0.6	844.5	5.3%	4	1	4	Low
Local Road/Enclosed Traffic Area/30/R2	0.5	44.8	10.2%	1	2	2	Very Low
Minor Road/Other/20/U1	0.5	413.0	5.3%	3	1	3	Low
A Road Primary/Dual Carriageway/20/U2	0.5	533.8	5.8%	4	1	4	Low
Motorway/Single Carriageway/60/U1	0.5	262.4	11.7%	3	2	6	Medium
Motorway/Single Carriageway/30/U1	0.5	262.4	7.1%	3	1	3	Low
A Road Primary/Slip Road/30/R1	0.5	435.1	8.8%	3	2	6	Medium
B Road/Traffic Island Link At Junction/70/R1	0.5	512.8	11.8%	4	2	8	High
Minor Road/Traffic Island Link/50/R2	0.5	455.5	15.7%	4	4	16	Very High
Local Road/Roundabout/60/U1	0.5	1,406.8	11.7%	5	2	10	High
Local Road/Slip Road/70/U1	0.5	844.5	9.3%	4	2	8	High
Local Access Road/Roundabout/20/R1	0.5	882.4	7.5%	4	1	4	Low
A Road Primary/Traffic Island Link At Junction/70/U1	0.5	1,212.3	9.3%	5	2	10	High
A Road Primary/Roundabout/20/U2	0.5	998.5	5.8%	4	1	4	Low
Local Access Road/Slip Road/20/R2	0.5	462.4	10.0%	4	2	8	High
Local Road/Traffic Island Link/60/R1	0.5	287.7	15.8%	3	4	12	Very High
Local Access Road/Slip Road/30/R1	0.5	435.1	8.8%	3	2	6	Medium
B Road/Traffic Island Link/50/R1	0.5	287.7	14.6%	3	3	9	High
Local Road/Slip Road/40/R2	0.4	462.4	12.8%	4	2	8	High
Minor Road/Traffic Island Link/20/R1	0.4	287.7	7.5%	3	1	3	Low
Motorway/Dual Carriageway/30/U2	0.4	533.8	6.9%	4	1	4	Low
Local Access Road/Roundabout/60/U2	0.4	998.5	13.6%	4	2	8	High
Local Access Road/Slip Road/40/U1	0.4	844.5	9.2%	4	2	8	High
A Road/Single Carriageway/70/U1	0.4	262.4	9.3%	3	2	6	Medium
Minor Road/Roundabout/50/U1	0.4	1,406.8	9.5%	5	2	10	High
Local Access Road/Roundabout/60/R2	0.4	1,098.2	16.3%	4	4	16	Very High
Motorway/Slip Road/20/U2	0.4	604.0	5.8%	4	1	4	Low
Local Access Road/Other/40/U1	0.4	413.0	9.2%	3	2	6	Medium
Local Road/Dual Carriageway/50/U1	0.4	794.9	9.5%	4	2	8	High
Minor Road/Traffic Island Link/50/R1	0.4	287.7	14.6%	3	3	9	High
Local Road/Roundabout/40/R1	0.4	882.4	12.2%	4	2	8	High
Local Access Road/Roundabout/60/R1	0.4	882.4	15.8%	4	4	16	Very High
A Road/Traffic Island Link At Junction/20/R1	0.4	512.8	7.5%	4	1	4	Low
Local Road/Enclosed Traffic Area/20/R1	0.4	106.6	7.5%	2	1	2	Very Low
Local Access Road/Other/50/U1	0.4	413.0	9.5%	3	2	6	Medium
Secondary Access Road/Single Carriageway/60/U1	0.4	262.4	11.7%	3	2	6	Medium
Local Access Road/Traffic Island Link At Junction/40/R1	0.4	512.8	12.2%	4	2	8	High
Local Road/Single Carriageway/70/U2	0.4	157.2	10.8%	3	2	6	Medium
Local Access Road/Slip Road/20/U1	0.4	844.5	5.3%	4	1	4	Low
Minor Road/Traffic Island Link/50/U2	0.4	599.2	11.3%	4	2	8	High
B Road/Roundabout/70/U1	0.4	1,406.8	9.3%	5	2	10	High
B Road/Roundabout/60/U1	0.3	1,406.8	11.7%	5	2	10	High
Local Access Road/Dual Carriageway/60/U2	0.3	533.8	13.6%	4	2	8	High
Minor Road/Dual Carriageway/20/R2	0.3	374.0	10.0%	3	2	6	Medium
Local Access Road/Roundabout/20/R2	0.3	1,098.2	10.0%	4	2	8	High
Local Road/Roundabout/40/U1	0.3	1,406.8	9.2%	5	2	10	High
Local Access Road/Other/20/U1	0.3	413.0	5.3%	3	1	3	Low
Local Road/Slip Road/40/R1	0.3	435.1	12.2%	3	2	6	Medium
B Road/Other/20/U2	0.3	266.7	5.8%	3	1	3	Low
B Road/Traffic Island Link/60/U1	0.3	939.9	11.7%	4	2	8	High
A Road Primary/Roundabout/20/U1	0.3	1,406.8	5.3%	5	1	5	Medium
Local Access Road/Dual Carriageway/50/U1	0.3	794.9	9.5%	4	2	8	High
Minor Road/Traffic Island Link/20/R2	0.3	455.5	10.0%	4	2	8	High
Local Road/Enclosed Traffic Area/40/R1	0.3	106.6	12.2%	2	2	4	Low
Minor Road/Other/30/R1	0.3	112.3	8.8%	2	2	4	Low
Local Road/Traffic Island Link/60/U2	0.3	599.2	13.6%	4	2	8	High
Local Access Road/Slip Road/70/R2	0.3	462.4	13.2%	4	2	8	High
Motorway/Roundabout/40/R1	0.3	882.4	12.2%	4	2	8	High
A Road Primary/Slip Road/30/R2	0.3	462.4	10.2%	4	2	8	High
Local Road/Slip Road/50/R2	0.3	462.4	15.7%	4	4	16	Very High
Minor Road/Slip Road/20/R1	0.3	435.1	7.5%	3	1	3	Low
Local Road/Roundabout/40/R2	0.3	1,098.2	12.8%	4	2	8	High
B Road/Traffic Island Link/50/U1	0.3	939.9	9.5%	4	2	8	High
Local Road/Dual Carriageway/40/U1	0.3	794.9	9.2%	4	2	8	High
Minor Road/Roundabout/70/R1	0.3	882.4	11.8%	4	2	8	High
Motorway/Dual Carriageway/60/R2	0.3	374.0	16.3%	3	4	12	Very High
Local Road/Enclosed Traffic Area/60/U2	0.3	133.2	13.6%	2	2	4	Low
Minor Road/Other/30/U1	0.3	413.0	7.1%	3	1	3	Low
Minor Road/Traffic Island Link/50/U1	0.3	939.9	9.5%	4	2	8	High
Local Road/Dual Carriageway/60/U1	0.3	794.9	11.7%	4	2	8	High
B Road/Traffic Island Link/20/R1	0.3	287.7	7.5%	3	1	3	Low
Local Access Road/Traffic Island Link At Junction/50/U2	0.3	634.2	11.3%	4	2	8	High
B Road/Roundabout/20/R1	0.3	882.4	7.5%	4	1	4	Low
A Road Primary/Traffic Island Link/20/U2	0.3	599.2	5.8%	4	1	4	Low
B Road/Traffic Island Link At Junction/20/R2	0.3	647.5	10.0%	4	2	8	High
A Road/Traffic Island Link/20/R1	0.3	287.7	7.5%	3	1	3	Low
Motorway/Single Carriageway/60/R2	0.3	73.5	16.3%	2	4	8	High
Local Access Road/Slip Road/60/U1	0.3	844.5	11.7%	4	2	8	High
Local Access Road/Other/20/R1	0.2	112.3	7.5%	2	1	2	Very Low
A Road/Traffic Island Link/60/U1	0.2	939.9	11.7%	4	2	8	High
Minor Road/Roundabout/20/R2	0.2	1,098.2	10.0%	4	2	8	High
Local Road/Traffic Island Link/40/U1	0.2	939.9	9.2%	4	2	8	High
Motorway/Roundabout/50/U1	0.2	1,406.8	9.5%	5	2	10	High
B Road/Slip Road/50/R1	0.2	435.1	14.6%	3	3	9	High
Motorway/Dual Carriageway/60/R1	0.2	423.6	15.8%	3	4	12	Very High
Local Access Road/Traffic Island Link/60/R2	0.2	455.5	16.3%	4	4	16	Very High
Local Access Road/Roundabout/40/R2	0.2	1,098.2	12.8%	4	2	8	High
Local Access Road/Traffic Island Link At Junction/60/U1	0.2	1,212.3	11.7%	5	2	10	High

Likelihood, Consequence and Risk Scores by Road Categorisation

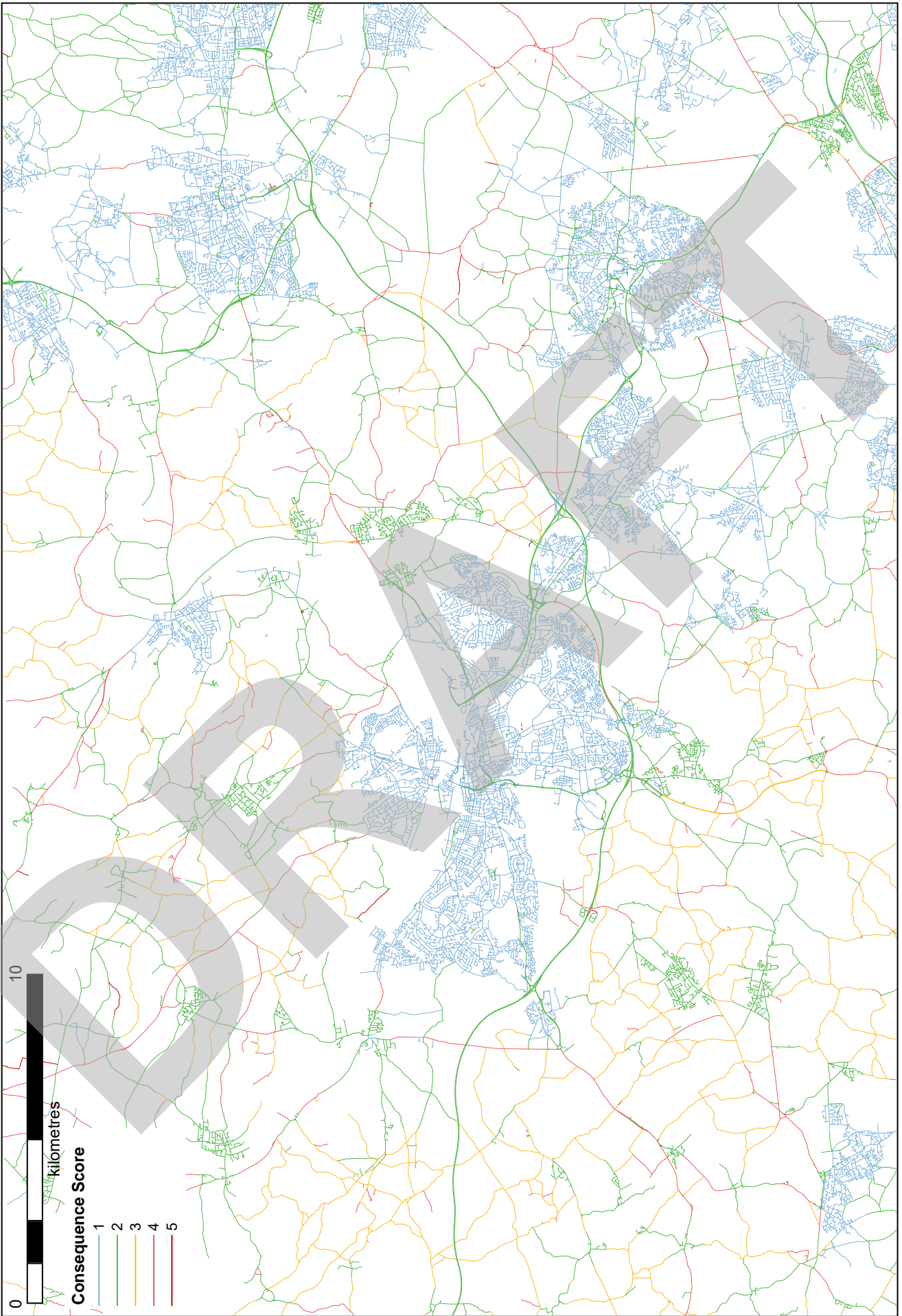
RTC Risk Methodology

Road Categorisation	Total Road Length (km)	Likelihood Value	Consequence Value	Likelihood Score	Consequence Score	Risk Score	Risk Category
Local Road Other 20 R1	0.2	112.3	7.5%	2	1	2	Very Low
Local Road Single Carriageway 70 R1	0.2	102.3	11.8%	2	2	4	Low
Local Access Road Slip Road 40 U2	0.2	604.0	9.1%	4	2	8	High
Local Road Traffic Island Link At Junction 70 U2	0.2	634.2	10.8%	4	2	8	High
Local Road Enclosed Traffic Area 20 U1	0.2	168.3	5.3%	3	1	3	Low
Motorway Traffic Island Link At Junction 70 R2	0.2	647.5	13.2%	4	2	8	High
B Road Other 30 U2	0.2	266.7	6.9%	3	1	3	Low
A Road Roundabout 20 R1	0.2	882.4	7.5%	4	1	4	Low
Minor Road Slip Road 20 R2	0.2	462.4	10.0%	4	2	8	High
Motorway Traffic Island Link At Junction 30 R1	0.2	512.8	8.8%	4	2	8	High
Minor Road Roundabout 50 R2	0.2	1,098.2	15.7%	4	4	16	Very High
Motorway Roundabout 50 U2	0.2	998.5	11.3%	4	2	8	High
Motorway Slip Road 20 R2	0.2	462.4	10.0%	4	2	8	High
Local Access Road Enclosed Traffic Area 50 R1	0.2	106.6	14.6%	2	3	6	Medium
Local Access Road Traffic Island Link 20 R2	0.2	455.5	10.0%	4	2	8	High
Minor Road Roundabout 70 R2	0.2	1,098.2	13.2%	4	2	8	High
Local Access Road Slip Road 70 R1	0.2	435.1	11.8%	3	2	6	Medium
Local Road Enclosed Traffic Area 40 R2	0.2	44.8	12.8%	1	2	2	Very Low
Local Access Road Traffic Island Link At Junction 50 U1	0.1	1,212.3	9.5%	5	2	10	High
Minor Road Traffic Island Link 60 U1	0.1	939.9	11.7%	4	2	8	High
Local Road Dual Carriageway 50 U2	0.1	533.8	11.3%	4	2	8	High
B Road Single Carriageway 70 U2	0.1	157.2	10.8%	3	2	6	Medium
Local Access Road Traffic Island Link At Junction 50 R1	0.1	512.8	14.6%	4	3	12	Very High
Local Access Road Traffic Island Link 60 R1	0.1	287.7	15.8%	3	4	12	Very High
Local Road Traffic Island Link 40 R1	0.1	287.7	12.2%	3	2	6	Medium
Local Road Enclosed Traffic Area 60 R1	0.1	106.6	15.8%	2	4	8	High
Motorway Traffic Island Link At Junction 30 U1	0.1	1,212.3	7.1%	5	1	5	Medium
Local Access Road Traffic Island Link 40 U2	0.1	599.2	9.1%	4	2	8	High
Local Road Slip Road 60 U1	0.1	844.5	11.7%	4	2	8	High
Motorway Traffic Island Link At Junction 70 R1	0.1	512.8	11.8%	4	2	8	High
Motorway Traffic Island Link At Junction 70 U2	0.1	634.2	10.8%	4	2	8	High
Motorway Slip Road 20 U1	0.1	844.5	5.3%	4	1	4	Low
Minor Road Other 30 U2	0.1	266.7	6.9%	3	1	3	Low
A Road Primary Traffic Island Link At Junction 20 R1	0.1	512.8	7.5%	4	1	4	Low
Local Access Road Enclosed Traffic Area 50 U2	0.1	133.2	11.3%	2	2	4	Low
A Road Primary Single Carriageway 70 R1	0.1	102.3	11.8%	2	2	4	Low
Local Road Traffic Island Link 60 U1	0.1	939.9	11.7%	4	2	8	High
Local Access Road Traffic Island Link 60 U2	0.1	599.2	13.6%	4	2	8	High
Motorway Single Carriageway 30 U2	0.1	157.2	6.9%	3	1	3	Low
Local Road Slip Road 20 R1	0.1	435.1	7.5%	3	1	3	Low
Local Access Road Traffic Island Link At Junction 50 R2	0.1	647.5	15.7%	4	4	16	Very High
Local Road Slip Road 50 R1	0.1	435.1	14.6%	3	3	9	High
Local Access Road Roundabout 40 U1	0.1	1,406.8	9.2%	5	2	10	High
Local Access Road Traffic Island Link 40 R1	0.1	287.7	12.2%	3	2	6	Medium
Minor Road Dual Carriageway 70 U1	0.1	794.9	9.3%	4	2	8	High
Local Access Road Slip Road 40 R2	0.1	462.4	12.8%	4	2	8	High
A Road Primary Single Carriageway 70 U1	0.1	262.4	9.3%	3	2	6	Medium
Local Road Traffic Island Link 50 U2	0.1	599.2	11.3%	4	2	8	High
Motorway Traffic Island Link At Junction 70 U1	0.1	1,212.3	9.3%	5	2	10	High
Local Access Road Roundabout 40 R1	0.1	882.4	12.2%	4	2	8	High
Local Road Dual Carriageway 50 R2	0.1	374.0	15.7%	3	4	12	Very High
Local Road Dual Carriageway 70 U1	0.1	794.9	9.3%	4	2	8	High
Motorway Roundabout 40 U2	0.1	998.5	9.1%	4	2	8	High
Local Road Dual Carriageway 70 U2	0.1	533.8	10.8%	4	2	8	High
Local Road Other 30 R2	0.1	134.5	10.2%	2	2	4	Low
Minor Road Single Carriageway 70 U1	0.1	262.4	9.3%	3	2	6	Medium
A Road Traffic Island Link 70 U2	0.1	599.2	10.8%	4	2	8	High
Motorway Traffic Island Link At Junction 40 U2	0.0	634.2	9.1%	4	2	8	High
A Road Primary Traffic Island Link 70 R2	0.0	455.5	13.2%	4	2	8	High
Motorway Traffic Island Link At Junction 30 U2	0.0	634.2	6.9%	4	1	4	Low
Local Road Traffic Island Link 40 R2	0.0	455.5	12.8%	4	2	8	High
Local Access Road Single Carriageway 70 R2	0.0	73.5	13.2%	2	2	4	Low
Motorway Single Carriageway 40 U2	0.0	157.2	9.1%	3	2	6	Medium
Motorway Traffic Island Link At Junction 40 R1	0.0	512.8	12.2%	4	2	8	High
A Road Primary Traffic Island Link 70 U2	0.0	599.2	10.8%	4	2	8	High
Motorway Dual Carriageway 20 U1	0.0	794.9	5.3%	4	1	4	Low
Secondary Access Road Single Carriageway 50 U1	0.0	262.4	9.5%	3	2	6	Medium
Local Road Slip Road 20 R2	0.0	462.4	10.0%	4	2	8	High
Minor Road Single Carriageway 70 R1	0.0	102.3	11.8%	2	2	4	Low
Motorway Single Carriageway 50 U1	0.0	262.4	9.5%	3	2	6	Medium
B Road Single Carriageway 70 R1	0.0	102.3	11.8%	2	2	4	Low
Motorway Traffic Island Link At Junction 60 U2	0.0	634.2	13.6%	4	2	8	High
B Road Single Carriageway 70 U1	0.0	262.4	9.3%	3	2	6	Medium
Local Access Road Enclosed Traffic Area 50 U1	0.0	168.3	9.5%	3	2	6	Medium
Local Road Single Carriageway 70 U1	0.0	262.4	9.3%	3	2	6	Medium
Minor Road Traffic Island Link 70 U2	0.0	599.2	10.8%	4	2	8	High
Local Access Road Slip Road 60 R1	0.0	435.1	15.8%	3	4	12	Very High
B Road Traffic Island Link 20 R2	0.0	455.5	10.0%	4	2	8	High
B Road Single Carriageway 70 R2	0.0	73.5	13.2%	2	2	4	Low
Local Road Traffic Island Link 50 R1	0.0	287.7	14.6%	3	3	9	High
A Road Primary Slip Road 20 R1	0.0	435.1	7.5%	3	1	3	Low
Local Access Road Roundabout 50 U1	0.0	1,406.8	9.5%	5	2	10	High

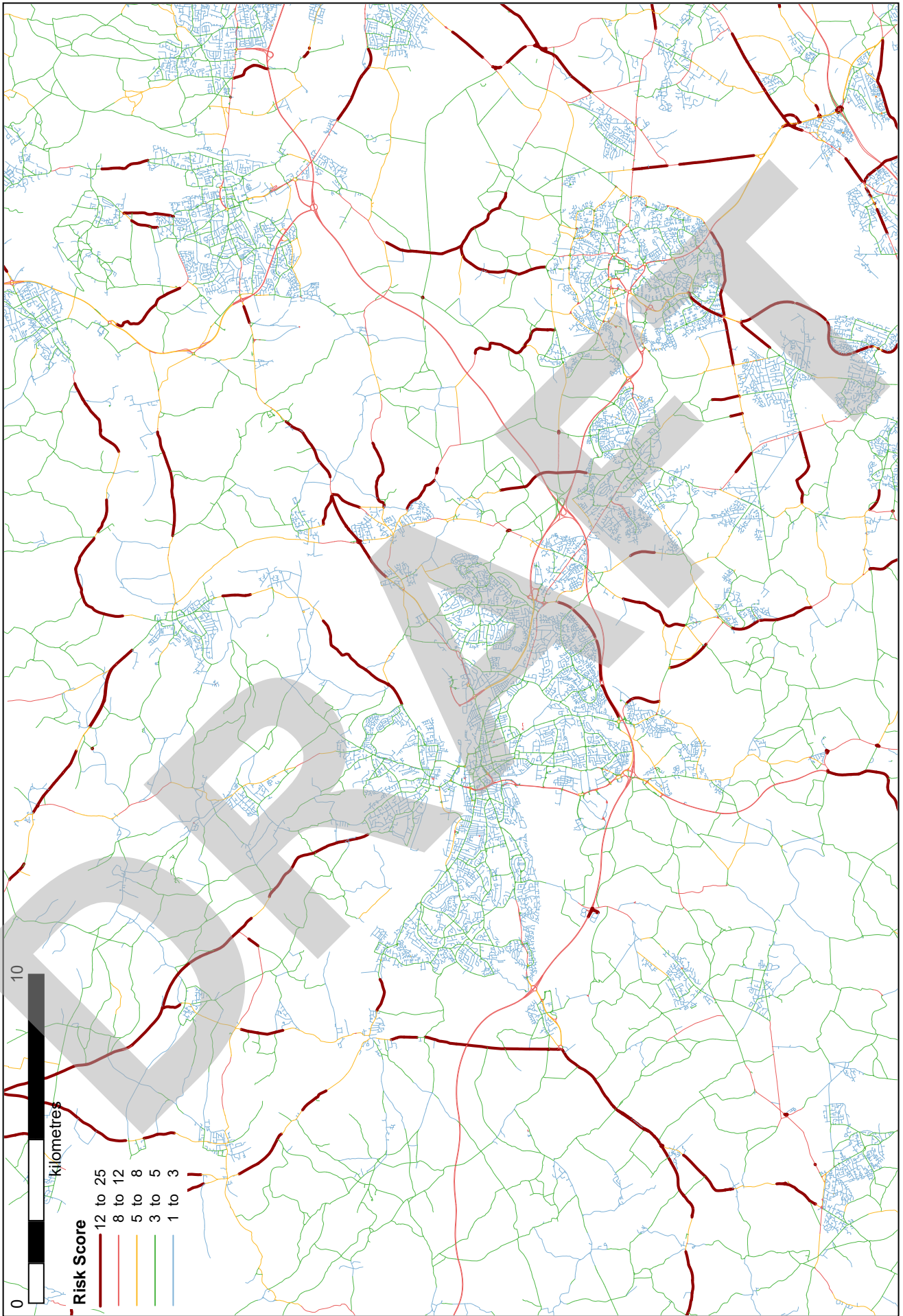
Mapped Example: RTC Likelihood Score by Road Segment



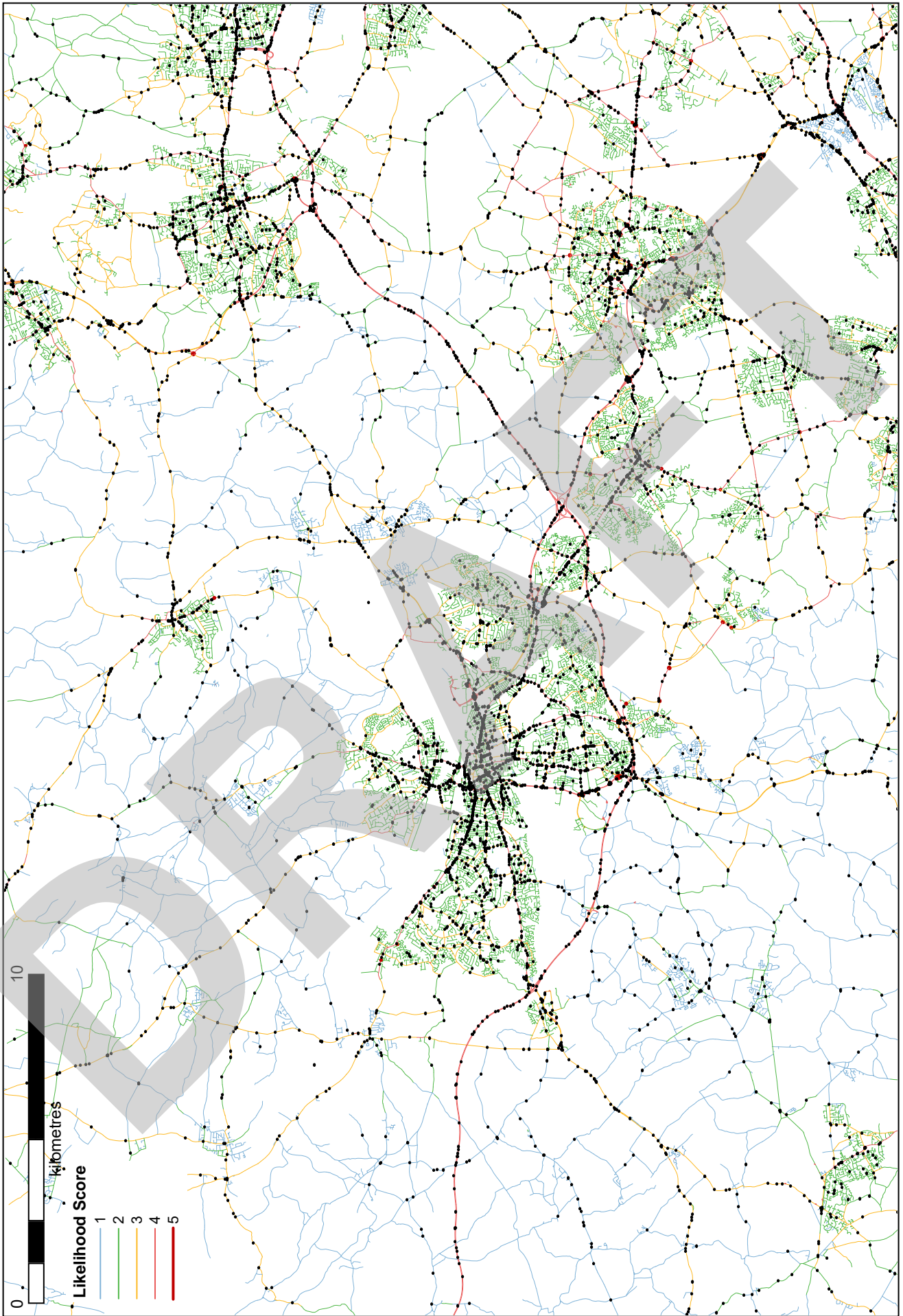
Mapped Example: RTC Consequence Score by Road Segment



Mapped Example: RTC Risk Score by Road Segment



Mapped Example: RTC Likelihood Score and All Stats19 Incident Locations



Mapped Example: RTC Consequence Score and Stats19 RTCs with Fatalities

