North East Unit Network Management Contract
Winter Service Plan
2023 / 2024

Revision History

This plan shall be reviewed at a minimum of 12 monthly intervals and updated as appropriate. The reviews, including no changes, are noted in the following table.

Revision	Date	Amendment	Content Owner	Authorised By
01	May 23	Draft	Stuart Green	Tom Wallace
02	September 23	Draft. Amendments made from PAG audit. Vehicle registrations added.	Stuart Green	Tom Wallace
03	September 23	New trial footpath routes and maps added.	Stuart Green	Tom Wallace

Ref	Name of Holder	Designation	Organisation
Main Electronic Copy			
1	Tom Wallace	Operating Company Representative	Amey
2	Stuart Green	Severe Weather Manager	Amey
3	Stephen Pilkington	Operations Manager	Amey
4	Allan Cuthbert	Operations Manager – North	Amey
5	Kevin McRae	Operations Manager – South	Amey
6	Maryann McGee	Control Room Manager	Amey
7	TBC	Control Room	Amey
8	Martin Polland	Transport Scotland	Transport Scotland
9	Iain McDonald	Transport Scotland	Transport Scotland
10	Andy Fraser	PAG	PAG
Additional Electronic Copies			
10	David Wright	Severe Weather Manager	BEAR – Northwest Unit
11	Alistair Allen	Severe Weather Manager	BEAR – Southeast Unit
12	David Paton	Severe Weather Manager	BEAR – M80 DBFO
13	Michael Trollen	Control Centre Manager	Traffic Scotland OC
14	Stirling Council	Head of Roads	Stirling Council
15	Aberdeenshire Council	Head of Roads	Aberdeenshire Council
16	Aberdeen City Council	Head of Roads	Aberdeen City Council
17	Dundee City Council	Head of Roads	Dundee City Council
18	Fife Council	Head of Roads	Fife Council
19	Perth & Kinross Council	Head of Roads	Perth & Kinross Council
20	Angus Council	Head of Roads	Angus Council
21	Moray Council	Head of Roads	Moray Council
22	Highland Council	Head of Roads	Highland Council
23	Clackmannanshire Council	Head of Roads	Clackmannanshire Council
24	Severe Weather Manager	AWPR DBFO	Aberdeen Roads Ltd
25	OIC	Control Room – Helen Street	Police Scotland
26	OIC	West Area HQ	Scottish Fire and Rescue Service
27	OIC	West Area Control Centre	Scottish Ambulance Service
28		Network Rail HQ	Network Rail
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Introduction and Policy

The Network consists of the motorway and Trunk Road network in the Northeast of Scotland including the M90, A9, A90, A92, A95, A96 and A972 routes.

Winter Service Operations shall allow the safe movement of all road users throughout the Network and minimise disruption to users arising from adverse winter weather (ice and snow). The incidence and severity of winter conditions vary throughout the season and from year to year and hence the deployed resource requirements fluctuate accordingly.

Amey will deliver a level of Winter Service to deal with the winter conditions normally associated in the Northeast of Scotland, with the facility to provide additional resources as required to deal effectively with all winter weather conditions which can be expected to arise. The requirements of Amey are provided in Schedule 2 Appendix 6.

Amey shall provide sufficient resources to ensure that all during the Winter service period, Amey shall prevent snow or ice from forming and remaining on all Trunk Roads of the unit in accordance with the requirements of this Schedule 2 Scope, Section 6 Network Operations – Winter Service and Attachment 6.11 De-icing Material Spread Rates Table 6.11.1 Decision Matrix for Winter Service.

The Winter period runs from 1st October to 15th May. Amey shall provide and maintain the Winter Service if Winter conditions occur out with the Winter Service period.

Amey has previous experience of successfully managing both Trunk Road and Local Authority Winter Service Operations within the UK (United Kingdom), including over 12 years in Southwest Trunk Roads, the Southeast Trunk Roads in the 2nd and 4th Generation Contracts, The Forth Bridges Unit and for North Lanarkshire Council. This valuable experience has assisted in shaping this strategy, which details how the Directors' Winter Service requirements will be achieved.

This Winter Service Plan is of key strategic importance to the successful operation of the Project and its importance will be reflected in the Plan's ownership by our Severe Weather Manager. While our Operating Company Representative has the overall responsibility for the successful delivery of the Plan. He will be assisted in all respects by the Severe Weather Manager being available to support as required by the prevailing or predicted conditions.

The Winter Service Plan shall comply with the requirements of Transport Scotland's Manual for the Management of the Risk of unplanned Network Disruption and be included within the Operating Company's Disruption Risk Management Plan and held within the Operating Companies Management System

1. Management Arrangements

1.1. Severe Weather Manager (SWM)

1.1.1. Name

Stuart Green will have the delegated responsibility for all aspects of winter service provision.

1.1.2. Qualifications

11 years of experience in Winter service. IHE Winter decision Making qualifications. Met Desk training.

1.1.3. Experience

The SWM has the relevant experience required to fulfil the duties of this post and ensure compliance with the requirements of the Project. He has done Winter Service decision making since 2012 and has done the Severe Weather Manager role since 2019.

1.1.4. Responsibilities

The SWM has delegated and overall responsibility for the provision of the winter service and ensuring compliance with the Project for the following activities:

- Ice prediction and weather forecasting service, including sensor calibration.
- Collection and management of weather data
- Winter service decision making
- Plant and communications
- De-icing material stock levels and storage
- Staff and Operative training and rosters
- Inspection and maintenance of winter hardware
- Maintaining records
- Liaison with third parties
- Implementing additional resources where required Communicating with Transport Scotland during severe events.
- Preparing reports and participating in weekly conference calls with Transport Scotland
- Reporting salt stock levels, as required.
- Achieving contractual response times
- Identification and provision of Mutual Aid subject to approval from the Director

The SWM is the owner of the Winter Service Plan (WSP), being responsible for revisions to this plan at least once annually and whenever considered necessary during the Winter Service Season. The SWM is responsible for submitting the WSP to The Directors for written consent no later than 31 July each year.

The SWM is also responsible for the preparation and submission of the Winter Service Annual Report prior to 31 May each year and will attend the subsequent Winter Service annual review meeting with The Directors within 15 days of submission.

1.2. Winter Service Duty Officers

1.2.1. Aiden Kerr, Meghan Gilmartin, Gary Watkinson,

Will undertake the role of Winter Service Duty Officer on a rota basis, handling daily decision making on planned actions. In addition, any fresh staff will be enrolled on the IHE Winter Decision Makers course and then join the rota undertaking a shadowing role. We have also undertaken WSDO training through the IHE for a further 7 WSDO's who will shadow the current WSDO's for the first part of Winter. They are Martin Dunsmuir, Rhys Lowe. Nicola Traill, Fraser Mathers, Rian Marchi, Joseph Crockett and Shadman Khan.

1.2.2. Qualifications

All WSDO's will have undertaken suitable training in relation to winter service decision making and weather forecast interpretation, including subjects such as road meteorology and winter service computer systems and software. All WSDO's will attend the IHE Winter Decision Makers Course during the contract term and additional staff will be trained to become WSDO's.

1.2.3. Experience

WSDO's will each have minimum 4 years' previous experience or IHE Winter Service training ensuring competent and consistent winter service decision making and the use of both the weather forecast information and the computerised road weather information system. They will also be supported by several trained Duty Operation Managers who will be available 24/7 for any help. Our OCCR (Operating Company Control Room) staff will also have the Meteorological Training and will be able to monitor the weather in the control room screens.

1.2.4. Responsibilities

The WSDO is solely authorised by Amey and is responsible for taking decisions, issuing instructions, always implementing, and directing the Winter Service. If the WSDO is uncertain of conditions and what action to take he should discuss with the Severe Weather Manager. During the winter months of October to May inclusive, a WSDO will be based in the Operation Control Room when RST's are forecast to below or equal to +3 degrees Celsius. Additionally, we can also remotely access the Computerised Road Weather Information System (RWIS) and if needed our Winter Control Room can be established and transferred seamlessly to a new location (Bargeddie Office) should the need arise due to failure or extra assistance is needed. This also allows more experienced managers to assist from any location should the need arise. The WSDO shall be in the control room whenever Winter Service Operations are planned, constantly monitoring weather and road conditions via the RWIS, Weather Radar and information fed back from the drivers on site. The WSDO shall also receive information from and communicate instructions to patrol drivers on a regular basis. At changes in shift, the outgoing and incoming WSDO will handover and exchange information including:

- 24-hour action plan
- current weather and road conditions including trend.
- updates from the Expert Weather Forecasting Service (Met Desk)

The WSDO will be supported by the SWM. The criteria which will decide this support will include guidance and decision-making support during:

- marginal conditions.
- periods when low confidence forecasts are issued.
- severe weather conditions such as prolonged snow, high winds, or freezing rain.

In prolonged periods of severe conditions, the SWM will instruct additional resources to be deployed within the Control Room to deal with the increased monitoring requirement and higher level of ingoing and outgoing communications.

Duty WSDO's will operate on a roster basis. This ensures that two WSDO's are rostered for every week throughout the Winter Service Season. The WSDO will maintain and update winter records including:

- Planned and actual:
  - Treatment records
  - Response times
  - Commencement times
  - Route times
  - Spread rates
- Observations and actions taken by the Winter Service Patrols.
- Output from Constructional Plant on-board data capture devices.
- Constructional Plant down time and software faults.
- Constructional Plant deployment records (including Global Positioning System records) and driver/operator logs.
- Logs of telephone, electronic mail, and two-way communication calls
- RWIS records.
- Weather forecasts and actual weather experienced.
- Complaints by members of the public and road users.
- Accidents resulting from winter conditions.
- Road closures due to winter conditions.

During the Winter Service Period, the WSDO shall produce Daily Action Plans on planned treatments for the following twenty-four (24) hour period and actual treatments for the previous twenty-four (24) hour period for each precautionary treatment Route and each Winter Service Patrol Route.

These reports shall be recorded in an electronic format and shall include as a minimum;
(a) summary forecast and actual weather data,
(b) planned and actual treatment,
(c) planned and actual commencement times,
(d) completion times, amount of de-icing material spread, and the cumulative amount spread by weight including percentage target weight achieved for the Route during the relevant Winter Service Period,
(e) plough usage,
(f) number of resilience days (capability) of each depot based on two treatments per Route per day at forty (40) grams per square metre for pre wetted salt and three (3) treatments per Route per day at 0.0156 litres per square metre for potassium acetate,
(g) the weather forecast accuracy, and
(h) any other relevant information.

1.3. Monitoring Arrangements

1.3.1. Monitoring arrangements during normal working hours

During normal working hours, the WSDO will be responsible for monitoring weather forecasts and actual weather conditions throughout the period. If RST's are forecast to be below or equal to +3 this will be done from the Operational Control Room. They will be assisted by the Control Room staff, who will have Meteorological training and there will be an experienced Duty Operations Manager available 24/7. The OCCR will have the Vaisala Navigator system always showing on a big screen in the Control Room during the Winter Period and alarms set so if any alarm thresholds are met, they will be notified. These alarms will be acknowledged within the Vaisala Manager System to allow an audit trail to be kept. In addition, if any further action is needed this should be noted in the Diary within Vaisala Manager.

1.3.2. Monitoring arrangements out with normal working hours

Outside of normal working hours the WSDO will remain responsible for monitoring weather forecasts and actual weather conditions.

1.4. Personnel Resources

1.4.1. Names of staff and labour resources

Severe Weather Manager: Stuart Green

Winter Service Duty Officers: Aiden Kerr. Wilma Corbett. Meghan Gilmartin. Gary Watkinson, Martin Dunsmuir, Rhys Lowe. Nicola Traill, Fraser Mathers, Rian Marchi, Joseph Crockett and Shadman Khan.

Duty Operations Managers: Kevin McCrae. Allan Cuthbert.

Operatives:

Name	Depot	Qualification
See rota in link below	Perth	
See rota in link below	Kinross	
See rota in link below	Dundee	
See rota in link below	Forfar	
See rota in link below	Aberdeen	
See rota in link below	Keith	
See rota in link below	Nairn	
See rota in link below	Stirlinghill	

Additionally, every driver will have a basic knowledge of each precautionary treatment route and will be capable of undertaking treatment on that route if necessary.

In case of severe weather being forecast in the 5-day advance forecast, additional operatives will be put on standby or shift to ensure adequate resources are available to deal with snow conditions. These will be fully trained drivers who are not rostered for that period.

1.4.2. During the winter period detailed rosters will be prepared detailing all staff referred to this Winter Service Plan. On a weekly basis during the winter period a specific Roster detailing personnel, contact details and specific duty details will be issued to all key staff. This will be distributed electronically and updated on a shared server area each week to ensure key details are constantly kept up to date. Below are examples of rosters for Staff and Operatives. Below is a link to the Shared server where the rotas are stored:

Rota Northeast Winter Rota's

1.5. Call out arrangements.

1.5.1. Call out arrangements during normal working hours.

During the working day (Monday to Friday 08:00 to 17:00) the WSDO will liaise with each of the Depots directly to arrange any treatments required.

1.5.2. Call out arrangements outside normal working hours.

When a decision to carry out treatments falls outside normal working hours the WSDO will call the DOM who will mobilise the drivers.

1.5.3. Contact arrangements during normal working hours

The WSDO will contact each Depot by mobile telephone to instigate action during normal working hours. In addition, texts and emails will be sent via Vaisala Manager to confirm any actions.

1.5.4. Contact arrangements out with normal working hours

The WSDO will contact the DOM by mobile telephone to instigate action. In addition, there will be a list of direct mobile telephone contact numbers for rostered drivers which will be available to the WSDO if required. Vaisala Manager will also be updated to reflect the unplanned operation.

1.5.5. Mobilisation times

To ensure that the requirement to mobilise and begin unplanned treatment on any given route is within the one-hour period after being informed by the expert weather forecast, a shift system will operate which will include a day shift and night shift during snow and prolonged colder conditions. Where the 5-day forecast indicates that severe weather is anticipated, operatives will be put onto a 24/7 shift system ensuring there is always someone available for each route. In addition, we will always err on the side of caution

during marginal conditions to ensure callouts are limited and most treatments are planned.

1.6. Communications Equipment

1.6.1. All Winter Service vehicles will be fitted with "hands free push to talk over cellular" communications equipment, which will allow comms between drivers and WSDO's and an integrated satellite tracking and data recording system. All drivers will be trained in the effective use of the system. Any faults in the system of communication will be reported immediately to the WSDO for his action. We will have maintenance support through service level agreements with our Internal Fleet Service and relevant manufacturers to repair or replace communications equipment. The following means of communication will be available throughout the winter period:

- Telecommunications – landline and mobile phones
- Push to Talk over cellular.
- Airwave.
- API web-based GPS tracking showing vehicle location.
- Email with a dedicated winter email address.
- Microsoft Teams.
- Websites and social media utilising both Traffic Scotland and Amey SW specific
- Variable Message signs – via Traffic Scotland.
- Hidden Message signs.

1.6.2. Winter Service Patrol vehicles shall use an encrypted digital radio communications system, "Airwave". Amey will utilise this equipment as a dedicated communication system between Winter Service Patrol drivers, the Traffic Scotland Control Centre, the Winter Service Duty Officer, and the Police. All Winter Service Patrols will also have a hands-free push to talk system.

1.7. Training for Managers and Other Staff

1.7.1. Details of previous training

The proposed Severe Weather Manager, WSDO's and DOM's will have attended training courses covering basic road meteorology and the interpretation of weather forecasts prior to inclusion on the rota and this training will be refreshed when required. All operatives performing Front Line and Reserve Winter Service operations will hold an appropriate Class C LGV driving license and be trained and experienced in Winter Service operations.

1.7.2. Details of proposed training

The Severe Weather Manager, WSDO's, DOM's and CRO's will attend and be certified on refresher courses provided by The Met Desk and Vaisala every couple of years. An annual pre-winter internal briefing session will also be held in September.

The Operating Company shall carry out Winter Service "snow desk" exercises prior to 1st November in each Winter Service period in accordance with the Director's requirements.

All operatives performing Front Line and Reserve Winter Service Operations will be trained and assessed to meet the requirements of the Winter Service City & Guilds Qualification or hold an SVQ (Scottish Vocational Qualification) in Winter Service. Our SWM will ensure operative familiarisation with the Winter Service routes and plant prior to 1st October each year, recording this in our Management System. When Operatives are training on the network, the spinner at the rear of the vehicle will be covered to minimise any damage caused by sharp edges should an accident occur. In addition, Prior to 1 October in each Annual Period, the Operating Company shall;
(a) ensure the Contract Personnel who operate Winter Service Plant will drive the entire length of each precautionary treatment Route in the Winter Service Plant to be used for the precautionary treatment of such Route at speeds not exceeding those required for such precautionary treatment,
(b) fit and remove the plough to all Winter Service Plant so equipped,
(c) take any other measures necessary, and
(d) keep Records of the Contract Personnel who performed these preparations for Winter Service Operations,

to ensure that the Operating Company's Contract Personnel are familiar with the Route and Winter Service Plant to be used.

Records of these will include as a minimum detail of;
(a) time taken from depot to start of treatment Route,
(b) time taken to travel the Route,
(c) time taken to travel the treated Route,
(d) Route efficiency,
(e) time taken to fit the plough,
(f) any problems encountered, and actions taken to resolve them,
(g) proposed longer term solutions to prevent recurrence of such problems, and
(h) any other relevant information,

shall be held electronically by the Operating Company and in accordance with the documented procedures in the Operating Company's Management System.

2. Weather Forecasting

2.1. Purpose

The purpose is to provide accurate information for interpretation by our WSDO's enabling them to plan the Winter Service operations for the following 36-hour period. WSDOs (Winter Service Duty Officers) also have 24/7 access to the Met Desk Forecaster for advice or updated information, providing a proactive approach to winter service. Consent will be sought for the appointment of Expert Weather forecaster and the RWIS provided.

2.2. Methodology

Amey will obtain the expert weather forecasting service (EWFS) from the Met Desk who will always have access to the computerised road weather information system from the existing road sensor network, to give detailed forecasts for each route, using information from Scottish Weather Radar and thermal mapping to inform on existing and anticipated conditions. Weather forecasts will be issued for each of the 19 frontline routes and be provided from 1 October to 15 May (inclusive), and will be delivered every day by 1300hrs via the web-based Road Weather Information System (RWIS), providing:

2 – 5-day forecast
A general area forecast per day, for the 4 days following the day of issue of the 36hr forecast information. This will be Domain based utilising areas with similar geography and prevailing conditions.

36 Hour Forecast
Route specific forecasts, giving a general summary of the weather anticipated from 12:00 midday to 12:00 midday the following day. The primary features of the forecasts are: -

Readiness colour –

- Green No snow or ice expected.
- Amber Risk of snow and/or ice.
- Red Snow, ice or drifting snow is expected.

Hazards – This section gives detail on the weather conditions such as ice, hoar frost, snow (cms), fog, wind, and rain, which give rise to the "readiness colour".

Temperatures – Minimum Road surface temperature and time at or below freezing.

Severe Weather Warnings

This service is provided throughout the year through the Met Office Warning System with further Unit Specific forecast provided by the Met Desk. The early warning weather alert provides information regarding heavy snow, high winds and / or heavy rainfall.

24/7 Consultancy Service
This facility is used if there are any doubts about the forecasts or when conditions change significantly. Confirmation of updates will be made by telephone to the WSDO if. the forecast has changed significantly. The Forecaster will also be available to the WSDO to discuss any matters of concern or to clarify low confidence forecasts.
The consent of the Directors, in writing, will be sought prior to appointing the Expert Weather Forecaster and the Computerised Road Weather Information System provider.

2.3. Weather Forecasting Service

2.3.1. Climatic domains

Given the extent of the Network we will use Domain forecasting for the 2-to-5 day forecast. This will consist of 2 Climatic Domains listed below and shown in Fig 1:

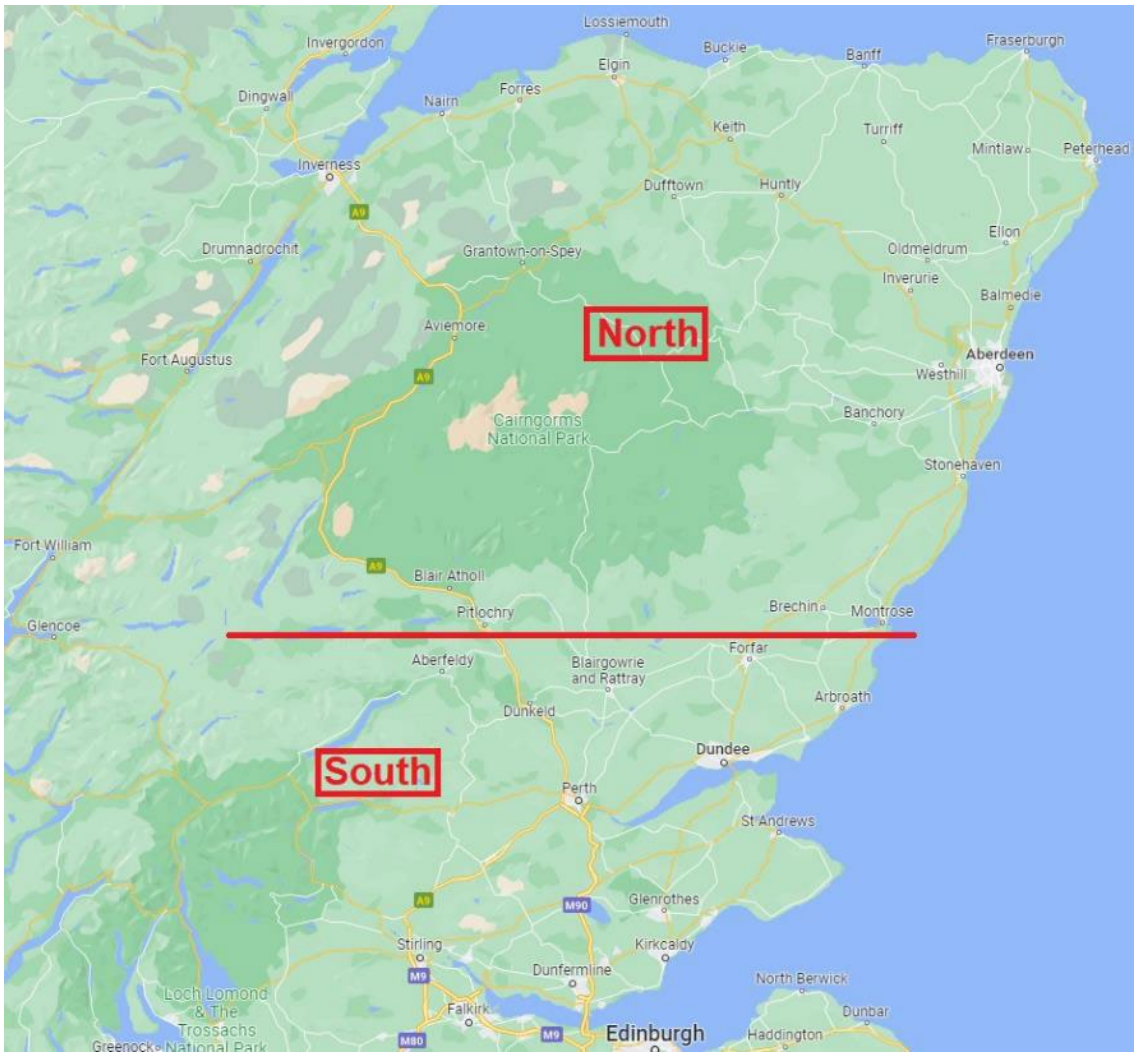

Fig 1. Proposed Climatic Domain.

2.3.2. Weather radar

The WSDO will have access to a web-based Weather Radar facility provided by the Met Desk, 24 hours a day, seven days a week, throughout the year. The Radar will help to improve the accuracy of assessing the timing, nature and intensity of precipitation, wind and in particular snowfall.

2.3.3. Weather Stations, forecast sites and camera sites.

The Operating Company shall provide and maintain all telecommunications links to meet the requirements of this Section 6 Network Operations – Winter Service.

Stations located on or close to the Network will be polled on a regular frequency of 10 minutes throughout the year and will include images which will be transmitted to Traffic Scotland using an Open Protocol System based on the Department for Transport TR2020C protocol and Transport Scotland Datex II. All data will be collected by the Vaisala Manager System, available online and monitored by the WSDO. In addition, Weather forecast sensors have added functionality to allow the Met Desk to model the temperature characteristics of the road pavement and can be accessed directly by the Met Desk to assist in producing road-specific weather forecasts. All weather stations will be maintained in line with Sch 6: Cl 6.2.2, S5 Cl 1472AR & Cl 6122AR. A list of stations can be found below:

Road Number	Location	Type
A9	Balhaldie	Vaisala with camera
A9	Inveralmond	Vaisala
A9	Loaninghead	Vaisala with camera
A92	Charlestown (in Aberdeen City) Maintained by Aberdeen City	Vaisala with camera
A90	Fiddes	Vaisala with camera
A90	Forfar	Vaisala with camera
A90	Fraserburgh	Vaisala
A90	Laurencekirk	Vaisala with camera
A90	Starr Inn Farm	Vaisala with camera

A92	North Anderson Drive (in Aberdeen City) Maintained by Aberdeen City	Vaisala
A92 / A956	Bridge of Don (in Aberdeen City) Maintained by Aberdeen City	Vaisala with camera
A90	Stracathro	Vaisala
A90	Todhills	Vaisala with camera
A90	Toll of Birness	Vaisala with camera
A92	New Inn	Vaisala with camera
A92	Cowdenbeath EFRR 1	Vaisala
A92	Cluny EFRR 2	Vaisala with camera
A92	Sandford	Findlay Irvine with camera
A95	Ballindalloch	Vaisala with camera
A95	Grantown	Vaisala with camera
A95	Avielochan (on A9 NW unit)	Vaisala with camera
A96	Brodie	Vaisala
A96	Fochabers	Vaisala with camera
A96	Foudland	Vaisala with camera
A96	Keith	Vaisala with camera
A96	Delnies	Vaisala with camera
A96	Tyrebagger	Vaisala with camera
M90	Glenfarg	Vaisala with camera
M90	Kelty	Vaisala with camera
M90	Friarton Bridge	Vaisala

2.3.4. Thermal mapping

This mapping has not been updated and therefore is not utilised.

During the Winter Service Period, the Operating Company shall monitor and interpret,

(a) weather forecasts,
(b) Trunk Road conditions,
(c) data from mobile road sensors,
(d) the Computerised Road Weather Information System,
(e) weather station and Traffic Scotland closed circuit television cameras, and
(f) Media coverage (Including social media) of weather-related articles in connection with the Unit

to ensure that the Winter Service Duty Officers receive and monitor climatic and road information to assist in the decision-making process and in taking appropriate action.

2.4. Computer Systems

The computerised road weather information system (RWIS) will be provided by Vaisala. During the Winter Service periods from October to May for the duration of the NE NMC contract, it will obtain, interpret, and display the following, in a manner that predicts trends in weather and road conditions:

- Road sensor data (forecast & actual)
- Thermal maps
- Weather data from the Met Desk
- Weather Camera images
- Frontline Winter Service Plant sensor data (air, RST (Road Surface Temperature) and spread rates)
- An automatic alarm system has been incorporated, which can be modified and set for different parameters including but not limited to when a road sensor falls to +1 degree centigrade, a road hazard is present, or a wind speed is reached. This alarm will be monitored and administered by both the WSDO (Winter Service Duty Officers) and the Operational Control Room.

In the unlikely event that the RWIS fails for any reason then the WSDO will contact the 24-hour RWIS helpdesk for assistance, until the system is restored.

In the event of power failure in the Control Room, non-electrical means of heat and light will be utilised pending the switching on of mobile generators. In addition, the system can be monitored from any location through a laptop and the Control Room or WSDO will contact the SWM to activate the remote monitoring.

In the event of communications failure, mobile phones will be used to maintain contact with vehicle drivers, police, Vaisala and the Met Desk.

3.Monitoring Arrangements for Vulnerable Locations

Vulnerable locations are known locations on the Network where:
Significant gradients exist (Fig 4/1), frost is prone to occur (Fig 4/2) and water run-off is liable to happen (Fig 4/3)

Amey will review these areas throughout the winter period, but as a minimum annually or immediately following a critical incident that involves a road closure. Where required Amey will seek consent from the Director to add or remove areas. All staff involved in Winter Service will be instructed to pay particular attention to the below areas. Any problems identified will be reported back and added to the communications log. Any runoff areas will be looked at and bids submitted to investigate to see if a drainage scheme could alleviate any problems.

Road Number	Location	Review Spring 2024	Frontline route covering VL
A9	Carnies Brae	Risk still present	NE 15
A90	Temple of Fiddes	Risk still present	NE 8
A95	Ballindalloch	Risk still present	NE 5
A95	Granish to Cromdale	Risk still present	NE 5
A96	Glens of Foundland	Risk still present	NE 3
A96	Tyrebagger Hill	Risk still present	NE 2
M90	Balmanno Hill Northbound	Risk still present	NE 16

4/1 – Significant Gradient Areas

Road Number	Location	Review Spring 2023	Next review date
A96	Near Fochabers	Risk still present	April 2024
A96	Roundabout near A9	Risk still present	April 2024
A96	Inverurie Bypass	Risk still present	April 2024
A96	Glens of Foudland	Risk still present	April 2024
A96	North of Huntly near Westerton	Risk still present	April 2024
A95	Bridge of Avon	Risk still present	April 2024
A90	Near Candy farm	Risk still present	April 2024
A90	Near Gateside Interchange	Risk still present	April 2024
A90	Temple of Fiddes	Risk still present	April 2024
A9	Blackford	Risk still present	April 2024
A9	Balhaldie	Risk still present	April 2024
A92	Sandford	Risk still present	April 2024
M90	Friarton Bridge	Risk still present	April 2024

4/2 – Frost Susceptible Areas

Road Number	Location	Review Spring 2023	Next Inspection date
A95	Kinnermonny near Aberlour	Site to be reviewed	April 2024
A90	Brechin Bypass	Site to be reviewed	April 2024
A95	Dalvey Bridge – Tormore	Site to be reviewed	April 2024
A95	Tom un Uird to Cromdale	Site to be reviewed	April 2024
A95	Gaich to Craggen	Site to be reviewed	April 2024
A95	Drumullie to Kinveachy	Site to be reviewed	April 2024
A95	South of Advie	Site to be reviewed	April 2024
A96	Skares – Bainshole	Site to be reviewed	April 2024
A96	Carnie junction – Coachford	Site to be reviewed	April 2024
A96	Portsoy Junction to Banff Junction	Site to be reviewed	April 2024
A96	Huntly	Site to be reviewed	April 2024
A90	Opposite Stracathro Services	Site to be reviewed	April 2024
A90	Bancar Hotel, Lonmay	Site to be reviewed	April 2024
A9	Blackford	Site to be reviewed	April 2024

4/3 – Water Runoff Areas

Each area must be monitored effectively. For both frost susceptible and known surface water run off locations, the ability to monitor and receive up-to-date road surface temperatures and states is critical. The Patrols will be fitted with MD30 Mobile Condition Weather Stations which will give live feed into the Vaisala Navigator system. This will allow these areas to be monitored with increased information live to the WSDO. In addition, the information will be transmitted to the Traffic Scotland Control Centre under an Open Protocol.

In addition to the Winter Service Patrols detailed in Section 5 of this document, the WSDO has the authority to instruct the mobilisation of any front-line winter constructional plant to patrol any part of the Network at any time. This action may be necessary to enable the WSDO to receive accurate real time visual information such as road surface state observations, surface water run-off and precipitation type/intensity. This information combined with data within the RWIS and Weather Radar allows the WSDO to monitor affected areas along with other areas on the Network and to make appropriate treatment planning decisions.

When the Expert Weather Forecaster forecasts 0.2cm/hr or greater snow Accumulations at a Vulnerable Location with gradient at least one reserve Winter Service Plant will be mobilised to that location in advance of snowfall.

Vulnerable Locations Schedule

Reference Number: VL/NE/A9 – Cairnie Braes	
Location	A9 Cairnie Braes Findo Gask to Kinkell Bridge
Grid Reference	(300130,717255) to (304892,721078)
Problem	Section of Dual Carriageway 2.5 miles in length with a gradient of approximately 10%
Has this site experienced problems before or is it an identified risk?	Yes. The road has been closed at various times due to HGVs struggling to climb the steep incline, which has resulted in the vehicles losing traction & sliding across the carriageway blocking the road.
Detailed Mitigation Measures	
Optional Mitigation Measures	Pre-treatment at 40g/m^2 on VULNERABLE LOCATIONS and ploughed using 'back to black'.blades. Consideration given to pre-treating carriageway (at inclines) with alternative de-icers. Patrolling of 3.5t pickups with salt for salting under the wheels of struggling motorists Reserve vehicle deployed to site. Deployment of vehicles with extra welfare equipment if vehicles become stuck at locus. Barrier removal crew deployed to site to assess if removing barrier would be safe at both top & bottom of Cairnie Brae. Liaise with Police Scotland re- traffic control if deemed safe to remove barrier & turn traffic, to be done under Police Scotland control. Plans put in place to move resources from less affected parts of the Unit potentially Kinross and Dundee this could include frontline, reserve, or additional spreaders with operatives to assist with snow clearance. Additional plant and resource could potentially be obtained from our supply chain Grant Ri which would include lorries with ploughs staffed with operatives deployed to the area dependent upon severity of conditions.
When enacted	The measures detailed above will be in place prior to the event based on a forecast of 0.2cm or greater snow fall in a short space of with a high degree of forecaster confidence. In cases of low or medium forecaster confidence dialogue will be opened with TS regarding extent of mitigation measures

Who enacts	Severe Weather Manager Based on the 24 hour and 2 – 5 Day forecast.
Who will manage the response	Strategic deployment and decision making – Operating Company Representative and Severe Weather Manager. This will be carried out in the control room and based on information from our forecaster i.e., Radar and Weather updates. Site information will be fed back through cameras, site supervisors and operative. Senior staff will liaise with the Police Scotland and Transport Scotland. Duty Managers will liaise with site staff, forecaster and our central control room. Site staff will liaise with the Severe Weather Manager and Duty
Are diversion routes to be used?	No, unlikely to be used as roads in vicinity likely to be in poorer condition than Trunk Road and unsuitable for HGV traffic. Diversion identified as M9/M90 if long term closure predicted
Deployment of resources	Frontline Resource and Reserve Resource from Perth if route blocked from Perth. Frontline spreader/plough & reserve vehicle plough (Perth) Patrol spreader/plough (Perth) Fastrac with plough / snowblower (Perth)
Use of VMS	Liaise with Traffic Scotland regarding closure and messages. Use of the following VMS to relay messages of closure, conditions, or delays (subject to availability) M9 North Approaching Junction 10 M9 North Approaching Junction 7 M80 Northeast of Junction 6 Old Inns A9 Approaching Broxden A9 Approaching Inveralmond M90 Approaching Craigend
Other measures put in place	Consideration would be given to asking for mutual aid from Councils and other Operating Companies Tayside Contracts, Perth & Kinross Council Spreader based at Inveralmond Depot
Assistance from additional Transport Scotland resources	Assistance from Transport Scotland Communications to agree message for media
Assistance from External Sources	Liaison with Police Scotland to potentially mobilise HGV recovery vehicles through existing HGV recovery contract. If road is closed: External Contractor resource to assist with snow clearance

Reference Number: VL/NE/M90 – Balmanno Hill	
Location	M90 Balmanno Hill
Grid Reference	(313979,711671) to (313635,717081)
Problem	Section of Motorway 2.5 miles in length with a gradient of approximately 10%
Has this site experienced problems before or is it an identified risk?	Yes. The road has been closed at various times due to HGVs struggling to climb the steep incline, which has resulted in the vehicles losing traction & sliding across the carriageway blocking the road.
Detailed Mitigation Measures	
Optional Mitigation Measures	Pre-treatment at 40g/m^2 on VULNERABLE LOCATIONS and ploughed using 'back to black blades. Consideration given to pre- treating carriageway (at inclines) with alternative de-icers. Patrolling of 3.5t pickups with salt for salting under the wheels of struggling motorists Reserve vehicle deployed to site. Deployment of vehicles with extra welfare equipment if vehicles become stuck at locus. Barrier removal crew deployed to site to assess if removing barrier would be safe at both top & bottom of Balmanno Hill. Liaise with Police Scotland re- traffic control if deemed safe to remove barrier & turn traffic, to be done under Police Scotland control. Plans put in place to move resources from less affected parts of the Unit potentially Kinross or Dundee this could include frontline, reserve, or additional spreaders with operatives to assist with snow clearance. Additional plant and resource could potentially be obtained from our supply chain partners Grant Ritchie which would include lorries with ploughs staffed with operatives deployed to the area dependent upon severity of conditions.
When enacted	The measures detailed above will be in place prior to the event based on a forecast of 0.2cm or greater snow fall in a short space of with a high degree of forecaster confidence. In cases of low or medium forecaster confidence dialogue will be opened with TS regarding extent of mitigation measures

Who enacts	Severe Weather Manager Based on the 24 hour and 2 – 5 Day forecast.

Who will manage the response	Strategic deployment and decision making – Operating Company Representative and Severe Weather Manager. This will be carried out in the control room and based on information from our forecaster i.e., Radar and Weather updates. Site information will be fed back through cameras, site supervisors and operative. Senior staff will liaise with the Police Scotland and Transport Scotland. Duty Managers will liaise with site staff, forecaster and our central control room. Site staff will liaise with Severe Weather Manager and Duty Manager.
Are diversion routes to be used?	No, unlikely to be used as roads in vicinity likely to be in poorer condition than Trunk Road and unsuitable for HGV traffic. Diversion identified as A9/M9 if long term closure predicted
Deployment of resources	Frontline Resource and Reserve Resource from Perth if route blocked from Perth. Frontline spreader/plough & reserve vehicle plough (Perth) Patrol spreader/plough (Perth) Snowblower (Perth) Fastrac with plough (Perth)
Use of VMS	Liaise with Traffic Scotland regarding closure and messages. Use of the following VMS to relay messages of closure, conditions, or delays (subject to availability) M90 Halbeath Northbound A9 Approaching Broxden A9 Approaching Inveralmond M90 Approaching Craigend
Other measures put in place	Consideration would be given to asking for mutual aid from Councils and other Operating Companies Tayside Contracts, Perth & Kinross Council Spreader based at Inveralmond Depot
Assistance from additional Transport Scotland resources	Assistance from Transport Scotland Communications to agree message for media
Assistance from External Sources	Liaison with Police Scotland to potentially mobilise HGV recovery vehicles through existing HGV recovery contract. If road is closed: External Contractor resource to assist with snow clearance

Reference Number: VL/NE/A96 – Glens of Foudland	
Location	A96 Glens of Foudland
Grid Reference	(358330,835191) to (363780,834530)
Problem	Section of Single Carriageway Road approx. 2 miles in length with history of snow issues due to high altitude
Has this site experienced problems before or is it an identified risk?	Yes. The road has been closed at various times due to snow drifting over road due to lack of shelter & high altitude.
Detailed Mitigation Measures	
Optional Mitigation Measures	Pre-treatment at 40g/m^2 on VULNERABLE LOCATIONS and ploughed using 'back to black' blades. Consideration given to pre- treating carriageway with alternative de- icers Patrolling of 3.5t pickups with salt for salting under the wheels of struggling motorists Reserve vehicle deployed to site. Deployment of vehicles with extra welfare equipment if vehicles become stuck at locus. Plans put in place to move resources from less affected parts of the Unit potentially Inverness or Aberdeen, this could include frontline, reserve, or additional spreaders with operatives to assist with snow clearance. Additional plant and resource could potentially be obtained from our supply chain partners Grant Ritchie (Elgin) which would include lorries with ploughs staffed with operatives deployed to the area dependent upon severity of conditions.
When enacted	The measures detailed above will be in place prior to the event based on a forecast of 0.2cm or greater snow fall in a short space of with a high degree of forecaster confidence. In cases of low or medium forecaster confidence dialogue will be opened with TS regarding extent of mitigation measures
Who enacts	Severe Weather Manager Based on the 24 hour and 2 – 5 Day forecast.

Who will manage the response	Strategic deployment and decision making – Operating Company Representative and Severe Weather Manager. This will be carried out in the control room and based on information from our forecaster i.e., Radar and Weather updates. Site information will be fed back through cameras, site supervisors and operative. Senior staff will liaise with the Police Scotland and Transport Scotland. Duty Managers will liaise with site staff, forecaster and our central control room. Site staff will liaise with Severe Weather Manager and Duty Manager.
Are diversion routes to be used?	No, unlikely to be used as roads in vicinity likely to be in poorer condition than Trunk Road and unsuitable for HGV traffic.
Deployment of resources	Frontline Resource and Reserve Resource from Aberdeen, Forfar or Dundee if route blocked from Keith.
Use of VMS	Liaise with Traffic Scotland regarding closure, messages and Use of the VMS to relay messages of closure, conditions, or delays. (Subject to availability)
Other measures put in place	Consideration would be given to asking for mutual aid from Councils and other Operating Companies Moray Council, Aberdeenshire, and Aberdeen City Councils.
Assistance from additional Transport Scotland resources	Assistance from Transport Scotland Communications to agree message for media
Assistance from External Sources	Liaison with Police Scotland to potentially mobilise HGV recovery vehicles through existing HGV recovery contract. If road is closed: Agricultural contractors with Fas-Tracs & ploughs to be deployed. External Contractor resource to assist with snow clearance

Reference Number: VL/NE/A95 – Ballindalloch	
Location	A95 Ballindalloch
Grid Reference	(318509,837224) to (319276,838315)
Problem	Section of Single Carriageway Road approx. 1 mile in length with history of snow issues due to high altitude
Has this site experienced problems before or is it an identified risk?	Yes. The road has been closed at various times due to snow on the steep incline & high altitude.
Detailed Mitigation Measures	
Optional Mitigation Measures	Pre-treatment at 40g/m^2 on VULNERABLE LOCATIONS and ploughed using 'back to black' blades. Consideration given to pre- treating carriageway with alternative de-icers. Patrolling of 3.5t pickups with salt for salting under the wheels of struggling motorists Reserve vehicles deployed to site. Deployment of vehicles with extra welfare equipment if vehicles become stuck at locus. Plans put in place to move resources from less affected parts of the Unit potentially Inverness or Aberdeen, this could include frontline, reserve, or additional spreaders with operatives to assist with snow clearance. Additional plant and resource could potentially be obtained from our supply chain partners Grant Ritchie (Elgin) which would include lorries with ploughs staffed with operatives deployed to the area dependent upon severity of conditions.
When enacted	The measures detailed above will be in place prior to the event based on a forecast of 0.2cm or greater snow fall in a short space of with a high degree of forecaster confidence. In cases of low or medium forecaster confidence dialogue will be opened with TS regarding extent of mitigation measures
Who enacts	Severe Weather Manager Based on the 24 hour and 2 – 5 Day forecast.

Who will manage the response	Strategic deployment and decision making – Operating Company Representative and Severe Weather Manager. This will be carried out in the control room and based on information from our forecaster i.e., Radar and Weather updates. Site information will be fed back through cameras, site supervisors and operative. Senior staff will liaise with the Police Scotland and Transport Scotland. Duty Managers will liaise with site staff, forecaster and our central control room. Site staff will liaise with Severe Weather Manager and Duty Manager.
Are diversion routes to be used?	No, unlikely to be used as roads in vicinity likely to be in poorer condition than Trunk Road and unsuitable for HGV (Heavy Goods Vehicles) traffic.
Deployment of resources	Frontline Resource and Reserve Resource from Inverness, Aberdeen, or Forfar if route blocked from Keith.
Use of VMS (Variable Message Signs)	Liaise with Traffic Scotland regarding closure, messages and Use of the VMS to relay messages of closure, conditions, or delays (Subject to availability)
Other measures put in place	Consideration would be given to asking for mutual aid from Councils and other Operating Companies Moray Council, Aberdeenshire, and Highland Councils.
Assistance from additional Transport Scotland resources	Assistance from Transport Scotland Communications to agree message for media
Assistance from External Sources	Liaison with Police Scotland to potentially mobilise HGV recovery vehicles through existing HGV recovery contract. If road is closed: Agricultural contractors with Fast-Tracs & ploughs to be deployed. External Contractor resource to assist with snow clearance

Reference Number: VL/NE/A95 – A95 Cromdale – A9 Junction	
Location	A95 Cromdale – A9 Junction
Grid Reference	(307500,828560) to (289989,815299)
Problem	Section of Single Carriageway Road approx. 12 miles in length with history of snow issues due to high altitude
Has this site experienced problems before or is it an identified risk?	Yes. The road has been closed at various times due to snow at high altitude.
Detailed Mitigation Measures	
Optional Mitigation Measures	Pre-treatment at 40g/m^2 on VULNERABLE LOCATIONS and ploughed using 'back to black' blades. Consideration given to pre- treating carriageway with alternative de-icers. Patrolling of 3.5t pickups with salt for salting under the wheels of struggling motorists Reserve vehicles deployed to site. Deployment of vehicles with extra welfare equipment if vehicles become stuck at locus. Plans put in place to move resources from less affected parts of the Unit potentially Inverness or Aberdeen, this could include frontline, reserve, or additional spreaders with operatives to assist with snow clearance. Additional plant and resource could potentially be obtained from our supply chain partners Grant Ritchie (Elgin) which would include lorries with ploughs staffed with operatives deployed to the area dependent upon severity of conditions.
When enacted	The measures detailed above will be in place prior to the event based on a forecast of 0.2cm or greater snow fall in a short space of with a high degree of forecaster confidence. In cases of low or medium forecaster confidence dialogue will be opened with TS regarding extent of mitigation measures
Who enacts	Severe Weather Manager Based on the 24 hour and 2 – 5 Day forecast.

Who will manage the response	Strategic deployment and decision making – Operating Company Representative and Severe Weather Manager. This will be carried out in the control room and based on information from our forecaster i.e., Radar and Weather updates. Site information will be fed back through cameras, site supervisors and operative. Senior staff will liaise with the Police Scotland and Transport Scotland. Duty Managers will liaise with site staff, forecaster and our central control room. Site staff will liaise with Severe Weather Manager and Duty Manager.
Are diversion routes to be used?	No, unlikely to be used as roads in vicinity likely to be in poorer condition than Trunk Road and unsuitable for HGV traffic.
Deployment of resources	Frontline Resource and Reserve Resource from Inverness, Aberdeen, or Forfar if route blocked from Keith.
Use of VMS	Liaise with Traffic Scotland regarding closure, messages and Use of the VMS to relay messages of closure, conditions, or delays. (Subject to availability)
Other measures put in place	Consideration would be given to asking for mutual aid from Councils and other Operating Companies Moray Council, Aberdeenshire, and Highland Councils.
Assistance from additional Transport Scotland resources	Assistance from Transport Scotland Communications to agree message for media
Assistance from External Sources	Liaison with Police Scotland to potentially mobilise HGV recovery vehicles through existing HGV recovery contract. If road is closed: Agricultural contractors with Fas-Tracs & ploughs to be deployed. External Contractor resource to assist with snow clearance

Reference Number: VL/NE/A90 – Temple of Fiddes	
Location	A90 Temple Fiddes
Grid Reference	(380838,781143) to (384171,782889)
Problem	Section of Dual Carriageway 2 miles in length little shelter from elements
Has this site experienced problems before or is it an identified risk?	Yes. The road has been closed at various times due to drifting snow.
	Detailed Mitigation Measures
Optional Mitigation Measures	Pre-treatment at 40g/m^2 on VULNERABLE LOCATIONS and ploughed using 'back to black' blades. Consideration given to pre- treating carriageway w i t h alternative de-icers. Patrolling of 3.5t pickups with salt for salting under the wheels of struggling motorists Reserve vehicles deployed to site. Deployment of vehicles with extra welfare equipment if vehicles become stuck at locus. Plans put in place to move resources from less affected parts of the Unit potentially Aberdeen, Dundee, or Keith this could include frontline, reserve, or additional spreaders with operatives to assist with snow clearance. Additional plant and resource could potentially be obtained from our supply chain partners Grant Ritchie which would include lorries with ploughs staffed with operatives deployed to the area dependent upon severity of conditions.
When enacted	The measures detailed above will be in place prior to the event based on a forecast of 0.2cm or greater snow fall in a short space of with a high degree of forecaster confidence. In cases of low or medium forecaster confidence dialogue will be opened with TS regarding extent of mitigation measures
Who enacts	Severe Weather Manager Based on the 24 hour and 2–5 Day forecast.

Who will manage the response	Strategic deployment and decision making – Operating Company Representative and Severe Weather Manager. This will be carried out in the control room and based on information from our forecaster i.e., Radar and Weather updates. Site information will be fed back through cameras, site supervisors and operative. Senior staff will liaise with the Police Scotland and Transport Scotland. Duty Managers will liaise with site staff, forecaster and our central control room. Site staff will liaise with Severe Weather Manager and Duty Manager.
Are diversion routes to be used?	Yes, A92 coastal route.
Deployment of resources	Frontline Resource and Reserve Resource from Dundee and Aberdeen if route blocked. Frontline spreader/plough & reserve vehicle plough (Dundee) Patrol spreader/plough (Dundee) Fastrac with plough / snowblower (Perth)
Use of VMS	Liaise with Traffic Scotland regarding closure and messages. Use of the following VMS to relay messages of closure, conditions, or delays (subject to availability)
Other measures put in place	Consideration would be given to asking for mutual aid from Councils and other Operating Companies Aberdeen City & Aberdeenshire Councils.
Assistance from additional Transport Scotland resources	Assistance from Transport Scotland Communications to agree message for media
Assistance from External Sources	Liaison with Police Scotland to potentially mobilise HGV recovery vehicles through existing HGV recovery contract. If road is closed: External Contractor resource to assist with snow clearance

Reference Number: VL/NE/A96 – Tyrebagger Hill	
Location	A96 Tyrebagger Hill
Grid Reference	(300130,717255) to (304892,721078)
Problem	Section of Dual Carriageway 2.5 miles in length with a gradient of approximately 10%
Has this site experienced problems before or is it an identified risk?	Yes. The road has been closed at various times due to high volumes of traffic at peak periods and HGVs (Heavy Goods Vehicles) struggling to climb the steep incline, which has resulted in the vehicles losing traction & sliding across the carriageway blocking the road.
Detailed Mitigation Measures	
Optional Mitigation Measures	re-treatment at 40g/m^2 on VULNERABLE LOCATIONS and ploughed using 'back to black' blades. Consideration given to pre- treating carriageway (at inclines) with alternative de-icers. Patrolling of 3.5t pickups with salt for salting under the wheels of struggling motorists Reserve vehicles deployed to site. Deployment of vehicles with extra welfare equipment if vehicles become stuck at locus. Plans put in place to move resources from less affected parts of the Unit potentially Keith, Aberdeen, or Dundee this could include frontline, reserve, or additional spreaders with operatives to assist with snow clearance.
When enacted	The measures detailed above will be in place prior to the event based on a forecast of 0.2cm or greater snow fall in a short space of with a high degree of forecaster confidence. In cases of low or medium forecaster confidence dialogue will be opened with TS regarding extent of mitigation measures
Who enacts	Severe Weather Manager Based on the 24 hour and 2 – 5 Day forecast.

Who will manage the response	Strategic deployment and decision making – Operating Company Representative and Severe Weather Manager. This will be carried out in the control room and based on information from our forecaster i.e., Radar and Weather updates. Site information will be fed back through cameras, site supervisors and operative. Senior staff will liaise with the Police Scotland and Transport Scotland. Duty Managers will liaise with site staff, forecaster, and our central control room. Site staff will liaise with Severe Weather Manager and Duty Manager.
Are diversion routes to be used?	No, unlikely to be used as roads in vicinity likely to be in poorer condition than Trunk Road and unsuitable for HGV traffic.
Deployment of resources	Frontline Resource and Reserve Resource from Inverness and Keith if route blocked from Aberdeen. Frontline spreader/plough & reserve vehicle plough (Aberdeen) Patrol spreader/plough (Aberdeen) Snowblower (Keith) Fastrac with plough (Keith)
Use of VMS	Liaise with Traffic Scotland regarding closure and messages. Use of the following VMS to relay messages of closure, conditions, or delays (subject to availability) A96 West Approaching Aberdeen A90 North Approaching Aberdeen A90 South Approaching Aberdeen
Other measures put in place	Consideration would be given to asking for mutual aid from Councils and other Operating Companies Aberdeen City Council Spreader based at Tullos Depot
Assistance from additional Transport Scotland resources	Assistance from Transport Scotland Communications to agree message for media
Assistance from External Sources	Liaison with Police Scotland to potentially mobilise HGV recovery vehicles through existing HGV recovery contract. If road is closed: External Contractor resource to assist with snow clearance

4. Decision Making

4.1. Role of the Severe Weather Manager

The role of the SWM is strategic and has ultimate responsibility for the provision of the Winter Service. The Winter Service Duty Officer is delegated the responsibility of producing the daily Winter Service action plan in conjunction with the treatment matrices shown in tables 6.11.2 and 6.113. The WSDO then informs the SWM of their proposal to get approval. The proposal on the rates of spread of de-icing material, the time of commencement of the routes and the routes to be covered will be made by the WSDO before 14:00 hours. The Severe Weather Manager will always be available to enable the WSDO to seek advice regarding any aspect of the Winter Service.

Full use will be made of the Met Desk and RWIS to determine the optimum time to commence precautionary treatments, to ensure that these are completed within two hours of commencement and in advance of sub- zero road surface temperatures.

4.2. Role of the Winter Service Duty Officer

The WSDO will have at his disposal robust procedures, detailed weather forecast information, actual road condition information including information from mobile surface temperature sensors and a communication system to the Winter Service Patrols and operations teams across the Network.

Following receipt of the daily Winter Service action plan, the WSDO will contact all Depots and DOM's informing each of the decision and timing of any treatment in the forthcoming 24hr period. The DOM's will then ensure the plan is enacted in each Depot. The WSDO will also upload the Daily Action Plan to the CMS before 14:00 each day.

All decisions will be based on the matrices below:

Table 6.11.1 – Decision Matrix for Winter Service

<table>
<tr><td rowspan="2">Road Surface Temperature</td><td colspan="3">Predicted Road Conditions</td></tr>
<tr><td>Wet</td><td>Wet Patches</td><td>Dry</td></tr>
<tr><td>May fall below 1°C</td><td rowspan="2">Salt before frost</td><td>Salt before frost (See note A)</td><td>No action likely, monitor weather. (See note A)</td></tr>
<tr><td rowspan="4">Expected to fall below 1°C</td><td colspan="2">Salt before frost (see note B)</td></tr>
<tr><td colspan="3">Salt after rain stops</td></tr>
<tr><td colspan="3">Salt before frost and after rain stops (see note C)</td></tr>
<tr><td colspan="2">Salt before frost</td><td>Monitor weather conditions</td></tr>
<tr><td>Expected snow</td><td colspan="3">Salt before snow</td></tr>
<tr><td rowspan="3">Freezing Rain</td><td colspan="3">Salt before rainfall (see note C)</td></tr>
<tr><td colspan="3">Salt during rainfall (see note C)</td></tr>
<tr><td colspan="3">Salt after rainfall (see note C)</td></tr>
</table>

Notes:
(a) Particular attention should be given to any possibility of water running across carriageways and such locations should be monitored and treated as required.
(b) When a weather forecast contains reference to expected hoarfrost considerable deposits of frost are likely to occur and close monitoring will be required. Particular attention should be given to the timing of precautionary treatments due to the possibility that salt deposited on a dry road may be dispersed before it can become effective.
(c) Under these circumstances rain will freeze on contact with running surfaces and full pre-treatment should be provided even on dry roads. This is a most serious condition and should be monitored closely and continuously throughout the danger period.

Table 6.11.2 – Treatment Matrix Spread Rates for Precautionary Treatments

Item	Forecast weather condition	Dry or damp road (grammes/square metre)	Road Surface Wet / Frost Susceptible / Surface Water Run-off Area (grammes/square metre)
1	RST higher than plus 1°C	0	0
2	RST lower than or equal to plus 1°C but higher than minus 2°C	10	20
3	RST lower than or equal to minus 2°C but higher than minus 5°C	15	30
4	RST lower than or equal to minus 5°C (or see TS (Transport Scotland) alternative de-icer guidance)	30	40
5	Freezing Fog	Add 5 to Item 1 to 4 as applicable	Add 10 to Item 1 to 3 as applicable; otherwise as per item 4.
6	Freezing Rain	40	40
7	Snow Accumulations of any depth	40	40

Table 6.11.3 – Precautionary Treatment Potassium Acetate Spreading Rates

Conditions forecast	Spread Rate (litres/square metre)
Road surface temperature lower than or equal to plus 1°C but higher than minus 2°C	0.0156
Road surface temperature lower than or equal to minus 2°C but higher than minus 5°C	0.0312
Frost and road surface temperature lower than	a minimum of 0.0312 which should be increased with manufacturer's recommendations
-5°C	
Snow	
Freezing conditions after rain	

Table 6.11.4 – Snow or Ice Clearance Salt Spreading Rates

Road Surface Condition	Spreading Salt (grammes/square metre)	Ploughing	Blowing	Alternative De-Icer	Ice Breaker
Ice Formed	40	No	No	Where Applicable	No
Snow covering of less than 30mm	40	Yes	No	No	No
Snow covering exceeds 30mm	40	Yes	No	No	No
Snow accumulations due to prolonged snowfall	40	Yes (continuous)	Where applicable	No	No
Hard packed snow/ice less than 20mm thick	40 (successive treatments)	No	No	No	Where applicable
Hard packed snow/ice	salt/abrasive (successive)	No	No	Yes	Yes

Table 6.12.1 Snow Clearance

Condition Criteria	Category A Patrol Routes		Non-Category A Patrol Routes	
	Dual Carriageways & Motorways		Dual Carriageways	Dual Wide Single 2+1 & Single Carriageways
	Number of Existing Lanes		Number of Existing Lanes	
	2	3 or More	2	1 or 2 (WS 2 + 1)
	Minimum number of lanes in each direction free from ice and snow as far as is reasonably practicable		Minimum number of lanes in each direction free from ice and snow as far as is reasonably practicable (Except where snow gates)	
Snow at any time	1	2	1	1
Following clearance of minimum lanes or the cessation of snow fall all lanes are to be clear of snow	3 hours	3 hours	3 hours	3 hours

Table 6.12.2 Road Surface Wetness

Definition	Description	Water film thickness (For when using WFT instrumentation)
Dry Road	A road that shows no signs of water or dampness at the surface but may be just detectably darker. It may have moisture contained in pores below the surface that is not 'pumped' to the surface by traffic.	0 to 0.03mm (=0-30 g/m^2)
Damp Road	A road which is clearly dark, but traffic does not generate any spray. This would be typical of a well-drained road when there has been no rainfall after 6 hours before the treatment time.	0.03 to 0.05mm (=30-50 g/m^2)
Wet Road	A road on which traffic produces fine spray but not small. water droplets. This would be typical of a well-drained road when there has been rainfall up to 3 hours before the treatment time.	0.05 to 0.1mm (=50-100 g/m^2)
Very Wet Road and Flowing Water on Road*	A road on which traffic produces droplets of water in the air to visibly flowing water on the surface	Greater than 0.1mm (=>100 g/m^2)

4.2.1. Winter Service Patrol Mobilisation.

Amey will carry out Winter Service Patrols from 1 November to 30 April inclusive on those sections of Trunk Roads identified in Schedule 2, table 6.6.1 of the Project and further detailed in Appendix B of this plan.

The requirement for Winter Service Patrols is initially determined by the Winter Service Duty Officer on receipt of the Met Desk daily forecast and after this has been analysed and enacted where the forecast minimum road surface temperature is equal to or less than +3°C, for the route associated with the Patrol Routes listed in Section 8 of this Plan. The WSDO will in addition instruct Winter Service Patrols on the daily action plan. All Patrols will operate out with the time specified when forecasts indicate snow and ice conditions causing an increased risk of delays and disruption to road users.

On occasions the forecast may initially predict road surface temperatures to be above +3°C, but a subsequent forecast update may predict road surface temperatures to drop to or below +3°C. Where such an update is received by the WSDO, Winter Service Patrols will be mobilised by the WSDO.

4.2.2. Proposals for Precautionary and Additional De-icing Treatments when Low Confidence Forecasts shall be issued for Variable Road and Weather Conditions

The minimum requirements for de-icing material spread rates for precautionary treatment shall be as provided in Tables 6.11.2, 6.11.3

When low confidence weather forecasts are issued by the Met Desk, and during marginal conditions, the WSDO's will monitor conditions using the RWIS. Amey's decision-making process accounts for low confidence forecasts received and the WSDO will follow this process when considering the original and updated forecasts.

During marginal conditions the WSDO will always take a conservative approach. It is essential that during these periods the WSDO receives reports and information from the Winter Service Patrols. The WSDO shall instruct patrols to monitor conditions and, if necessary, initiate immediate precautionary treatments in accordance with the proposed de-icing material spread rates detailed in Tables 6.11.2, 6.11.3

Any high-risk areas will be monitored closely by the Winter Patrols and all decisions to grit will take these areas into account and decide treatment based on the worst locations. This will allow roads to remain as safe as possible on marginal nights. Patrol drivers will call the WSDO during his patrol to report the conditions of the high-risk areas.

4.2.3. Proposals for Monitoring the Effectiveness of De-icing Materials

Following any precautionary treatment, the WSDO will continue to monitor the weather forecasts and the actual weather conditions including but not limited to reports from Winter Service Patrols, road condition information from the patrols and data from the RWIS. This information will be used to assess the effectiveness of the treatment and to

instruct further treatment when considered necessary, in consideration of forecast conditions.

This is particularly important in situations where precipitation is forecast or has occurred resulting in a potential dilution of the amount of salt present and inherent reduction in the effectiveness of the treatment.

The presence and concentration of salt solution can be detected by Forecast and Road Sensors and displayed within the RWIS as 'Actual Freezing Temperature'. Actual Freezing Temperature is the theoretical Road Surface Temperature at which ice will form and the salt solution will cease to be effective. The detection of residual salt through the RWIS, however, depends upon the salt being in solution.

Where there is any doubt as to the ongoing effectiveness of any treatment undertaken, due to either dilution of salt from precipitation, or uncertainty of residual salt levels, the WSDO will err on the side of caution and will instruct further action to be undertaken. All patrols will also have MD30 mobile stations which will assist the WSDO in monitoring of actual road conditions along the patrol routes.

In extreme conditions when sodium chloride becomes less effective, Amey will use alternative de-icing materials, either pure or blended at a percentage of 30% of the pre-wet liquid, in accordance with the table below:

Temperature (Road Surface Temperature)	Conventional Treatment Salt / Sodium Chloride Brine	Alternative Treatment Salt / Alternative Pre-Wetter*
RST down to -7oC	Standard treatment	Not used
RST between -7oC and down to -10oC	Increased spread rate	Reduced spread rate possible 50% brine 50% alternative.
RST between -10oC and down to -12oC	Not effective	25% brine and 75% alternative.
RST below -12oC	Not effective	100%Alternative
*Alternative Pre-Wet- Mag Chloride Brine – Structures only Sodium Chloride Brine / ABP blend (Brinesolutions) Sodium Chloride Brine / ABP / Mag or Calcium Chloride Brine blend		

4.2.4. Road Closure Operational Procedures

Any decision to close a road will be taken by the Police.

The Severe Weather Manager, The Directors and Traffic Scotland Control Centre will be informed immediately by telephone, and in writing within 12 hours, of any decision to close a road, or of other major problems encountered within the Network due to winter weather conditions.

The Police will notify the other Emergency Services of any road closures and in liaison with Traffic Scotland will arrange for the provision of advance warning signs and/or activate variable message signs or arrange media coverage where appropriate.

The WSDO will also notify the local Roads Authorities of any relevant road closures.

The WSDO will do hourly notifications to Traffic Scotland Control Room giving an update on ongoing works and an estimated re-opening time.

The WSDO shall immediately inform Traffic Scotland Control Centre and the Directors of the reopening of the road.

Amey will open snow and ice message signs (shown in section 19) prior to 1st October each year or as necessary before this date to provide information to the road user regarding weather and road conditions.

If in exceptionally severe conditions, such as blizzards resulting in reduced visibility and deep drifting snow; the Severe Weather Manager decides that it is unsafe for operational personnel to clear snow or ice, operations will be suspended until conditions improve. Such instances are likely to be extremely rare and the Severe Weather Manager will liaise with the police, the Director, the expert weather forecaster, and Traffic Scotland prior to making such a decision.

4.2.5. Proposals for Dealing with Vulnerable Locations

These areas are listed in section 3 and will have dedicated plant during any severe weather.

4.2.6. Proposals for Using Alternative De-icers in Extreme Temperatures

The use of alternative de-icers will be considered in periods of extreme cold and on Venerable Locations when large volumes of snow are forecast. Before using these the SWM will consult with Transport Scotland and agree areas where these will be used. Amey will hold a minimum stock of 50,000 litres and when stock reaches 30,000 litres Amey will re-stock to full capacity within 7 days.

5. Liaison

5.1. Liaison and Communication with:

i. The Directors

Effective liaison with The Directors prior to, during and after the winter service season is essential to the successful delivery of the service. The Directors will be consulted during the preparation, approval, and review of the Winter Service Plan on an annual basis.

The Directors and PAG will have the capability of remotely accessing electronic winter service records in real time. In accordance with S5 C1 2804

Amey will continually review the need for snow fences and shelter belts on the Network and, where it considers that such provisions are necessary; will notify The Directors in writing. If alterations are required to any of these in the first annual period Amey will present a bid.

Prior to the commencement of the Winter Service Period, The Directors will receive one controlled electronic copy of the Winter Service Plan.

ii. Police

In preparing the Winter Service Plan, Amey will consult with all relevant Police Authorities. The Police shall receive, from Amey, one controlled electronic copy of the Winter Service Plan. All relevant Police Authorities will be notified, by the WSDO, of all proposed treatments and patrols once known, but not normally later than 14:00 each day.

Amey will liaise closely with the Police to monitor adverse winter weather and travelling conditions. During periods of Severe Weather, the Severe Weather Manager and WSDO will work closely with the Police who may supply information to the media regarding travelling conditions on the Network.

Any decision to close a road will always be taken by the Police. Amey will liaise with the Police regarding road closures as detailed in Section 5.2.4 of this document.

iii. Traffic Scotland Operator

Amey will, prior to the commencement of each winter service season, issue the Traffic Scotland Operator one controlled electronic copy of the Winter Service Plan.

During the Winter Service Period, the Operating Company shall report the known effect of adverse weather and travelling conditions to the Traffic Scotland Operator

Traffic Scotland Website will be updated by the WSDO of all planned treatments and patrols by 14:00 each day. In addition, should messages be required to be displayed on electronic warning systems and variable message signs, Traffic Scotland Control Centre will be notified by the WSDO.

During periods of severe weather, the WSDO will undertake regular. reviews, at no less than hourly intervals, of the information published within the severe weather bulletin board, and update this information via the Traffic Scotland Roadwork's diary terminal:

(i) if he is aware of any change in the situation at any location logged on the bulletin board and

(ii) if he is aware of any other locations where severe weather is affecting driving conditions or traffic movements on the Trunk Road network.

iv. Adjacent Road and Highway Authorities

In preparing the Winter Service Plan, Amey will consult with all adjacent Local Roads Authorities. They will receive, from Amey, one controlled electronic copy of the Winter Service Plan. Adjacent Local Roads Authorities, Operating Companies and DBFO's will be notified by the WSDO of all planned treatments and patrols by 14:00 each day.

Amey will liaise closely with all adjacent Local Roads Authorities to monitor adverse winter weather and travelling conditions.

A consistent level of service at boundary interfaces with adjacent Trunk Road Operating Companies and DBFO's is essential to allow the safe movement of road users and to minimise delays and disruption caused by snow and ice conditions.
During the annual preparation and review of the Winter Service Plan, Amey will consult with adjacent Trunk Road Operating Companies and DBFO's. They shall receive one controlled paper copy and one controlled electronic copy of the Winter Service Plan. The WSDO will notify adjacent Trunk Road Operating Companies of all proposed treatments and patrols once known, but not normally later than 14:00 each day.

During periods of severe weather, the WSDO will liaise and update the adjacent Trunk Road Operating Companies regarding the status of the prevailing weather conditions and Amey's winter service operations.

v. Network Rail

There are no railway level crossings on the network however, Amey will continue to liaise with Network Rail when appropriate and take caution when clearing snow adjacent to railway lines. Amey will provide minutes of the consultations to Transport Scotland 5 days after the meeting.

vi. Other Operational Partners

We will ensure we communicate with all parties who have an input to the Winter Service. Our SWM will work with our Media and Communications Officer (MCO) to develop our Communication Plan which will be vital for the effective management of Winter Services. The WSP will include contact details for relevant stakeholders and communication arrangements, including those for notification of events such as road closures. In addition, we will include Winter as a section in the liaison meetings and for all consultation we will request signed consultation forms from all parties.

Our MCO will work with our SWM and Press Transport Scotland (PTS) to develop an annual Winter Service publicity leaflet if required. In collaboration with PTS and other Operating Companies, we will undertake an annual winter service media relations and communications programme, promoting our winter-readiness and safe driving messages.

Each day the WSDO will use social media to update the public of any treatments planned or completed on the Network. During any severe weather period or incident, the WSDO will notify the SWM and MCO who will deal with all Social Media notification to allow the WSDO to concentrate on ensuring the roads are free flowing.

Consultation certificates for all parties can be found in the below link.

Consultation

6. Mutual Aid Arrangements

6.1. Mutual aid

The director shall identify circumstances in which it considers the Operating Company should execute Winter Service as mutual aid. A list of contacts for adjacent Operating Companies, DBFO's and Local Authorities will be held by the SWM to allow offers of mutual aid to be made, subject to the availability of resources. This aid may take the form of providing salt stocks or operated winter service plant. Whenever such a request is received, we will endeavour to make this aid available at the earliest opportunity, without compromising the level of service being provided on the Network.
Snow plan has been developed for Amey/AWPR and will work in conjunction with WSP.

Welfare Kits.

The Operating Company shall hold welfare kits and shall distribute these in the event of a critical incident that involves stranded vehicles. The welfare kits shall be carried by each Winter Service Plant and shall consist of a minimum 24 x Emergency Blankets, 24 x bottles of water and 24 x energy bars (or equivalent) all of which will be within the manufacturer's expiry date.

7. Winter Service Patrols

From 1st November to 30th April inclusive, when the forecast minimum road surface temperature for the Network is less than or equal to 3°C, the WSDO will instruct the relevant Winter Service Patrols covering the routes detailed in Schedule 2 Table 6.6.1. All Winter Service Patrol vehicles will have cameras fitted in accordance with Schedule 5 Specification & Drawings, 179AR Dash Cams.

Winter Service Patrols will:

- Patrol all carriageways of Trunk Roads, excluding slip roads, identified in Schedule 2 Table 6.6.1.
- Report on road conditions encountered to, and take instruction on treatments from, the Winter Service Duty Officer
- Provide an immediate response when instructed to carry out treatments or other de-icing Operations by the Winter Service Duty Officer
- Deal with any situation on the Winter Service Patrol route requiring immediate attention.
- Pay particular attention to Vulnerable Locations
- Undertake short stops for minor maintenance such as clearing grips and removing debris, and where any situation cannot be resolved, the OC will provide additional resource to manage the incident.
- Provide daily reports.
- Report Cat 1 defects and flooding which shall be responded to and recorded by the ILO (Incident Liaison Officer).

Category A Winter Service Patrols shall operate from 02:00 to 10:00 at two hourly intervals as described in Schedule 2 The routes will be designed such that each Winter Service Patrol alternates between a one-hour patrol and a one-hour standby on each route. All patrol routes shall be completed within one hour of commencement covering both directions and allow for a break.

The routes for dual carriageways and motorways shall be further designed so that the patrol vehicle, when working, is able to attend any location on its route within
30 minutes of receiving a call from the Winter Service Duty Officer.
Operating periods for Winter Service Patrols shall be between 02:00hrs and 04:00hrs, 04:00hrs and 06:00hrs, 06:00hrs and 08:00hrs and 08:00hrs and 10:00hrs.

Category B Winter Service Patrols shall operate from 00:00hrs to 09:00hrs at three hourly intervals covering both directions and allow for a break. Operating periods for Category B Winter Service Patrols shall be between 00:00hrs and 03:00hrs, 03:00hrs and 06:00hrs and 06:00hrs and 09:00hrs.

All patrols shall operate out with the specified times when forecasts indicate an increased risk of delays and disruption, or snow is forecast on the routes.

A list of all Patrols and their category are listed below:

Route	Category
Halbeath to M90/A90 merge north of Perth	A
Keir roundabout to Findo Gask south of Perth	A
Findo Gask south of Perth to Inveralmond to Errol	A
Errol to Forfar	A
Forfar to Laurencekirk	A
Laurencekirk to Newtonhill (south of Findon jct)	A
Newtonhill to Findon, Craibstone to Blackburn	A
Blackburn to Culsalmond to Blackburn	A
Keith to Culsalmond to Keith	A
Keith to Granish Aviemore to Keith	B
Keith to Raigmore interchange Inverness to Keith	B
Halbeath to Tay bridge roundabout to East Kingsway and return to Halbeath	B
A90 Ellon to Fraserburgh	B

7.1. Winter Service Plant and Reporting

7.1.1. Winter Plant for Patrols will be:

- fully loaded with de-icing material to provide an immediate response to carry out precautionary treatments or other de-icing Operations for carriageways.
- Equipped with on board data logging equipment to record actions taken by Winter Service Patrols.
- Be fitted with MD30 road condition sensors.
- Will not be used to undertake precautionary treatments.
- For every 4 patrol vehicles we will have 1 reserve vehicle.
- Dash Cams in line with Schedule 5 Specification.
- Capable of transmitting live road condition and images to the Traffic Control Scotland National Centre. And Operational Control Room.

Patrol routes are as follows:

Route	Depot	Route Description	Depot to Route (km)	Time to Route (mins)	Patrol Length (km)	Avg Speed (kph)	Route Time (mins)	Route to Depot (km)	Reg No.	PTT sign
PA1	Kinross	M90 Halbeath – Craigend; M90 Craigend - Halbeath	10	10	76	76	60	10	TBC	NE P1
PA2	Perth	Keir roundabout to Findo Gask to Keir Roundabout	10	10	70	70	60	10	TBC	NE P2
PA3	Perth	Inveralmond to Findo Gask to Broxden to Errol to Inveralmond	1	2	68	70	58	1	TBC	NE P3
PA4	Dundee	A90 Errol to A90 Forfar south jct to A90 Errol	2	2	68	70	58	2	TBC	NE P4
PA5	Forfar	A90 Forfar south jct to Laurencekirk south jct to A90 Forfar	8	10	72	72	60	8	TBC	NE P5
PA6	Forfar	A90 Laurencekirk south jct to Newtonhill to Laurencekirk	37	40	72	75	58	37	TBC	NE P6
PA7	Aberdeen	A90 Newtonhill to A90 Findon	5	10	45	70	39	5	TBC	NE P7
PA8	Aberdeen	A96 Craibstone roundabout to A96 / Culsalmond jct to A96 Craibstone roundabout	14	21	74	70	63	14	TBC	NE P8
PA9	Keith	A96/ A95 jct Keith to A96 / Culsalmond jct to A96 / A95 jct Keith	0.5	2	75	70	64	0.5	TBC	NE P9
PB1	Keith	A95 / A96 jct Keith to A9 A95 jct Garnish to A95 / A96 jct Keith	20	15	149	64	140	20	TBC	NE P10
PB2	Nairn	A96 / A95 jct Keith to A9 / A96 Raigmore roundabout Inverness to A96 / A95 jct Keith	3	5	170	64	159	3	TBC	NE P11
PB3	Kinross	M90 Halbeath to Tay bridge roundabout to East Kingsway to Tay bridge roundabout to M90 Halbeath	12	15	131	70	112	12	TBC	NE P12
PB4	Stirlinghill	A90 Ellon roundabout to Fraserburgh to A90 Ellon roundabout	28	30	111	64	104	28	TBC	NE P13

7.1.2. Winter Service Patrol Report

Winter Service Patrols will report on road conditions encountered to, and receive instructions from, the WSDO. Winter Service Patrols will provide daily reports to the WSDO using a Patrol Report Record Form below

Table 6.1.1 - Winter Service Patrol Record

Winter Service Patrol start and end time	Weather conditions for Winter		Assessed road condition. (By driver) (X)				Assessed residual salt level (by driver) (X)			Action implemented (use symbols provided below) *						Route salted prior to patrol (X)		
	Air (°C)	Road Surface temperature (°C)	Snow	Icy	Wet	Dry	High	Medium	Low	Action code	Treatment Type	Spread rate (g/m^2)	Approximate location of salting or other action	Start Time	End Time	Yes	No	Time of salting

*Action symbols:	
1 Spot treatment as instructed by the Winter Service Duty Officer.	2 Spot treatment as determined by driver.
3 Route treatment as advised by the Winter Service Duty Officer.	4 Route treatment as determined by driver.
5 Attend to runoff or seepage on surface.	6 Remove obstruction (e.g., dead dog, fallen tree, and other obstructions.) from surface.
7 Pre-wetted Salt	8 Dry Salt
9 Potassium Acetate	

8. Treatment Routes

8.1.1.

i. Precautionary treatment routes, including sections shared with Adjacent Road Authority

Precautionary treatments are based on information from our expert weather forecaster.

The precautionary treatment routes listed below have been separated into distinct categories:
Carriageway precautionary treatments for 20g/m2 and 40g/m2
Sections of footways, footbridges, and cycleways.

Table 6.1.2a and 6.1.3a (Resilience routes/Covid Routes based on 20g/m2 treatments).

Route No.	Depot	Description	Depot to Route	Time to Route (mins)	Salting Length (kms)	Av. Speed (kph)	Route Time (mins)	Route to Depot (kms)	Alternative access	Average width of route	Route tonnage (20g/m2	Treatment type
RR 1	Stirlinghill	A90 Fraserburgh-Ellon Dual	34	41	54	55	59	21	Tullos	7	7.6	Pre-wet Salt
RR 2	Nairn	A96 Inverness to Fochabers	25	30	76	55	83	52	Keith	6.8	10.3	Pre-wet Salt
RR 3	Keith	A96 Fochabers to Colpy	15	18	43.5	55	47	31	Tullos	6.8	5.9	Pre-wet Salt
RR 4	Keith	A95 Keith to Granish	5	6	74.3	50	107	89	Nairn	6	8.9	Pre-wet Salt
RR 5	Tullos	A96 Aberdeen West to Colpy	13	16	58	50	100	50	Keith	7	8.1	Pre-wet Salt
RR 6	Tullos	A92 Aberdeen South to A90 Glasslaw at Stonehaven	5.2	6	41.2	58	86	4	Forfar	7	5.8	Pre-wet Salt
RR 7	Forfar	A90 Laurenckirk to A90 Glasslaw at Stonehaven	29	35	66	58	97	25.4	Tullos	7	9.2	Pre-wet Salt
RR 8	Forfar	A90 Muiryfaulds to Laurencekirk	11	13	78.3	58	107	13	Dundee	7	11.0	Pre-wet Salt
RR 9	Dundee	A90 Inchmichael to A90 Muiryfaulds and A972 from Forfar Rd to East Dock St	20.1	24	59.2	55	110	10.1	Perth	7	8.3	Pre-wet Salt
RR 10	Perth	A9 Inveralmond roundabout to A90 West Kinfauns to A9 Loaninghead	7	8	72.7	60	115	7	Dundee	7	10.2	Pre-wet Salt
RR10 A	Perth	Friarton Bridge Spray	9.2	11	2.6	55	12	9.2	Dundee	7	284 litres	Potassium Accetate
RR 11	Perth	A9 Loaninghead to A9 Keir Roundabout	26	31	47.2	55	85	18	Dundee	7	6.6	Pre-wet Salt
RR 12	Kinross	M90 Halbeath to M90 Craigend	29	35	81.5	64	114	34	Perth	7.8	12.7	Pre-wet Salt
RR 13	Kinross	A90 Inchture to Perth and M90 slips	6	7	64.5	64	115	14	Perth	7.9	10.2	Pre-wet Salt
RR 14	Dundee	A92 Lochgelly to A92 Tay Bridge Roundabout	6.3	8	79	60	108	51	Kinross	7	11.1	Pre-wet Salt

Table 6.1.2 and 6.1.3 - Precautionary Treatment Routes determined by the Operating Company (40-gram routes) - Carriageway Route

Route	Depot	Description	Depot to Route (km)	Time to Route (mins)	Total Route Length (km)	De- icing Length (km)	Average Speed (kph)	Route Time (mins)	Route to Depot (km)	Route Efficiency	Alternative access	Average Width of Route (m)	Route Tonnage at 20 g/sq. m (tonne)	Route Tonnage at 40 g/sq. m (tonne)	Potassium Acetate (lit) @ 40 g/m2 equiv	Treatment Type
NE 1	Stirlinghill	A90 Fraserburgh to Ellon	54	60	83	53	50	100	28	46	Aberdeen	7	7.4	14.8		Pre wet salt
NE 2	Aberdeen	A96 Craibstone to Colpy Jct	12	17	50.1	46.2	40	85	12	62	Keith	7	6.5	12.9		Pre-wet Salt
NE 3	Keith	A96 Keith to Colpy Jct	4.8	6	35	35	40	53	31	49	Aberdeen	7	4.9	9.8		Pre wet salt
NE 4	Keith	A96 Elgin Dr Grays R/B to A95 Aberlour	30.9	37	50.2	45	40	75	19.3	45	Aberdeen	7	6.3	12.6		Pre wet salt
NE 5	Keith	A95 Aberlour to Granish	24.6	30	54.5	54.5	40	82	79.1	34	Aberdeen	7	7.6	15.3		Pre wet salt
NE 6	Nairn	A96 Inverness Raigmore Interchange - A96 Elgin Dr Grays R/B	28.3	34	58	58	40	87	35.5	48	Keith	6.5	7.5	15.1		Pre wet salt
NE 7	Aberdeen	A92 Findon, Aberdeen - A90 Glasslaw, Stonehaven	5	6	76.9	41	54	85	5	47	Forfar	7	5.7	11.5		Pre wet salt

NE 8	Aberdeen	A90 B974 Jcn - A90 Stonehaven Glasslaw	26	31	63.5	53.5	64	60	26	46	Forfar	7	7.5	15.0		Pre-wet Salt
NE 9	Forfar	A90 Parkford Jcn -A90 B974 Jcn	7.1	9	103	54	64	97	18.2	42	Dundee	7	7.6	15.1		Pre-wet Salt
NE 10	Forfar	A90 Fintry Dr R/B - A90 Parkford Jcn	1.2	1	75.2	54	64	71	1.6	69	Dundee	7	7.6	15.1		Pre-wet Salt
NE 11	Dundee	A90 Fintry Drive R/B - Kingsway – Inchmichael	1	1	51	42.7	64	48	1	81	Forfar	7	6.0	12.0		Pre-wet Salt
NE 12	Dundee	A90 Inchture – Perth	10	12	100.2	52.3	64	94	10	44	Perth	7	7.3	14.6		Pre-wet Salt
NE 13	Dundee	A92 Redhouse-A92 Tay Bridge	12	14	63	48	55	69	52	38	Kinross	7	6.7	13.4		Pre-wet Salt
NE 14	Perth	A9 Loaninghead to Keir R/B	25	30	86	47	64	81	25	35	Kinross	7	6.6	13.2		Pre-wet Salt
NE 15	Perth	A9 Loaninghead to Inveralmond	1	1	59	48	60	59	1	79	Kinross	7	6.7	13.4		Pre-wet Salt
NE 16	Perth	Broxden to Milnathort	5	6	78	40	64	73	28	36	Kinross	9	7.2	14.4	600	Pre-wet Salt + Pot Ace
NE 17	Kinross	Halbeath – Milnathort	0.5	1	84.1	45	64	79	0.5	43	Perth	7	6.3	12.6		Pre-wet Salt

NE 18	Kinross	Halbeath - Redhouse	16	19	73.5	42	60	74	16	45	Dundee	7	5.9	11.8		Pre-wet Salt
NE 19	Kinross	Friarton - Milnathort	2.8	3	44.2	23.2	64	41	19	35	Perth	9.5	4.4	8.8		Pre-wet Salt

Footway Routes Category A/B

Location Number	Route	Location	Name of street/side of street to be treated	Details of Footway		Route Centreline Length (m)		
				Start	Finish	Category A	Category B	
1.	A90	Crimond	Logie Avenue East/ Both Sides	Crimond House (12430/56 1940m)	Anvil Cottage (12430/68 390m)		600	
2.	A90	Dundee	Forfar Rd/ Both Sides	Kingsway	Jack Martin Way		1650	
3.	A90	Fraserburgh	Cross St – Maconochie Rd/ Both Sides	High St	Boothby Rd	1700		
4.	A92	Dundee	East Dock St/ Both Sides	Trades Ln	East Whale Ln		200	
5.	A92/ A972	Dundee	East Dock St-Broughty Ferry Rd- Greendykes Rd- Kingsway East/ Both Sides	East Market gait	Forfar Rd		4770	
6.	A92	Glenrothes	A92/ Both Sides	Bridge south of B9130 (14855/05 550m)	14865/05 450m		1100	
7.	A92	Freuchie	A92/ Both Sides	Shield Ave	Filling Station		500	
8.	A95	Aberlour	High St/ Both Sides	Dowan's Hotel (10950/05 2550m)	West Lodge (10950/30 1540m)	1760		
9.	A95	Craigellachie	A95- Victoria St/ Both Sides	Bridge east of A941 on A95 (10960/05 145m)	Spey Rd (10960/50 450m)		330	
10.	A95	Cromdale	A95/ Both Sides	Cromdale Hall (10940/50 0m)	The Old Inn (10940/50 810m)		810	

11.	A96	Keith	Moss St/ Both Sides	Church Rd	17665/00 745m	745		
			Church Rd- Regent St/ Both Sides	Moss St	Westend Cottage (17670/46 420m)		1300	
			A96/ Southern Side	B9015	Tigh Geal (12607/05 1080m)		630	
12.	A96	Elgin	East Rd/ Northern Side	Newmill Rd	Reiket Ln	1300		
			South Collage St- Alexandra Rd-High St- West Rd/ Both Sides	Pansport Rd	West Road 12623/50	1813		
			West Road	West Road 12623/50	Eight Acres Hotel (12625/00 580m)		1287	
13.	A96	Nairn	King St/ Both Sides	Viewfield Dv	St Ninians Rd	265		
			St Ninian St- Bridge St- Forres Rd/ Both Sides	King St	A939	700		
			Inverness Rd- Academy St- King St/ Both Sides	Tradespark Rd	Viewfield Dv		1575	
14.	A96	Alves	Main Road/ Northern Side	Filling Station (12625/46 100m)	12625/37 750m		1220	

All precautionary treatment routes have been designed to enable completion of treatment routes, including contiguous laybys but excluding remote laybys, within two hours of commencement of the treatment. Precautionary treatment routes will mobilise, commence, and complete before snow and ice conditions are forecast to occur. Immediate responses for unplanned treatments will mobilise and commence within one hour. The Friarton Bridge will be treated with Potassium Acetate. Treatments using Potassium Acetate shall comply with the AMS 1435D: Liquid Runway De-icing /Anti-icing product unless otherwise consented by the Director in writing.
De-icing vehicles and drivers will be assigned to specific routes to promote route ownership and knowledge, but all drivers will have a basic knowledge of every precautionary treatment route and will be capable of undertaking any such route if necessary.
Precautionary treatment spread rates, specified by the WSDO on the daily action plan, will be in accordance with the decision matrix tables in section 4.
Additional care will be taken at roadworks, where in addition to areas currently being trafficked, all other areas, including contraflows, likely to be opened to traffic are treated. Amendments to routes affected by non-trafficked areas during roadworks will be identified prior to treatment times. Traffic management equipment, including cones and cylinders, may disrupt distribution of salt, and liaison with engineering staff responsible for roadwork sites is essential if complete and robust treatment is to be ensured. Where more extensive traffic management measures prevent adequate precautionary treatment application, separate treatment will be carried out in advance of the carriageway being re-opened to traffic.
No Winter Constructional Plant will be driven above the legal speed limit at any time or at a speed greater than 40mph during precautionary treatment operations on de-restricted dual carriageways or motorways. On single carriageway roads de-icing material will be spread across the full width of the road in a single pass with the Winter Constructional Plant travelling at a speed no greater than 30mph. All vehicles will pass over the calibrated weighbridges before and after each treatment to record the amount of materials used.

On footway, cycling facilities and footbridges the total width shall be treated. Actual treatment levels will be agreed with local authority.

ii. Contingency plans for alternative access to precautionary treatment routes where normal access is prevented due to weather related or other incidents.

Amey have put in place arrangements and resources which will ensure that carriageway precautionary treatments will be provided for sections of the Network where normal access is prevented due to weather or other related incidents.

These contingency arrangements provide resources for precautionary treatments using an alternative access. Front Line Winter Constructional Plant will carry out treatment from an alternative access, should, for whatever reason, precautionary treatment is not able to be carried out from source Depot. This may include using a diversion route to get to the start of the route or a gritter from another Depot carrying out the treatment.

iii. Locations of De-icing Material Loading and Mixing Points.

De-icing materials will be stored in Nairn, Stirlinghill, Keith, Aberdeen, Forfar, Dundee, Perth, and Kinross. All of which will be the loading points for the Project.

iv. Cycling Facilities in Urban Areas.

Details of the precautionary treatment footway categories for footways and cycling facilities are included in Appendix 8 of this Winter Service Plan. These categories have been reviewed and routes developed to ensure compliance with contractual obligations.

8.1.2. Location of Cycling Facilities in Urban Areas

The table below shows locations

Location Number	Route	Location	Name of street/side of street to be treated	Details of Footway		Route Centreline Length (m)
				Start	Finish	
1	A90	Crimond	Logie Avenue East/ Both Sides	Crimond House (12430/56 1940m)	Anvil Cottage (12430/68 390m)	600
2	A90	Dundee	Forfar Rd/ Both Sides	Kingsway	Jack Martin Way	1650
3	A90	Fraserburgh	Cross St – Maconochie Rd/ Both Sides	High St	Boothby Rd	1710
4	A92	Dundee	East Dock St/ Both Sides Not a path anymore.	Trades Ln	East Whale Ln	200
5	A92/ A972	Dundee	East Dock St- Broughty Ferry Rd- Greendykes Rd-	East Marketgait	Forfar Rd	4770
6	A92	Glenrothes	A92/ Both Sides	Bridge south of B9130 (14855/05 550m)	14865/05 450m	1100
7	A92	Freuchie	A92/ Both Sides	Shield Ave	Filling Station	580
8	A95	Aberlour	High St/ Both Sides	Dowan's Hotel (10950/05 2550m)	West Lodge (10950/30 1540m)	1760
9	A95	Craigellachie	A95- Victoria St/ Both Sides	Bridge east of A941 on A95 (10960/05 145m)	Spey Rd (10960/50 450m)	330

10	A95	Cromdale	A95/ Both Sides	Cromdale Hall (10940/50 0m)	The Old Inn (10940/50 810m)	810
11	A96	Keith	Moss St/ Both Sides	Church Rd	17665/00 0m	745
			Church Rd- Regent St/ Both Sides	Moss St	Westend Cottage (17670/46 420m)	1300
			A96/ Southern Side	B9015	Tigh Geal (12670/00 1080m)	630
			Lennox Cres/ East Side	Intersection between A96 and A98	17675/91 100m	100
			Lennox Cres/ West Side	Intersection between A96 and A98	Burnside Cottage (17675/70 2040m)	445
12	A96	Elgin	East Rd/ Northern Side	Newmill Rd	Reiket Ln	1300
			South Collage St- Alexandra Rd-High St- West Rd/ Both	Pansport Rd	Eight Acres Hotel (12625/00 580m)	3100
13	A96	Nairn	King St/ Both Sides	Viewfield Dv	St Ninians Rd	265
			St Ninian St- Bridge St- Forres Rd/ Both Sides	King St	A939	700
			Inverness Rd- Academy St- King St/ Both Sides	Tradespark Rd	Viewfield Dv	1575
14	A96	Alves	Main Road/ Northern Side	Filling Station (12625/46 100m)	12625/37 750m	1220

9. Snow and Ice Clearance

9.1. Snow Clearing

9.1.1. Arrangements and Resources for Managing Snowfall

Amey will, as far as is reasonably practicable, ensure sufficient resources are available to prevent snow or ice from remaining on the Network and put into place specific arrangements to ensure that these resources will be mobilised. When the Met Desk forecasts snow at accumulations of 0.2 cm or greater on any route frontline and reserve plant will be mobilised to be on route 1 hour prior to the snow arriving. This will ensure completion before snow or ice is predicted.

The WSDO, in discussion with the Severe Weather Manager, will determine, from the 2–5-day weather forecast, the requirements to mobilise additional resources and fit ploughs. Winter Service shifts and the preparation of de-icing and ploughing equipment will be instructed by the WSDO, subject to prior approval by the SWM.

All Front Line, Reserve and Additional Winter Constructional Plant, apart from snow blowers, will be equipped with snow ploughs to effectively clear ice and snow. Non-salting vehicles fitted with ploughs, will also be mobilised to aid echelon ploughing on dual carriageways and motorways. All ploughs will be lowered to fully contact carriageway without damage to surface equipment on surface or the blade by utilisation of a hydraulic float. A list of ploughing routes can be found in Appendix D Annex 4. Snow or ice shall be cleared by the in a manner that prevents it from landing on adjacent or underlying paved surfaces.

Conditions and de-icing spread rates for snow and ice clearance of carriageways are detailed in the treatment matrix. There will also be a stock of alternative de-icers which can be used instead of or mixed with Brine that will allow more extreme temperatures to be treated. Potassium Acetate will be used on Friarton Bridge deck at spread rates identified in table 6.11.3

Operating Company will seek approvals from the Director to use dry salt to enable effective de-icing of carriageway and footway routes during certain weather conditions.

The clearance procedure for dual carriageways and motorways will be echelon ploughing (2 or more vehicles one of which will be a frontline spreader), moving in the same direction, one behind each other on different lanes). Ploughing techniques to be adopted are shown in Figure 11/1 below. In addition, there will be 4 Snow Blowers available solely for usage on the Unit. These snow blowers will as a minimum comply with Schedule 2 Section 6.5.14. We will have frontline plant capable of fitting and operating the Ice Breakers. When machine snow clearance is not suitable (including clearance around carriageway obstructions) hand snow clearance and salting shall be carried out.

Ploughing Techniques
2 Lane Dual Carriageway Roads without Hardshoulders: The method of clearance, on both carriageways, should be: (a) plough the left-hand lane to the verge. (b) plough the right-hand lane to the central reservation
2 Lane Dual Carriageway Roads with Hardshoulders: The method of clearance, on both carriageways, should be: (a) plough the left-hand lane to the Hardshoulder; (b) plough the right-hand lane to the central reservation. (c) plough the Hardshoulder to the verge

Figure 11/1: Ploughing Techniques

The ploughing routes are below in table 6.1.4:

Route	Depot	Description	Depot to Route (km)	Time to Route (mins)	Average Speed (km/hr)	Route time (mins)	Route to Depot (km)	Alternative Access	Average Width Route
NE 1	Stirlinghill	A90 Fraserburgh to Ellon	33	40	50	64	29.5	Aberdeen	7
NE 2	Aberdeen	A96 Craibstone to Colpy Jct	12	17	40	85	12	Keith	7
NE 3	Keith	A96 Keith to Colpy Jct	4.8	6	40	53	31	Aberdeen	7
NE 4	Keith	A96 Elgin Dr Grays R/B to A95 Aberlour	30.9	37	40	75	19.3	Aberdeen	7
NE 5	Keith	A95 Aberlour to Granish	24.6	30	40	82	79.1	Aberdeen	7
NE 6	Nairn	A96 Inverness Raigmore Interchange - A96 Elgin Dr Grays R/B	28.3	34	40	87	35.5	Keith	6.5
NE 7	Aberdeen	A92 Findon, Aberdeen - A90 Glasslaw, Stonehaven	5	6	54	85	5	Forfar	7
NE 8	Aberdeen	A90 B974 Jcn - A90 Stonehaven Glasslaw	8	31	64	60	26	Forfar	7

NE 9	Forfar	A90 Parkford Jcn -A90 B974 Jcn	7.1	9	64	97	18.2	Dundee	7
NE 10	Forfar	A90 Fintry Dr R/B - A90 Parkford Jcn	1.2	1	64	71	1.6	Dundee	7
NE 11	Dundee	A90 Fintry Drive R/B - Kingsway – Inchmichael	1	1	64	48	1	Forfar	7
NE 12	Dundee	A90 Inchture –Perth	10	12	64	94	10	Perth	7
NE 13	Dundee	A92 Redhouse-A92 Tay Bridge	11.6	14	55	90	11.6	Kinross	7
NE 14	Perth	A9 Loaninghead to Keir R/B	25	30	64	81	25	Kinross	7
NE 15	Perth	A9 Loaninghead to Inveralmond	1	1	60	59	1	Kinross	7
NE 16	Perth	Broxden to Milnathort	5	6	64	73	28	Kinross	9
NE 17	Kinross	Halbeath –Milnathort	0.5	10	64	79	0.5	Perth	7
NE 18	Kinross	Halbeath - Redhouse	16	6	60	74	16	Dundee	7
NE 19	Kinross	Friarton – Milnathort	2.8	3	64	41	19	Perth	7

Where hard packed snow and ice not exceeding 20mm thick has formed, and the air temperature is above minus 5°C, removal will be achieved by successive spreading of de-icing material. Below minus 5°C or where the snow or ice is more than 20mm thick, a single sized abrasive aggregate of particle size of 6mm, or 5mm sharp sand and having low fines content will be added to the de- icing material on a 1:1 ratio. Reversion to the use of de-icing material only will be made as soon as possible. Abrasive aggregates will be considered as a supplement on footway sections where de-icing material alone would provide an unacceptably slippery surface.

During prolonged periods of snowfall at locations where the use of salt for de- icing is prohibited, ploughing will be continuous followed by repeated applications of de-icing chemical. If snow becomes hard packed, consideration will be given to applying 5mm sharp sand to aid traction while snow clearing operations are being carried out. In the event of moderate or heavy snow and snow showers (as defined by the Met Office) the Operating Company shall deploy all Front Line, reserve, and additional Winter Service Plant on affected Routes for the purposes of Winter Service Operations including snow clearance.

There are two ice breakers that are shared between the Operating companies which are kept in Perth and Burghmuir Bear depots.

Ploughing routes will mirror the precautionary treatment routes as closely as possible and this activity will be carried out utilising the Echelon Ploughing technique on dual carriageways and motorways.

Where drifting snow is forecasted Amey will liaise with the Met Desk to get specifics of this and risk areas. These have generally been at venerable locations which have additional resources but if it is forecasted outside one of these areas an additional gritter or tractor will be deployed to this area.

9.1.2. Road Closure Procedure including use of Snow Gates

There are currently no physical snow gates in the Northeast Unit but there are virtual snow gates on the A96 at the Glens of Foudland.

Automated Signs (Virtual Snow Gates) are in place on the A96 just north of A920 near Kirkton of Culsalmond and east of the A96 near Huntly. The purpose of the signs is to allow rapid notification of a closure of the A96 between the gates. The point of closure is most likely to be at Glens of Foudland which has a history of closure during heavy snowfall.

The early notification will allow vehicles approaching the closed area the opportunity to turnaround and use an alternative route, or alternatively wait at a safer location until the road reopens. Where time permits a physical closure will be implemented to reinforce the warning.

Ongoing monitoring of the virtual gates shall be continued throughout the season to assess their effectiveness with de-briefings carried out following any implementation of the gates with both the Police Scotland & local authorities to identify any issues
The following procedure shall be used when the Virtual Gates are required to be closed: -

Implementation Procedure

Amey notify Police Scotland and Local authorities of need to close A96 due to snow (or stranded vehicle)
Police Scotland instruct the road to be closed.
Amey activates virtual gate signs.

Using a mobile phone send following text message to phone number **07935 347061** for South sign and **07935 347687** for North sign

SET 131,2 to activate

The reply will be 'Parameter set successfully'

If no reply from the sign resend the command again. There is a slight time delay on the North sign, possibly due to the signal.

1. Amey notifies Traffic Scotland of closure.
2. Amey deploy staff to implement physical closure at a suitable turning point.
3. Traffic Scotland instigates VMS signing notifying of closure.
4. Traffic Scotland create incident, web story etc

Removal Procedure

SET 131 to de-activate

1. Amey Scotland and the Police agree the road is fit to reopen.
2. Amey Scotland removes physical closure (if there was time to deploy)
3. Amey Scotland notifies the Police that the physical closure has been lifted.
4. Amey Scotland deactivates virtual gates
5. Amey Scotland notifies Traffic Scotland that the road has reopened.
6. Traffic Scotland advise A96 reopened on VMS, web etc.

The Police will issue instructions to Amey to assist in road closures. When the Police, in consultation with the WSDO, consider that weather conditions have made a road unsafe to vehicular traffic, arrangements will be made with the Police to close the road.

Having decided on the need to close a road, the Police will issue instructions to close the road. This decision will normally be relayed by the Police to the WSDO using a dedicated

contact number. Amey will liaise, and co-operate, with the Police to staff each end of the closure, if applicable, until a search of the section of road affected has been undertaken to ensure that no vehicles or pedestrians are trapped within the lengths of closure.

When a road is required to be closed, the WSDO will immediately notify the Traffic Scotland Control Centre by telephone. A written report will be submitted to the Directors within 12 hours (or if outside of normal working hours, then the morning of the next working day) of the Police instructing road closure.

The Police will normally notify the other Emergency Services of any road closures and will arrange for the provision of advance warning signs and/or will activate fixed or variable message signs where appropriate. The WSDO will also notify the adjoining Local Authorities and Operating Companies of any relevant closures.

Once it has been ascertained that no-one has been trapped within the closure length, the closure will be secured, and all Amey personnel withdrawn except those involved in the clearance of snow.

When it is considered safe, the Police will request Amey to re-open the road. The WSDO will immediately inform Traffic Scotland and the Directors of the reopening of the road.

9.1.3. Prolonged Snowfall Strategy

During prolonged periods of snowfall, ploughing will be continuous from the onset of snow to prevent a build-up of snow and compaction by traffic. Ploughing will continue until the Network is clear of snow and ice. Reserve and Additional Winter Constructional Plant will be used, as necessary, to supplement Front Line Winter Constructional Plant in snow conditions. The WSDO will liaise with The Directors Multi Agency Response Team (MART) throughout this period ensuring the provision of a coordinated response.
When planning and carrying out snow clearance, Amey will pay particular attention to the layout of the carriageway in terms of the overall number of lanes and the location of entrance and exit slip lanes. Snow clearance of slip roads will be co-ordinated with main carriageway clearance, and a clear path kept open between those entry and exit points where frequent lane changes are necessary.
For dual carriageways and wide single carriageway roads, echelon ploughing will be carried out utilising two snow plough vehicles (at least one of which will be a frontline spreader) moving in the same direction, one behind the other in adjacent lanes.
Irregular windrows caused by ploughing passes, especially those that weave from one lane to another are dangerous, and will be avoided, as they may tempt drivers to overtake by squeezing into the partly cleared lane. Lanes will be completely cleared, such that any windrows of snow remaining form a smooth and continuous line with no sudden encroachments into the cleared path. Clearance of snow from contiguous and remote laybys will be carried out once the main carriageway, junction areas and crossovers have been cleared of snow.

Care will be taken to avoid damage to road surfaces, road studs, roadside furniture, and structures. At roadworks, traffic management equipment must not be disrupted. An accumulation of ploughed snow creating a ramp adjacent to safety fences and concrete barriers will be avoided.

Where conventional ploughing or snow ploughing is not possible, for example:

- in exceptional circumstances when the snow on the road is deep and cannot be removed by conventional ploughing or snow blowing
- when de-icing treatment over packed snow is likely to provide an unacceptable surface, or
- when the traffic is insufficient to disperse the snow,
- Grade separated j

Amey will lift, remove, and dispose of snow and ice and/or utilise the ice breaker or snow blowers, with the snow being directed onto adjacent land (where Amey has obtained the prior agreement of the landowner and the Scottish Environmental Protection Agency). Such operations will be followed by de-icing treatment.

When snowploughing or snow blowing operations are undertaken care will be taken that snow does not build up across:
railway tracks or against gates, bridges, parapets, fences and safety fences, walls, and other boundaries

Speeds of ploughing vehicles will be regulated, particularly at features such as underbridges where snow could be thrown over the bridge parapet, and adjacent to the central reserve where snow could be pushed into the opposing carriageway. When ploughing snow, other vehicles will not be overtaken unless stationary.
We recognise that additional resources will be required for echelon ploughing in snow conditions. Winter Service operations will accord the highest priority and additional operatives will be rostered to crew additional shifts. Ploughing routes mirror our precautionary treatment routes where possible are shown in Appendix D.

9.1.4. Snow and ice clearance in accordance with Schedule 2 Scope, Appendix 6

De-icing material spread rates will be carried out in line with treatment rates in table 6.11.4
Potassium Acetate spread rates wil will be carried out in line with treatment rates in table 6.11.3

9.1.5. Arrangements for Safe Clearance of Snow and Ice from Wide Single Carriageways.

When clearing wide single carriageway roads, particularly those having more than two lanes, snow clearance operations must avoid the build-up of snow in the centre of the road. The detail of the ploughing strategy to be adopted is shown in Figure 10/1.

9.1.6. Treatment strategy for bridge service roads, footways (including those on bridge decks), footpaths and cycling facilities including location of salt bins.

All Footways, footbridges and cycle facilities shall be cleared of all snow within 2 hours of snow ceasing to fall. On wide routes, 1.2m minimum width should be cleared initially to allow safe passage but following this the full width will be cleared. After clearance of snow a treatment a minimum of 20ml/m2 spread rate shall be applied to all footway areas.

A list of Salt bins and self-help heaps is in section 15.

For reactive snow and ice clearance of all categories of footways, footbridges, and cycleways the following spread rates will apply:

During snow clearance 20g/m2
Following clearance of ice and snow 20ml/m2

9.2. Plans showing the location of the footways, footbridges and cycling facilities as Category A and Category B

The list of designated categories of each footway, footbridge or cycle facility within the Network area is shown in section 8.1.2 above, and a precautionary treatment should be carried out before 06:00 each morning when temperatures are forecast to below or equal to +1 degree.

Categories	Requirements
A	Apply de-icing treatment before 06.00 hours each morning.

Categories	General	Between 06.00 and 19.00 hours	Treatments out with daytime hours
B	Between the hours of 06.00 and 19.00, commence snow clearing as soon as practicable to prevent compaction by traffic. Ploughing should be continuous thereafter to prevent a build-up of snow.	Clear all snow within 2 hours of snow ceasing to fall. On wide routes, 1.2 metre minimum width shall be cleared initially.	Clear snow when required by the Director.

10. Freezing rain / Rain falling on extremely cold surfaces

10.1. Advance Planning

Freezing rain will be dealt with in line with the best practice information as it is recognised that prediction and treatment of freezing rain is problematic.

10.1.1. Advanced planning for freezing rain/rain falling on extremely cold

I. Prior to the commencement of the winter season, agreement should be reached with the local police authorities and, where applicable, the Regional Control Centres (RCCs) on procedures for dealing with occurrences of freezing rain and any incidents that may occur during or following such conditions. When a forecast shows freezing rain is forecast the SWM will liaise with Transport Scotland, Police Scotland and all other operational partners and discuss the impact of the freezing rain and what actions are planned to try combat these impacts.

II. Although the adverse effects of freezing rain can impact across any part of the network particular consideration should be given to those parts where the impact may be more significant such as on gradients or difficult alignments. These will be reviewed in line with the individual forecast from the Met Desk.

10.2. Operational Arrangements

I. Freezing rain should be treated like snow and therefore 40g treatments should be carried out in advance of the arrival of freezing rain and then all routes effected should be patrolled throughout the risk period. Freezing rain usually occurs along the line of an incoming warm front. If possible, to ensure maximum effectiveness of the salt, the advance treatment should be made in the same direction and immediately in advance of the weather front. Once the front has passed the vehicles will make a further pass of their routes to ensure they are fully treated and clear of any hazards.

II. Use of weather radar will be key to monitoring the freezing rain along with feedback from the spreader drivers who will be out on the effected routes. Once the WSDO sees no further rain on the radar and temperatures rising above zero again they will instruct the spreaders to do a final pass of the areas to confirm cessation and that routes have no issues present. In addition, a call should be made to the Met Desk to confirm no more freezing rain is accepted.

10.3. Hazard Mitigation

I. The very nature of freezing rain means that treatments will have virtually no effect initially and ice will form on the carriageway. Mitigation of the hazard is therefore a significant aspect of the actions taken in response to freezing rain. The main action is to inform road users of the hazard, but more pro-active

measures might be required. Press officer should be contacted in order that the local media can be advised, as necessary. Other considerations will need to be made on a local basis considering local circumstances. Where available fixed or mobile Variable Message Signs should be used to warn road users of the hazard. The existing established procedures for requesting VMS settings to be made should be followed well in advance. The following legend is currently the most appropriate for use in these circumstances:

SKID RISK SLOW DOWN

II. Where available, use of variable mandatory speed limits should be considered. Consideration should be given to closing the road as the rain arrives and holding the traffic (rather than diverting) until such times as it is deemed safe to proceed. This will require arrangements and protocols to be established with Police Scotland as part of the advance planning procedures.

11. De-Icing Materials

Details

Salt used for de-icing will be 6.3mm grading particle size and comply with the following:

I. 6.3mm grading particle size to BS 3247: 2011 + A1: 2016 Specification for Salt for Spreading on Highways for Winter Service and treated with an anti-caking agent

II. Salt will be stored in fully enclosed barns, and they will be maintained to ensure the following:

Salt is stored in dry conditions, such that moisture content does not exceed 4%.
No sheer faces left on stockpiles.
Salt stockpiles do not become contaminated.
Salt stockpiles or adjacent operations do not affect the environment.

III. Moisture content at existing salt stocks will be measured at monthly intervals throughout each Winter Period. The results will be recorded on an electronic data base which will be available for access at any time by the Director and PAG. Should the moisture content of salt used for de-icing exceed 4%, spread rates will be increased by 100% for spread rates up to and including 20gm/m2 and in addition salt stocks should be turned over and mixed to try reducing the moisture level.

Within 10 days of new salt deliveries, salt will be tested in accordance with BS 3247: 2011 + A1: 2016 at a UKAS accredited laboratory and results recorded to ascertain:

Moisture content (1 test per 500 tonnes)
Particle size distribution (1 test per 500 tonnes)
Chloride content (1 test per 1500 tonnes)
Soluble sulphate compounds (1 test per 1500 tonnes)

Salt stocks shall be tested by the Operating Company for salt moisture content at monthly intervals throughout each Winter Service Period and the results shall be recorded. As a minimum, the salt should be tested at the base of the stockpile. All salt storage shall be in line with 6.13.1 Specification for Salt Storage Facility.

IV. Amey has developed a long-standing agreement with national de-icing material suppliers Cleveland potash, Salt Union Ltd and Salt Sales Co.

V. We will use to import should supplies in the UK become low or limited.

VI. A list of stock can be found below.

VII. Our salt will be supplied by Cleveland Potash and Salt Sales. We have an agreement for an automatic restocking to ensure that adequate quantities of salt

are always available locally is in place. Each Depot will submit daily usage records to the SWM who will monitor stock levels throughout the season.

VIII. Amey will use an independent specialist surveyor to carry out a computerised survey and calculate quantities of all de-icing materials no later than
a) 7 days before start of WS Period and
b) 5 days before 21st Dec and 15th Feb.
Amey will provide The Director with report 1 Day after receipt.

IX. The Operating Company shall support the Director in the Operation of the Scottish Salt Group as required.

X. Weekly monitoring of the salt stock in each depot will be provided no later than 17:00hrs on the first working day every week during September, October, April, and May.

XI. Daily stock monitoring will be provided no later than 4 hours from Director's request.

XII. Accuracy of the Weather forecast will be provided weekly prior to 12:00hrs on the first working day or at Director's request.

XIII. The daily operational status of our Winter fleet including Frontline, Reserve, Additional and loaders reports will be submitted during the winter period.
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- Sufficient brine will be stored within our depots to be able to treat simultaneously at the maximum spread rate, all precautionary routes that each depot will service. An additional quantity of 20% above the minimum will be held in reserve at each depot location.
- Brine will be produced with marine salt to BS3247:2011 +A1 2016 specification using automated brine production equipment to a concentration of 23% dissolved NaCL and be 30% of total spread weight giving 70% salt and 30%. In addition, they shall have an alarm facility when brine is outside tolerances and be capable of being accessed remotely by Amey, the Director, and the Performance Audit Group. Where air temp forecast < -15°C brine diluted 5% -10% water to prevent recrystallisation. When the brine within the storage facilities is depleted, this shall be replenished within two hours. All brine production facilities will be fitted with digital read outs to measure the salt concentration of the brine automatically. No arisings from brine production will be disposed of in salt stockpiles.
- Daily checks shall be carried out using a saturation meter and the results will be stored electronically. The water supply to saturator units shall be protected from freezing to allow production to continue through all weather conditions.
- Alternative De-Icing Material. These includes Magnesium Chloride and Safecote or Ecothaw. A list of alternative materials we have in stock can be found below.

Location	Material Type	Stock
Perth	Magnesium Chloride	20,000
Keith	Magnesium Chloride	10,000
Aberdeen	Magnesium Chloride	10,000
Forfar	Magnesium Chloride	5,000
Stirlinghill	Magnesium Chloride	5,000

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Details of de-icing materials stocks are provided below and take account of the minimum stock levels to be maintained as required by the Project. Salt levels will be kept to within 80% of the original level by regular re-ordering of material.

Operational Salt Stock Levels

Operating Company	Minimum Salt Stock Level at Start of Season (tonnes)
Northeast Unit	35,000

De-icing Material (i.e., Dry salt / ABP)	Location	Type (barn/open)	Min (tonnes) 1st Oct
Dry Salt White Salt	Kinross	Barn	9,000 salt 120 white salt
Dry Salt White Salt Potassium Acetate	Perth	Dome Tank	3,000 salt 120 white salt 50,000
Dry Salt White Salt	Dundee	Barn	3,000 salt 120 White Salt
Dry Salt White Salt	Forfar	Barn	3,000 salt 120 White Salt
Dry Salt White Salt	Aberdeen	Barn	1,000 salt 60 White Salt
Dry Salt White Salt	Keith	Barn	5,000 salt 120 White Salt
Dry Salt White Salt	Stirlinghiill	Barn	500 salt 60 White salt
Dry Salt White Salt	Nairn	Barn	5,000 salt 60 White Salt
Dry Salt	Inverurie	Barn	3,500 salt
Dry Salt	Alves	Barn	3,000 salt
Total			35,500

Brine Production and Storage

Location	Type (Saturator / Storage Only)	Capacity (L)	Min (L)
Aberdeen	Saturator and storage	15,000 saturator and 22,000 storage	15,000
Dundee	Saturator and storage	15,000 saturator + 20,000 storage	15,000

Forfar	Saturator and storage	15,000 saturator + 22,000 storage	15,000
Keith	Saturator and storage	16,000 saturator + 20,000 storage	16,000
Kinross	Saturator and storage	15,000 saturator and 22,000 storage	15,000
Perth	Saturator and storage	18,000 saturator + 20,000l storage	18,000
Nairn	Saturator	18,000 saturator	18,000
Stirlinghill	Saturator and storage	15,000 saturator + 20,000l storage	15,000

12.Strategic Salt

Subject to order, Amey to supply or transfer strategic salt.

13. Winter Service Fleet 7 Plant.

All Winter Service Plant shall be fitted with a communication system in accordance with Schedule 5 Specification & Drawings, 2805AR Winter Service Vehicle Communications Equipment that will enable all plant personnel to communicate with the WSDO. They will also be fitted with on-board electronic data loggers in accordance with the requirements of Schedule 5 Specification & Drawings, 2803 AR Winter Service Vehicle Data Logging & Transmitting Equipment. The in-vehicle data shall be transferred from the vehicle to the computer system in near real time. In the event of an on-board electronic data logger malfunction, Amey shall prepare a similar written record within twelve hours of the malfunction occurring, a non-conformance will be raised immediately and will inform Transport Scotland and PAG no later than 24 hours of the non-conformance occurring. In addition, all Winter Service Plant will be fitted with a snowplough and have a minimum of two additional headlamps fitted to allow forward visibility when the plough is fitted.

All Front-Line Winter Service Plant shall be permanently available throughout the winter season and may only be named on the Northeast Unit. Front Line Winter Constructional Plant will undertake Winter Service Patrols, precautionary treatments and snow and ice clearance to the total width of carriageways including slip roads, hard strips, turning lanes, central reserve crossovers, lay-bys, bus bays and the like. All front-line plant will be fitted with brine saddle tanks to allow the use of pre-wetted salt to a 70/30 ratio.
Any unplanned treatments required immediately will be classed as "call-outs" and response times will be within an hour in line with Schedule 6.
When Winter Service Plant is changed for any reason Amey will inform The Director and this will include when a piece of winter plant is given a new "spreader name"

In the event of a breakdown on any of the Front-Line Winter Service Plant;
(a) Amey shall provide details of the cause, time and location of the breakdown and any other relevant information; this shall be recorded using Vaisala Manager no later than one hour of the breakdown occurring,
(b) Amey shall, if possible, return the vehicle to the nearest depot to minimise blockages and further disruption on the Unit, and
(c) Amey shall make immediate arrangements for reserve Winter Service Plant to be made available to comply with the requirements of this Section 6 Network Operations – Winter Service.

Below is a list of frontline and reserve Winter Service Plant available on the Unit.

Frontline fleet

Type of Winter Service Plant	Depot location	Vehicle Registration Number	Vehicle capacity	Number of vehicles	Plant use* (i), (ii), (iii)	PTT Radio Sign
32 Ton pre wet	Stirlinghill	PN73 FXS	12m3	1	(i) & (ii)	NE 1
32 Ton pre wet	Aberdeen	PN73 FWU	12m3	1	(i) & (ii)	NE 2
32 Ton pre wet	Keith	PN73 FXL	12m3	1	(i) & (ii)	NE 3
32 Ton pre wet	Keith	PN73 FXJ	12m3	1	(i) & (ii)	NE 4
32 Ton pre wet	Keith	PN73 FXM	12m3	1	(i) & (ii)	NE 5
32 Ton pre wet	Nairn	PN73 FXP	12m3	1	(i) & (ii)	NE 6
32 Ton pre wet	Aberdeen	PN73 FXR	12m3	1	(i) & (ii)	NE 7
32 Ton pre wet	Aberdeen	PN73 FXK	12m3	1	(i) & (ii)	NE 8
32 Ton pre wet	Forfar	PN73 FYU	12m3	1	(i) & (ii)	NE 9
32 Ton pre wet	Forfar	PN73 FYV	12m3	1	(i) & (ii)	NE 10
32 Ton pre wet	Dundee	PN73 FZT	12m3	1	(i) & (ii)	NE 11
32 Ton pre wet	Dundee	PN73 FZX	12m3	1	(i) & (ii)	NE 12
32 Ton pre wet	Dundee	PN73 FZY	12m3	1	(i) & (ii)	NE 13
32 Ton pre wet	Perth	PN73 FZW	12m3	1	(i) & (ii)	NE 14
32 Ton pre wet	Perth	PN73 FZV	12m3	1	(i) & (ii)	NE 15

32T Combi Sprotaayer	Perth	PN73 GAU	12m3	1	(i) & (ii)	NE 16
32 Ton pre wet	Kinross	PN73 FZU	12m3	1	(i) & (ii)	NE 17
32 Ton pre wet	Kinross	PN73 FZZ	12m3	1	(i) & (ii)	NE 18
32 Ton pre wet	Kinross	PN73 GAO	12m3	1	(i) & (ii)	NE 19
18-ton pre wet Patrol	Kinross	PN73 GAX	6m3	1	(i) & (ii)	NE PA1
18-ton pre wet Patrol	Perth	PN73 GJJ	6m3	1	(i) & (ii)	NE PA2
18-ton pre wet Patrol	Perth	PN73 GJK	6m3	1	(i) & (ii)	NEPA3
18-ton pre wet Patrol	Dundee	PN73 FWR	6m3	1	(i) & (ii)	NE PA4
18-ton pre wet Patrol	Forfar	PN73 GFA	6m3	1	(i) & (ii)	NE PA5
18-ton pre wet Patrol	Forfar	PN73 GEU	6m3	1	(i) & (ii)	NE PA6
18-ton pre wet Patrol	Aberdeen	PN73 GFE	6m3	1	(i) & (ii)	NE PA7
18-ton pre wet Patrol	Aberdeen	PN73 GFG	6m3	1	(i) & (ii)	NE PA8
18-ton pre wet Patrol	Keith	PN73 FWP	6m3	1	(i) & (ii)	NE PA9
26-ton pre wet Patrol	Keith	PN73 FWW	6m3	1	(i) & (ii)	NE PB1
18-ton pre wet Patrol	Nairn	PN73 FWS	6m3	1	(i) & (ii)	NE PB2
18-ton pre wet Patrol	Kinross	PN73 GAX	6m3	1	(i) & (ii)	NE PB3
26-ton pre wet Patrol	Stirlinghill	PN73 FWV	6m3	1	(i) & (ii)	NE PB4
Hako spreader with plough	Aberdeen	WX70 GZB	500 litres	1	(i)	NE FP1
Hako spreader with plough	Dundee	WX70 GYN	500 litres	1	(i)	NE FP2
Hako spreader with plough	Kinross	WX70 GYK	500 litres	1	(i)	NE FP3
Hako spreader with plough	Keith	TBC	500 litres	1	(i)	NE FP4
Hako spreader with plough	Keith	TBC	500 litres	1	(i)	NE FP5
Hako spreader with plough	Nairn	TBC	500 litres	1	(i)	NE FP6

Key:

(i) Precautionary treatments and clearance of snow or ice with a depth up to 100 millimetres

(ii) Winter service patrols.

(iii) Other arrangements to comply with the requirements of this Part.

Reserve Fleet:

Type of Winter Service Plant	Depot location	Vehicle Registration Number	Vehicle capacity	Number of vehicles	Plant use* (i),	PTT Radio Sign
26t Pre Wet Reserve	Stirlinghill	PN73 FWV	9m3	1	(i) & (iii)	NE RES 1
26t Pre Wet QCB Reserve Patrol	Forfar	PN73 GJX	9m3	1	(i) & (iii)	NE RES 2
32t Pre Wet Reserve	Dundee	PN73 FWX	12m3	1	(i) & (iii)	NE RES 3
32t Pre Wet Reserve	Keith	PN73 FXO	9m3	1	(i) & (iii)	NE RES 4
26t Pre Wet QCB Reserve Patrol	Keith	PN73 GJU	9m3	1	(i) & (iii)	NE RES 5
32t Combi sprayer	Perth	PN73 GBE	12m3	1	(i) & (iii)	NE RES 6
26t Pre Wet QCB Reserve Patrol	Kinross	PN73 GJV	9m3	1	(i) & (iii)	NE RES7
26t Pre Wet Reserve	Nairn	PN73 FWW	9m3	1	(i) & (iii)	NE RES8
Hako spreader with plough	Keith	TBC	500 litres	1	(i)	NE RFP1
Hako spreader with plough	Dundee	TBC	500 litres	1	(i)	NE RFP 2
Fast-Trak	Keith	BX70 GUS		1	(iii)	NE FT1
Fast-Trak	Keith	SN67 AHG		1	(iii)	NE FT2
Fast-Trak	Perth	SH72 UVM		1	(iii)	NE FT3
Fast-Trak	Perth	SH72 UVS		1	(iii)	NE FT4
Snowblower attachment	Keith			2	(iii)	
Snowblower attachment	Perth			2	(iii)	

II. Below is a list of additional Winter Service Plant available for pre-deployment at vulnerable locations to assist reserve winter plant when required. through strategic partners and mobilisation times:

Type of Winter Service Plant & registration number	Depot location or third-party operator and location	Number of vehicles	Mobilisation time in hours
Tractor/Plough	ScotPlant. Huntly	1	4
Tractor/Plough	Sivewright. Aberdeen	2	4
Fastrac	Grant Ritchie Kinross. Perth	2	4

Tractor/Plough/Blower	Agri Services. Ladybank	1	4
Tayside Contracts	Forfar, Dundee, Perth	1	4
Aberdeen City Council	Aberdeen	1	4

III. Below is a list of loading Winter Service Plant available on the Unit.

Type of Winter Service Plant & registration number	**Depot location**	**Vehicle capacity**	**Number of vehicles**
Telescopic Loader (or similar)	Aberdeen	1.5 cu m	1
Telescopic Loader (or similar)	Dundee	1.5 cu m	1
Telescopic Loader (or similar)	Keith	1.5 cu m	1
Telescopic Loader (or similar)	Perth	1.5 cu m	1
Telescopic Loader (or similar)	Kinross	1.5 cu m	1
Telescopic Loader (or similar)	Nairn	1.5 cu m	1
Telescopic Loader (or similar)	Forfar	1.5 cu m	1
Telescopic Loader (or similar)	Stirlinghill	1.5 cu m	1

13.1 Calibration of Winter Service Plant

13.1.1 All Winter Service Plant will be calibrated in September and January of each Annual Period and carried out and certified by an independent company. All equipment for spreading de-icing material shall be calibrated.

(a) in accordance with the requirements of BS 1622:1989 Specification for Spreaders for Winter Service, or
(b) where BS 1622:1989 Specification for Spreaders for Winter Service does not provide for the calibration of any de-icing spreading equipment, in a manner proposed in writing by the Operating Company and consented to in writing by the Director. As a minimum the Operating Company shall provide details of the Winter Service Plant supplier's calibration method to the Director for his consent, and
(c) in accordance with the requirements of the specific material being used.

September calibration and testing shall comply with the requirements of tests 'A' and 'B' and January calibration and testing shall comply with the requirements of test 'B', all of BS 1622:1989 Specification for Spreaders for Winter Service. Re-calibration and testing shall be carried out after repairs to the spreading equipment and at other times when necessary to ensure the accuracy of de-icing material spreading.

13.1.2 All calibrations will be carried out by an independent party and records will be stored on Amey's Management System with access for Transport Scotland and PAG.

14. Compounds, Depots, and Facilities

14.1 Below is a list the facilities based on the Unit

Compound, Depot or Facility Name	Owner	Postal Address	Purpose	Access Arrangements	Contact Details	Facilities
Perth	Morris Leslie Limited	Caledonian House, West Kinfauns, Perth, PH2 7XZ	Central Office	24 hours	Morris Leslie Limited Caledonian House, West Kinfauns, Perth PH2 7XZ	Office, Welfare Mess
Perth	Tayside Contracts	Ruthvenfield Rd, Perth	Operational and Winter depot	24 hours	Head of Operations, Tayside Contracts, Contracts House, 1 Soutar St, Dundee, DD3 8SS	Office, Welfare Mess
Dundee	Tayside Contracts	Marchbanks Depot, Harefield Rd, Dundee DD2 3JW	Operational and Winter depot	24 hours	Head of Operations, Tayside Contracts, Contracts House, 1 Soutar St, Dundee, DD3 8SS	Office, Welfare Mess
Forfar	Tayside Contracts	Kirriemuir Rd, Forfar, DD8 3TG	Operational and Winter depot	24 hours	Head of Operations, Tayside Contracts, Contracts House, 1 Soutar St, Dundee, DD3 8SS	Office, Welfare Mess

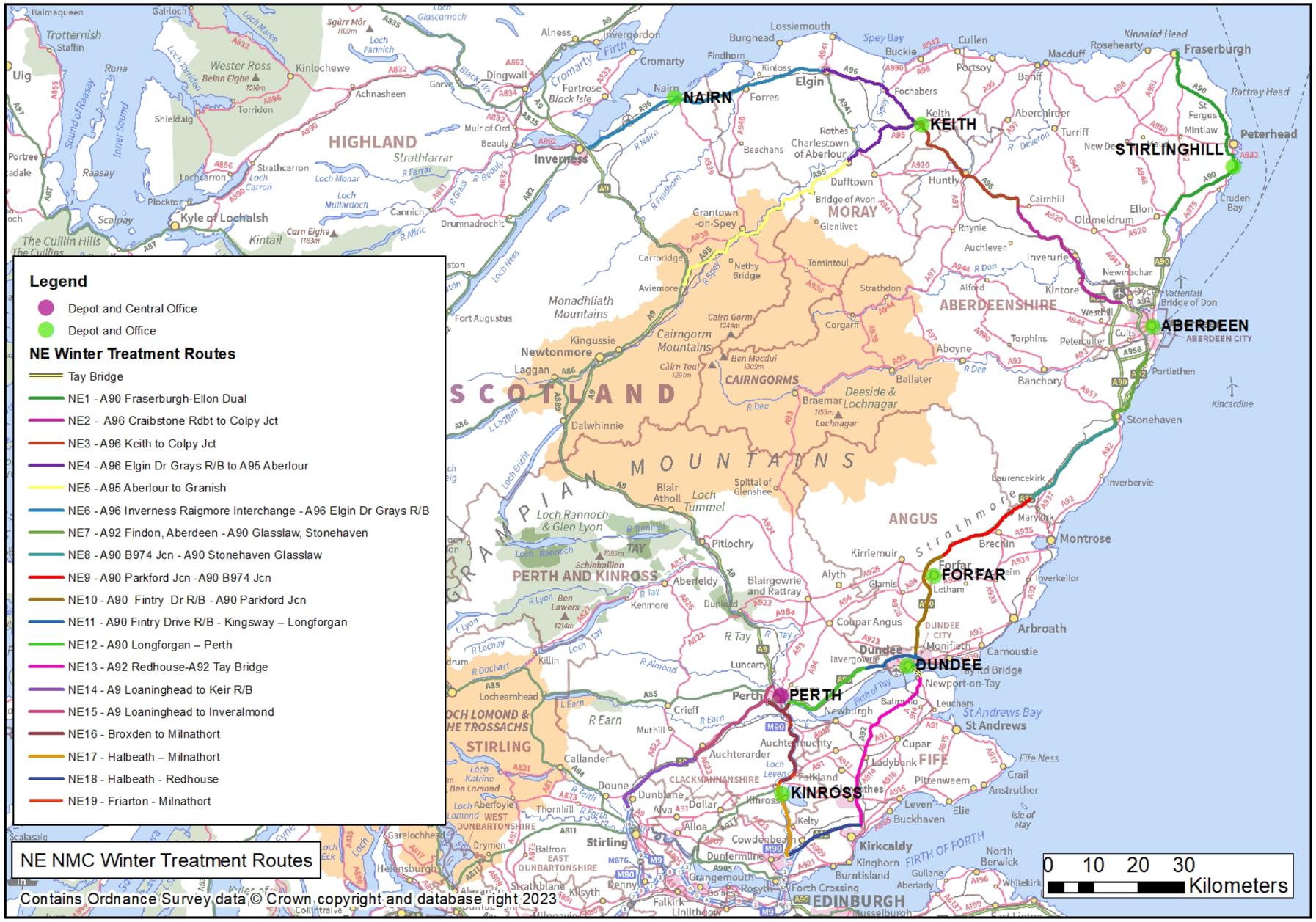
Kinross	Tayside Contracts	Kinross Roads Depot, Turfhills	Operational and Winter depot	24 hours	Head of Operations, Tayside Contracts, Contracts House, 1 Soutar St, Dundee, DD3 8SS	Office, Welfare Mess
Keith	Blackhillock Quarry	Blackhillock Depot. Keith. AB55 5PA	Operational and Winter depot	24 hours		Office, Welfare Mess
Nairn	Highland Council	Highland Council Park Quarry Nairn IV12 5QN	Operational and Winter depot	24 hours	Highland Council Park Quarry Nairn IV12 5QN	Office, Welfare Mess
Aberdeen	Aberdeen City Council	Craigshaw Drive, West Tullos Industrial Estate, Aberdeen	Operational and Winter depot	24 hours	Aberdeen City Council, Operations, Marischal College, 2nd Floor West, Broad Street, Aberdeen AB10 1AB	Office, Welfare Mess
Stirlinghill	Breedon Quarry	Stirlinghill Quarry, Stirlinghill, Boddam Peterhead AB42 3PB	Operational and Winter depot	24 hours	Stirlinghill Quarry, Stirlinghill, Boddam Peterhead AB42 0XX	Office, Welfare Mess
Inverurie	Sivewright	Rothienorman. Newton of Boghead Farm.	Salt Storage	24 hours	Colin Sivewright Rothienorman. Newton of Boghead Farm.	Salt storage
Alves	Sivewright	Earnside Farm. Alves. IV36 2RB	Salt Storage	24 hours	Colin Sivewright Earnside Farm. Alves. IV36 2RB	Salt storage

15. Maps, Drawings and Geographical Information

15.1 Maps

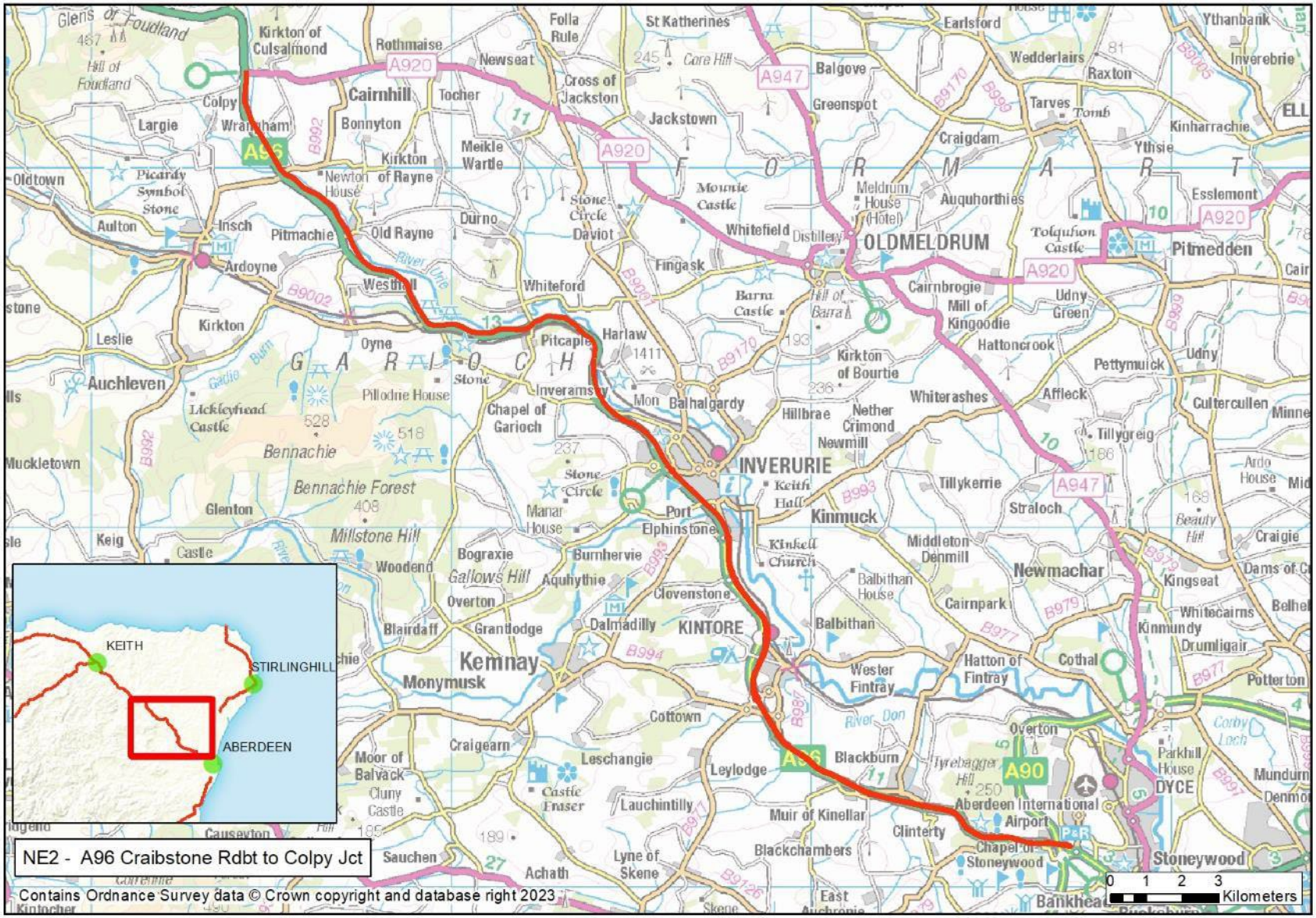
I. Precautionary treatment routes for carriageways, including on/off slips and depots.

NE Winter Treatment Routes

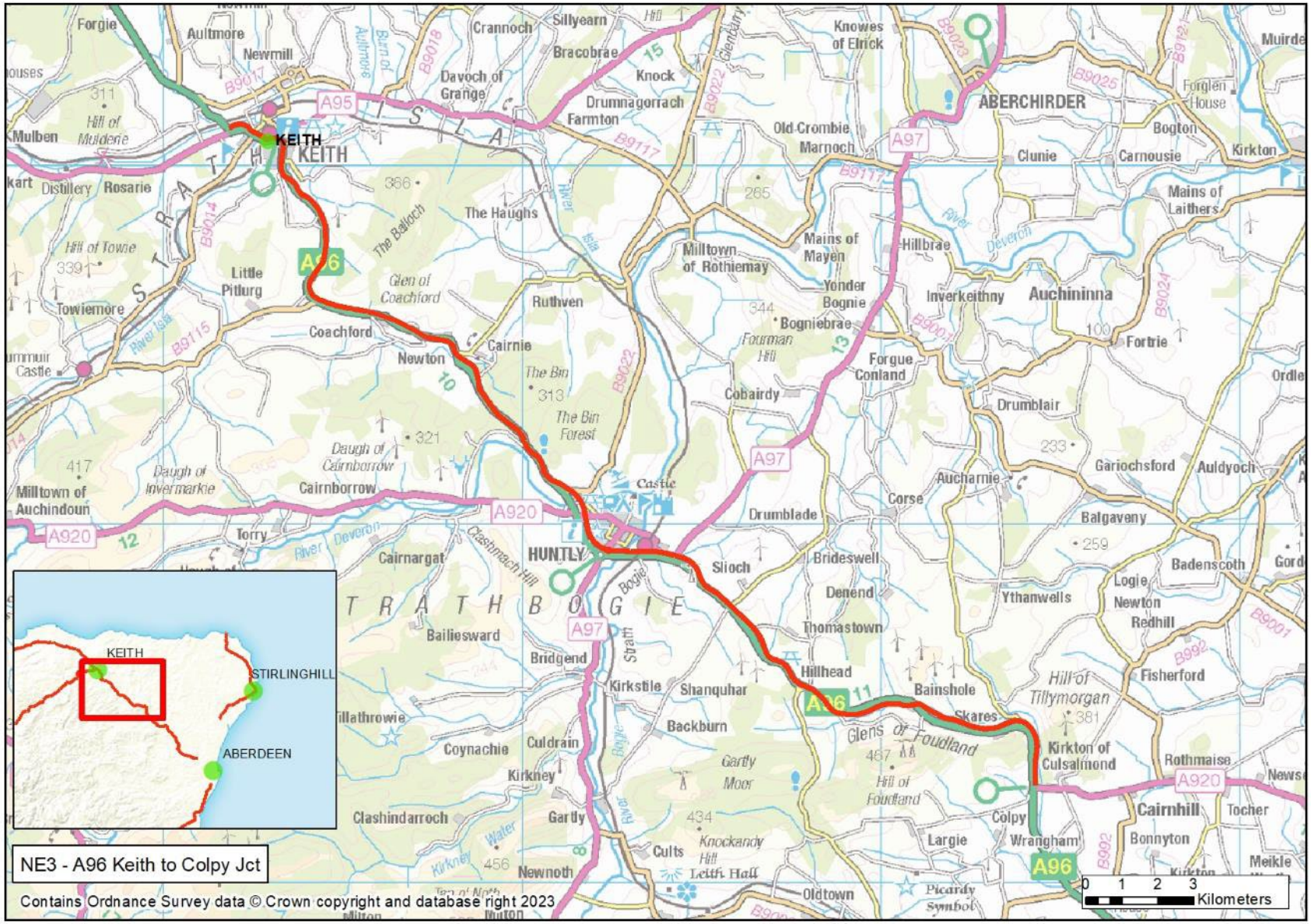


NE1 – A90 Fraserburgh to Ellon Dual

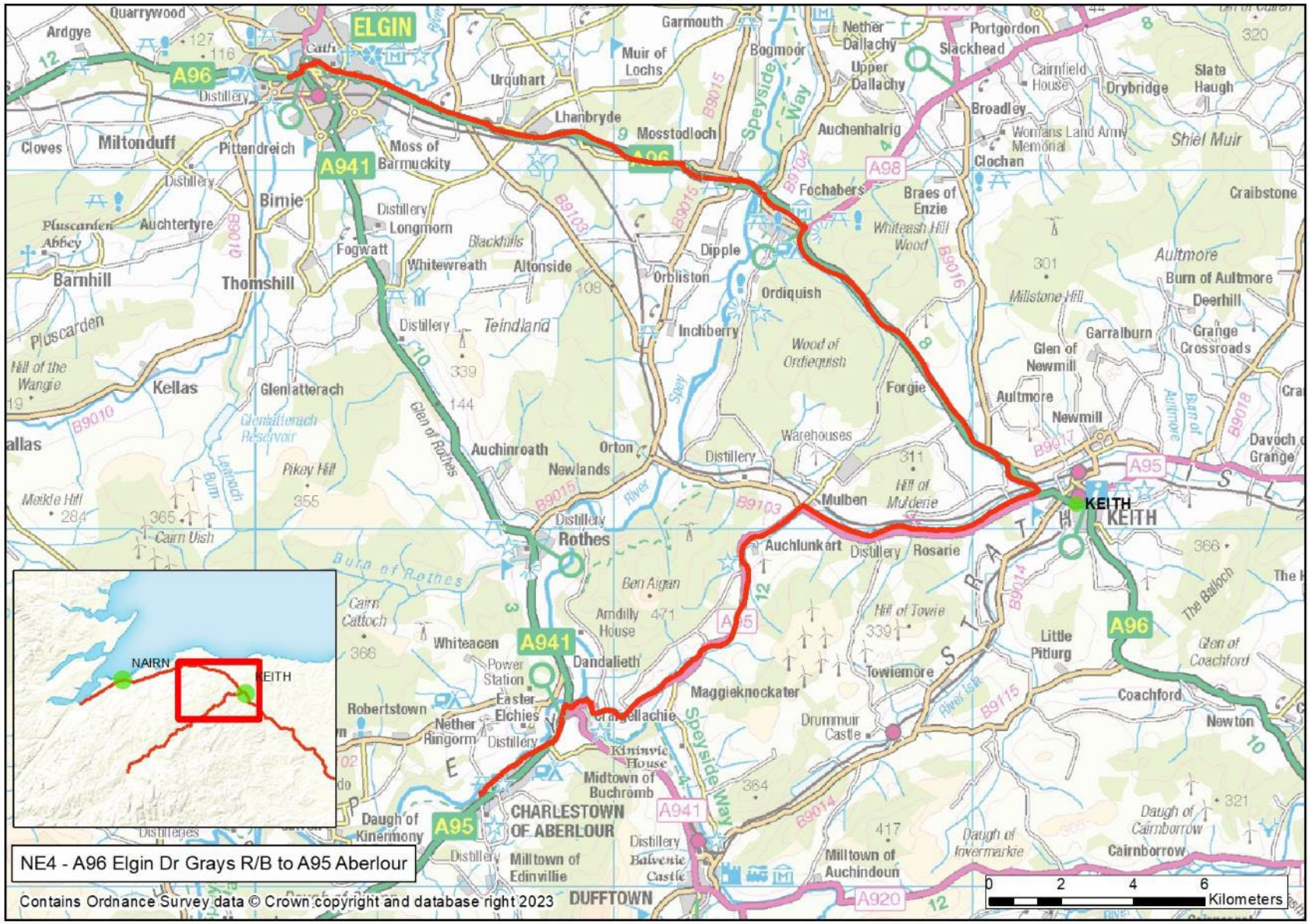
NE2 – A96 Craibstone R/B to Colpy Jct



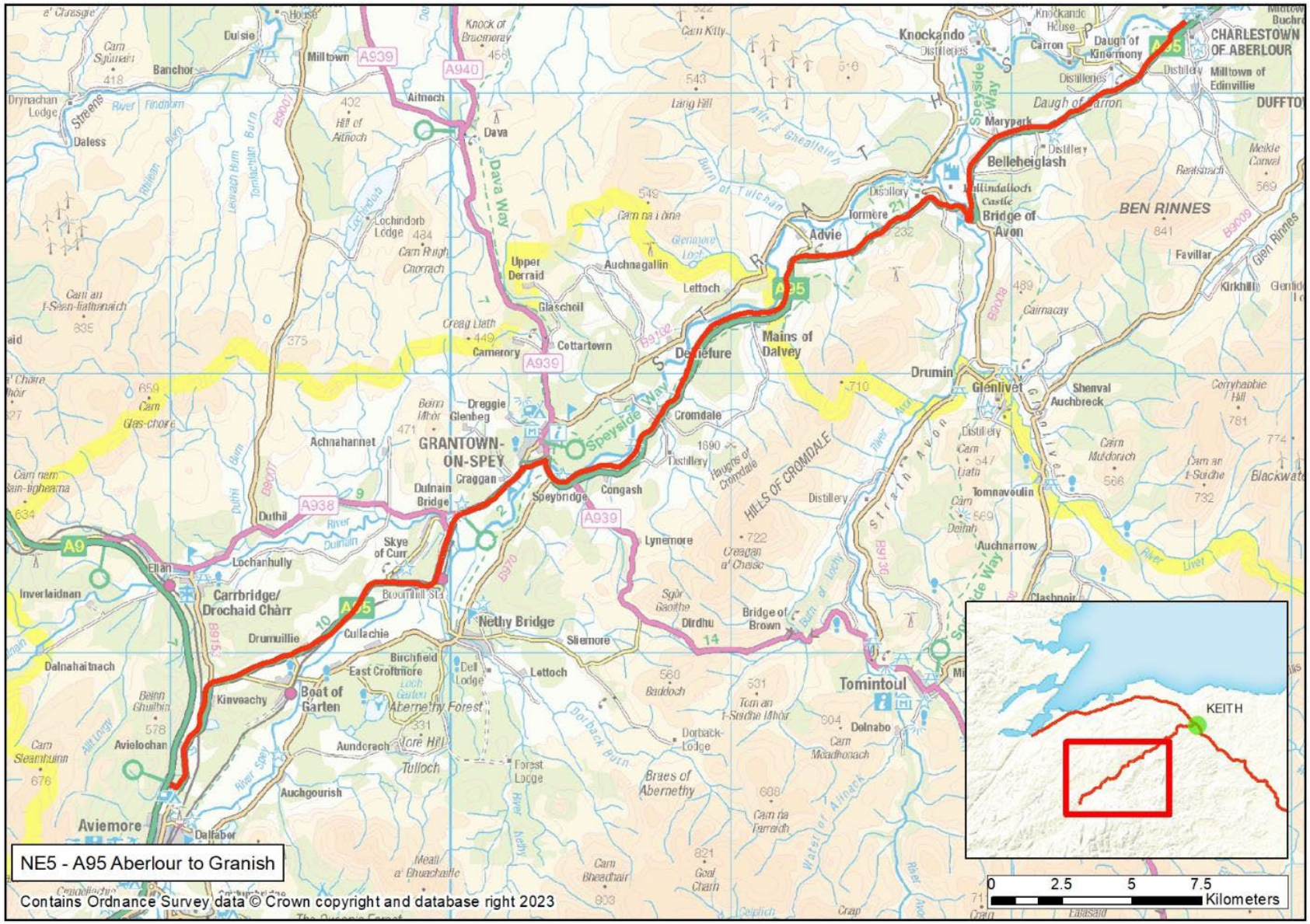
NE3 – A96 Keith to Colpy Jct



NE4 – A96 Elgin Dr, Grays R/B to A95 Aberlour



NE5 – Aberlour to Granish

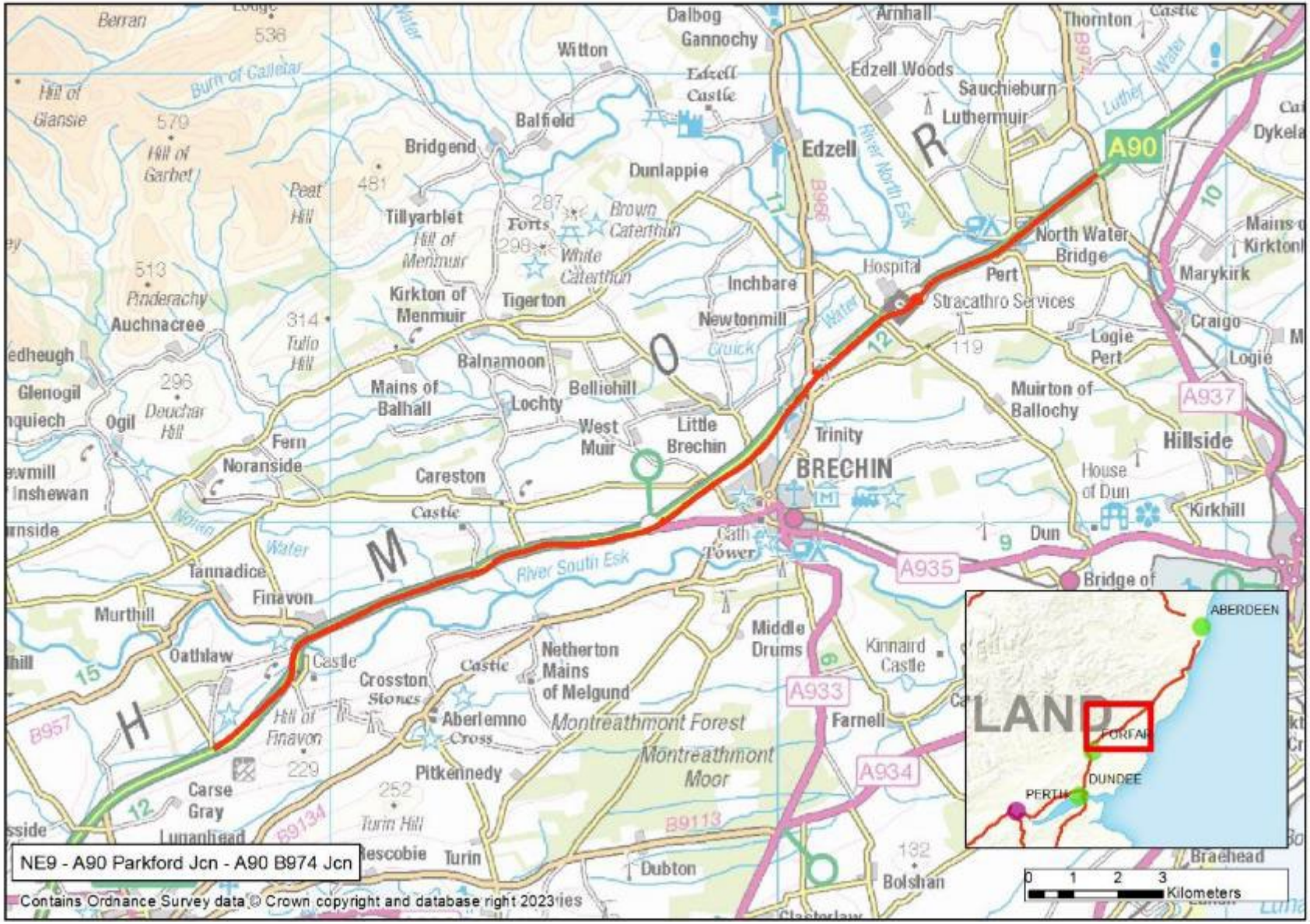


NE6 – A96 Inverness Raigmore Interchange to A96 Elgin Dr Grays R/B

NE7 – A92 Findon, Aberdeen to A90 Glasslaw, Stonehaven

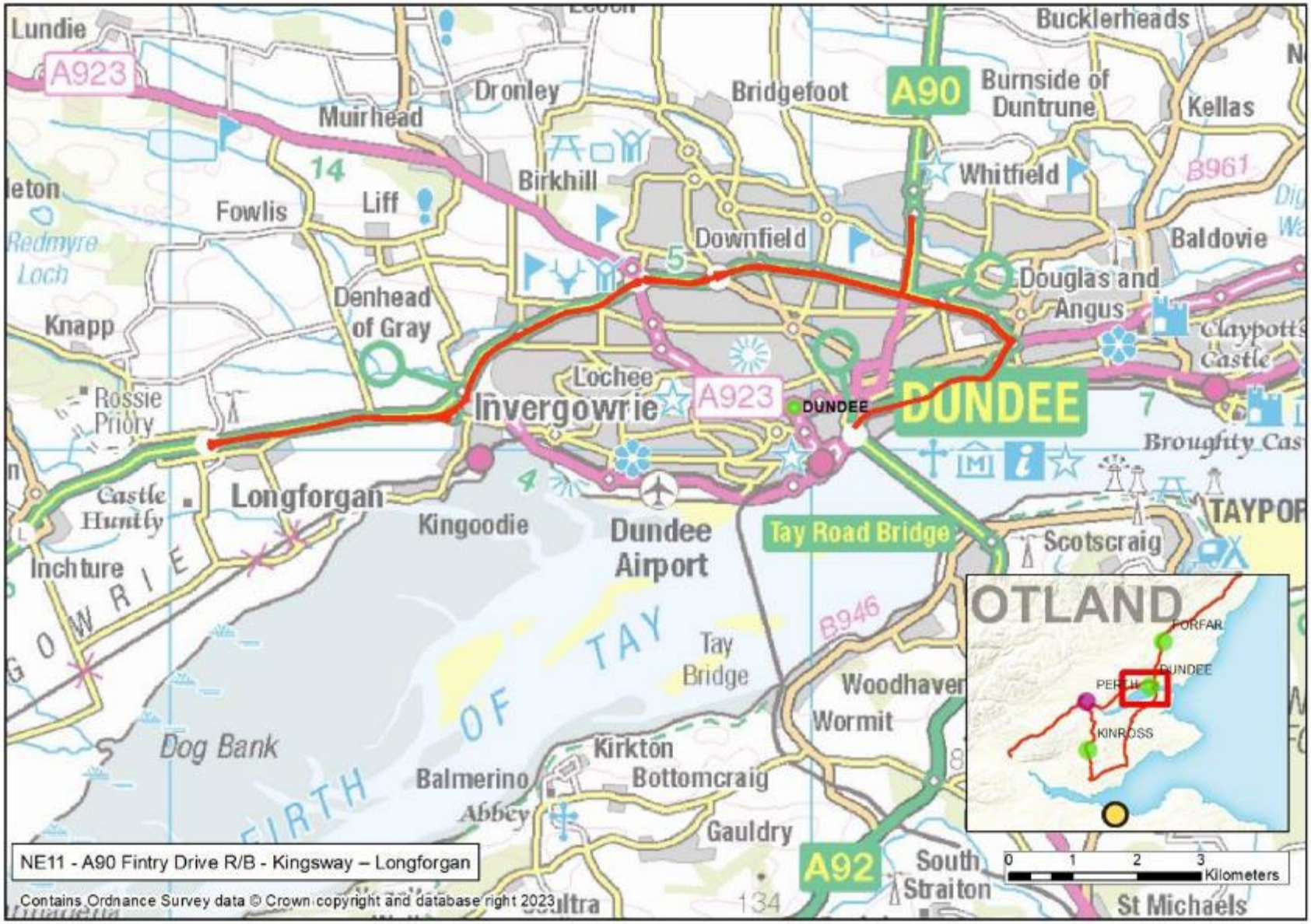
NE8 – A90, B974 Jct to A90 Glasslaw, Stonehaven

NE9 – A90 Parkford Jct to A90 B947 Jct

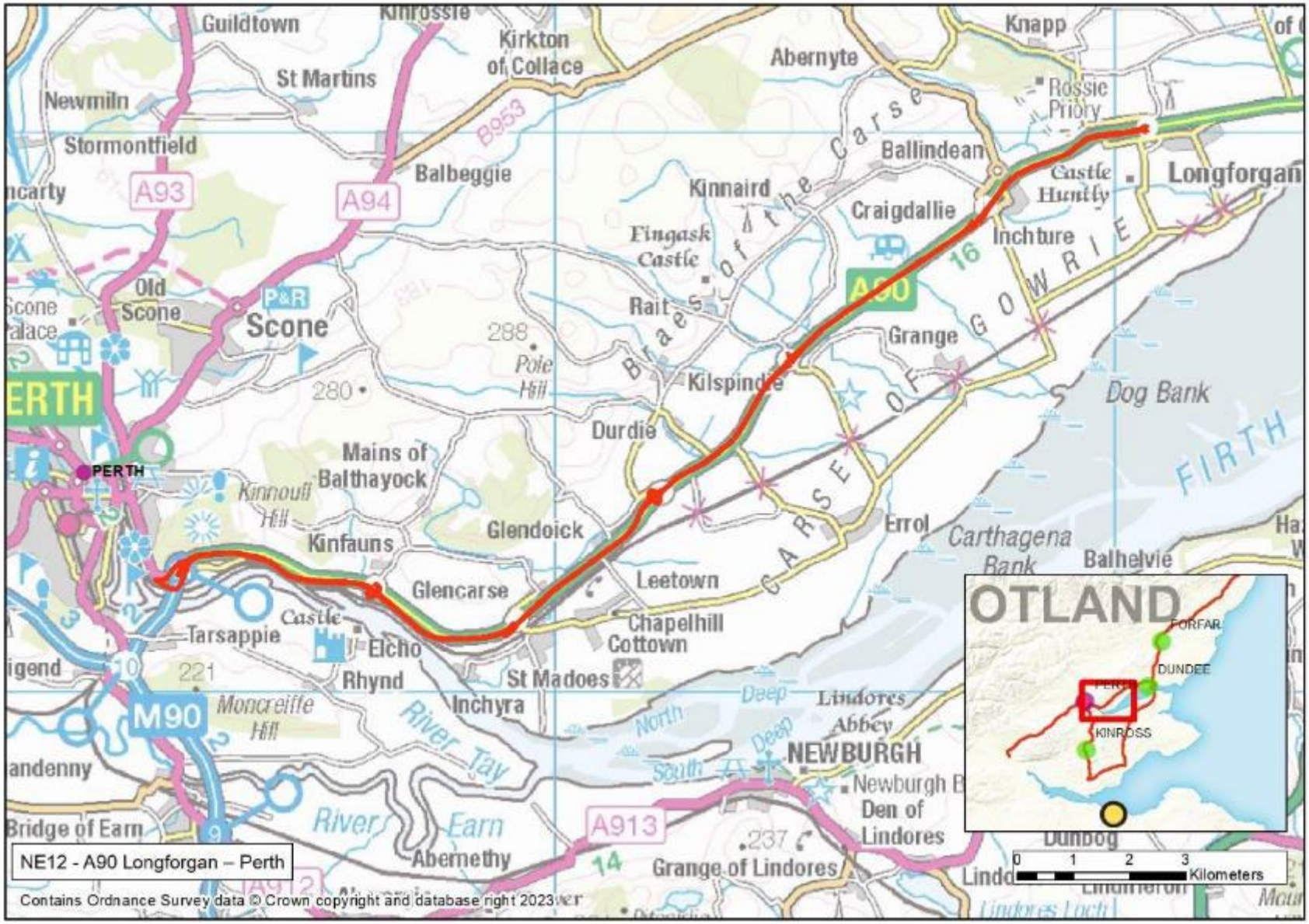


NE10 – A90 Fintry Dr R/B to A90 Parkford Jct

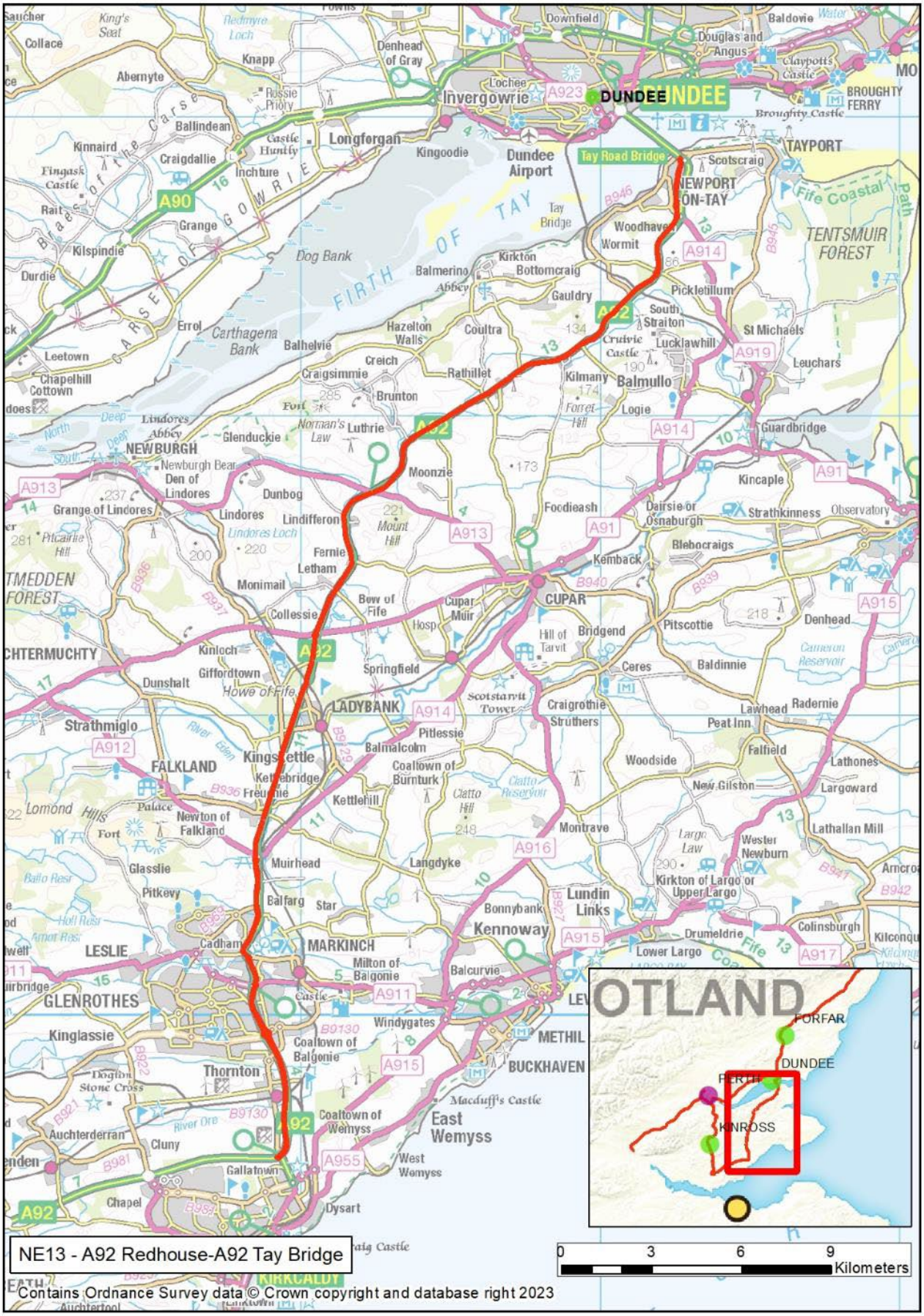
NE11 – A90 Fintry Dr R/B - Kingsway - Longforgan



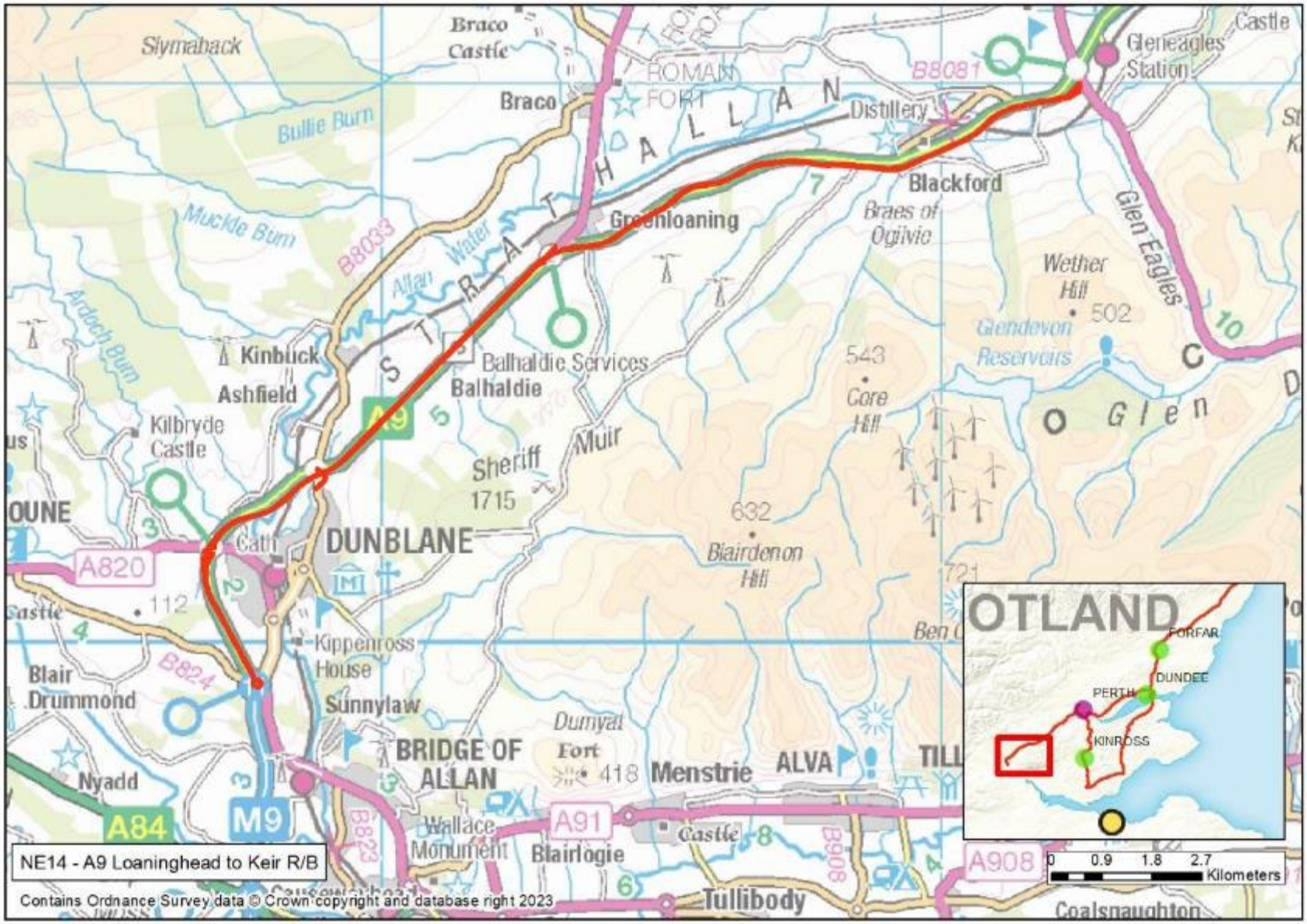
NE12 – A90 Longforgan - Perth



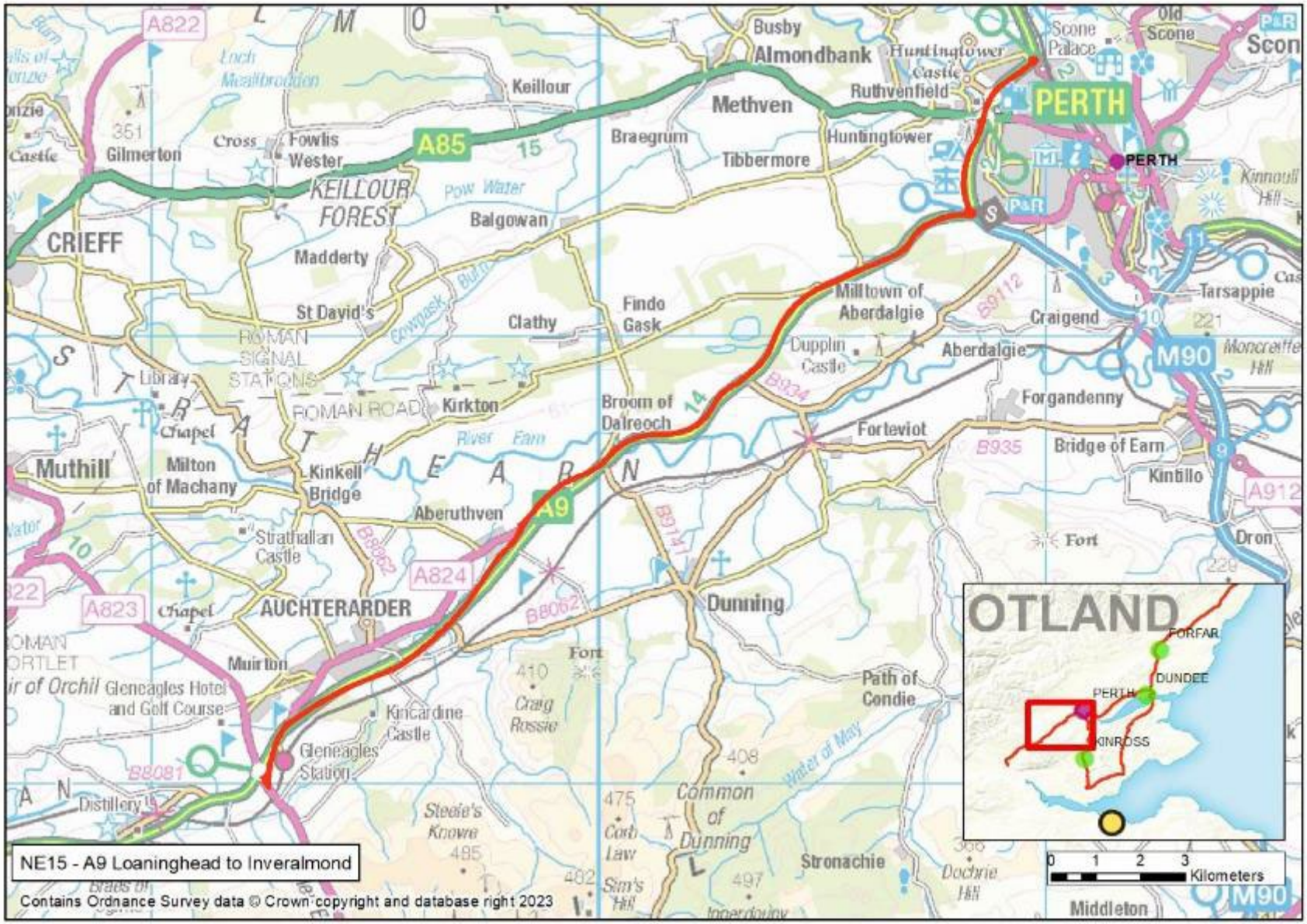
NE13 – A92 Redhouse to A92 Tay Bridge



NE14 – A9 Loaninghead to Keir R/B



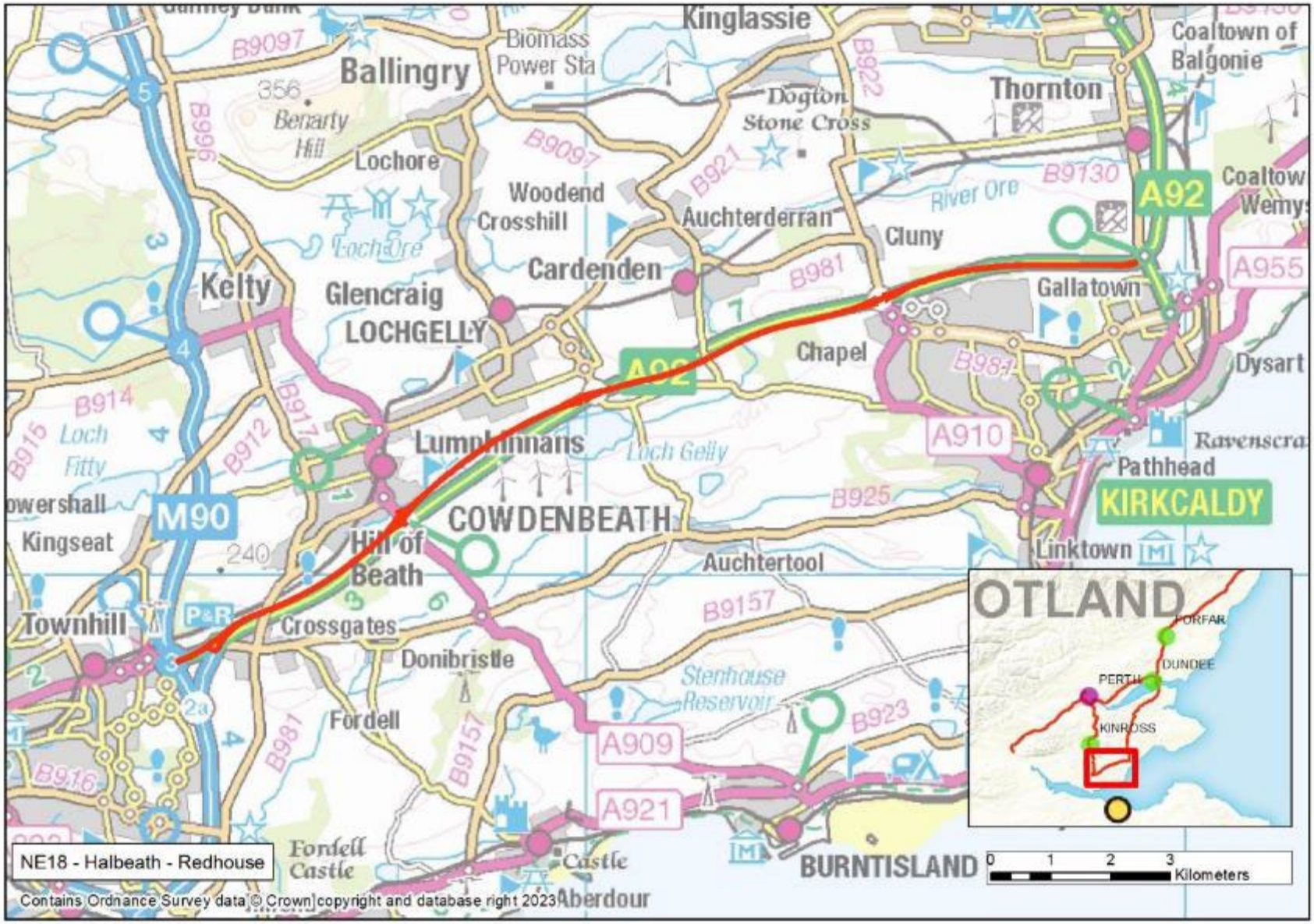
NE15 – A9 Loaninghead to Inveralmond



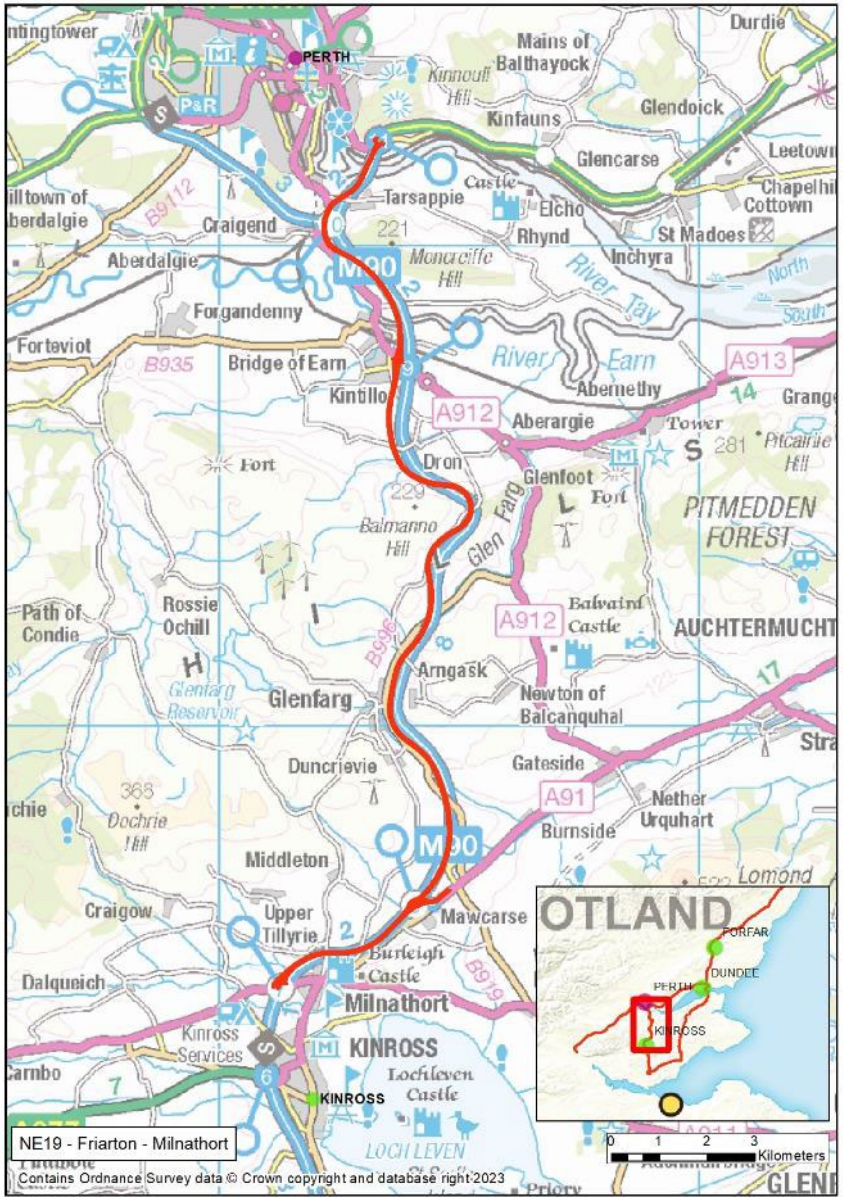
NE16 – Broxden to Milnathort

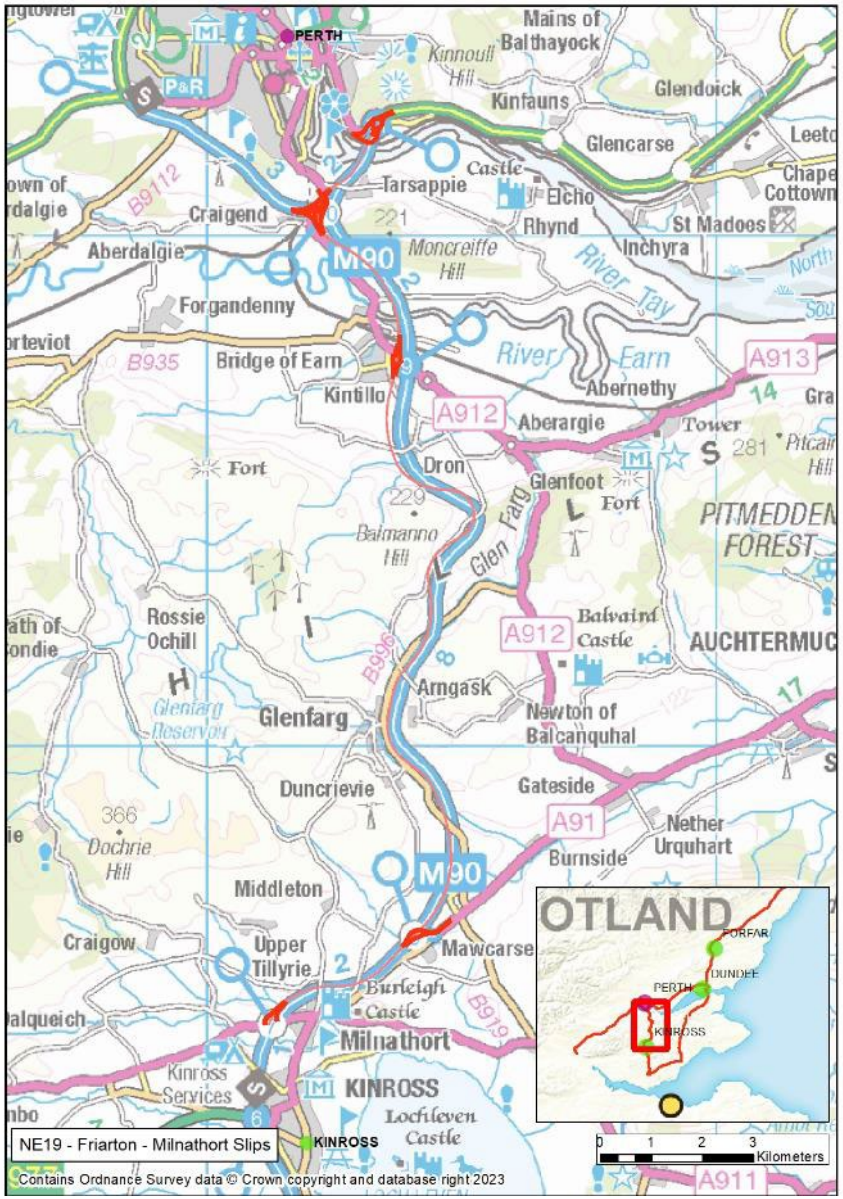
NE17 – Halbeath to Milnathort

NE18 – Halbeath to Redhouse

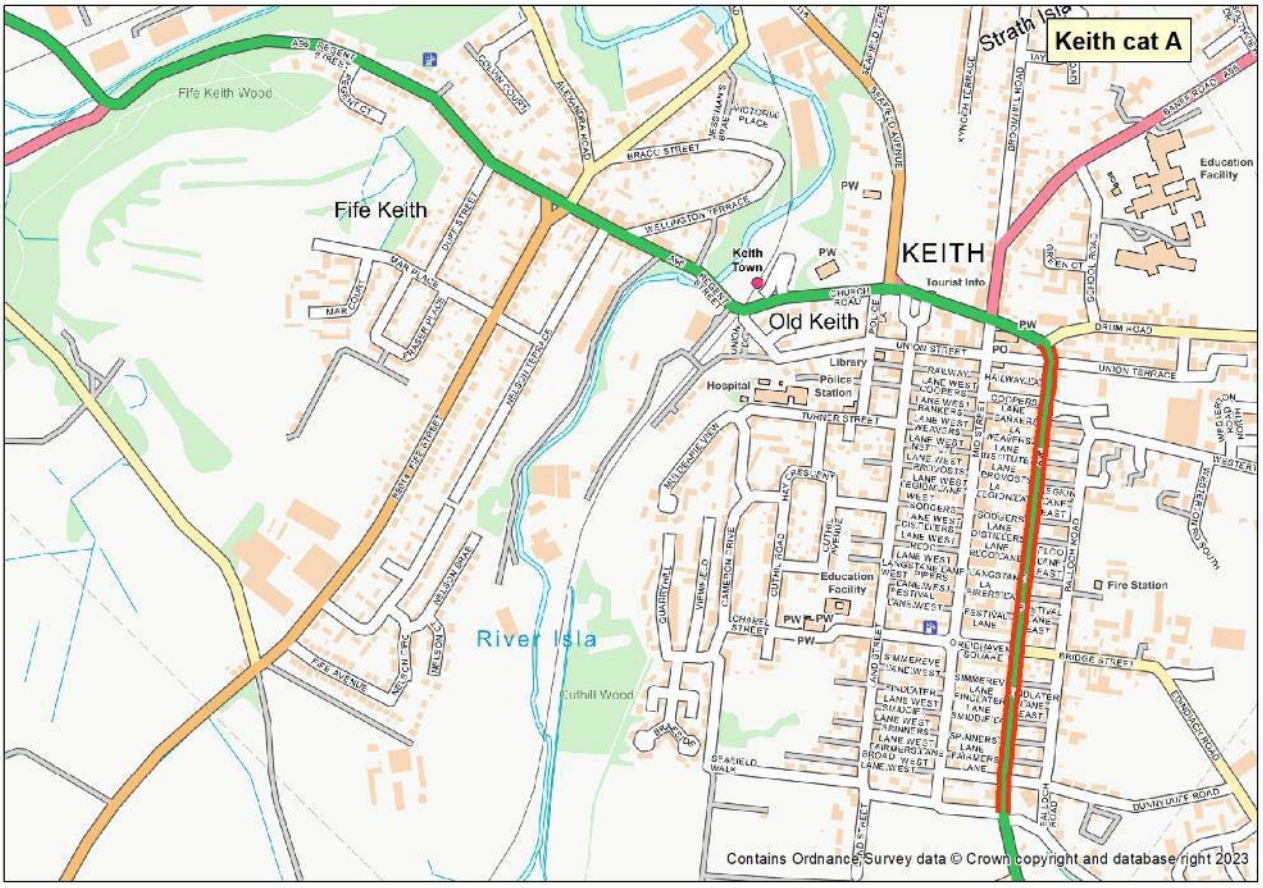


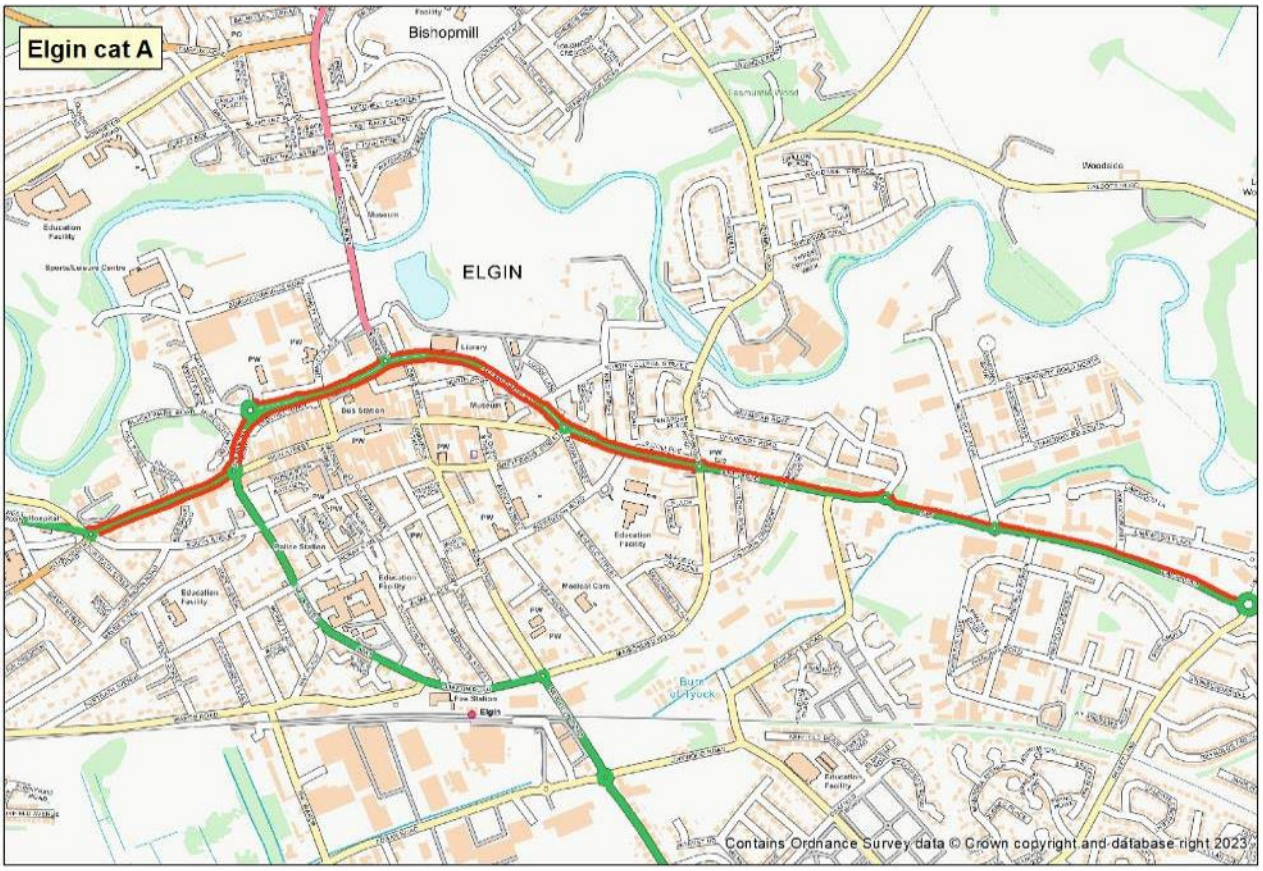
NE19 – Friarton to Milnathort (Slips and R/B's)

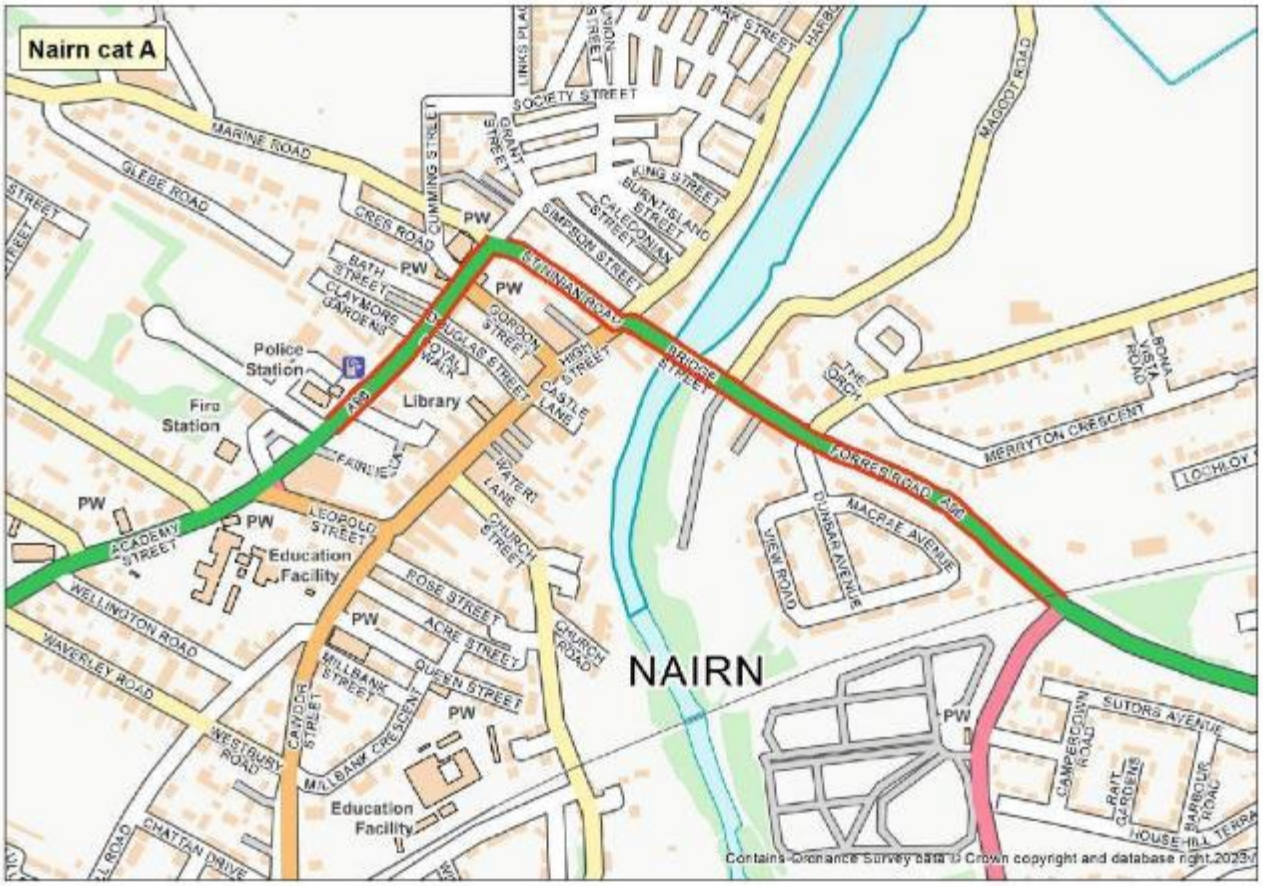




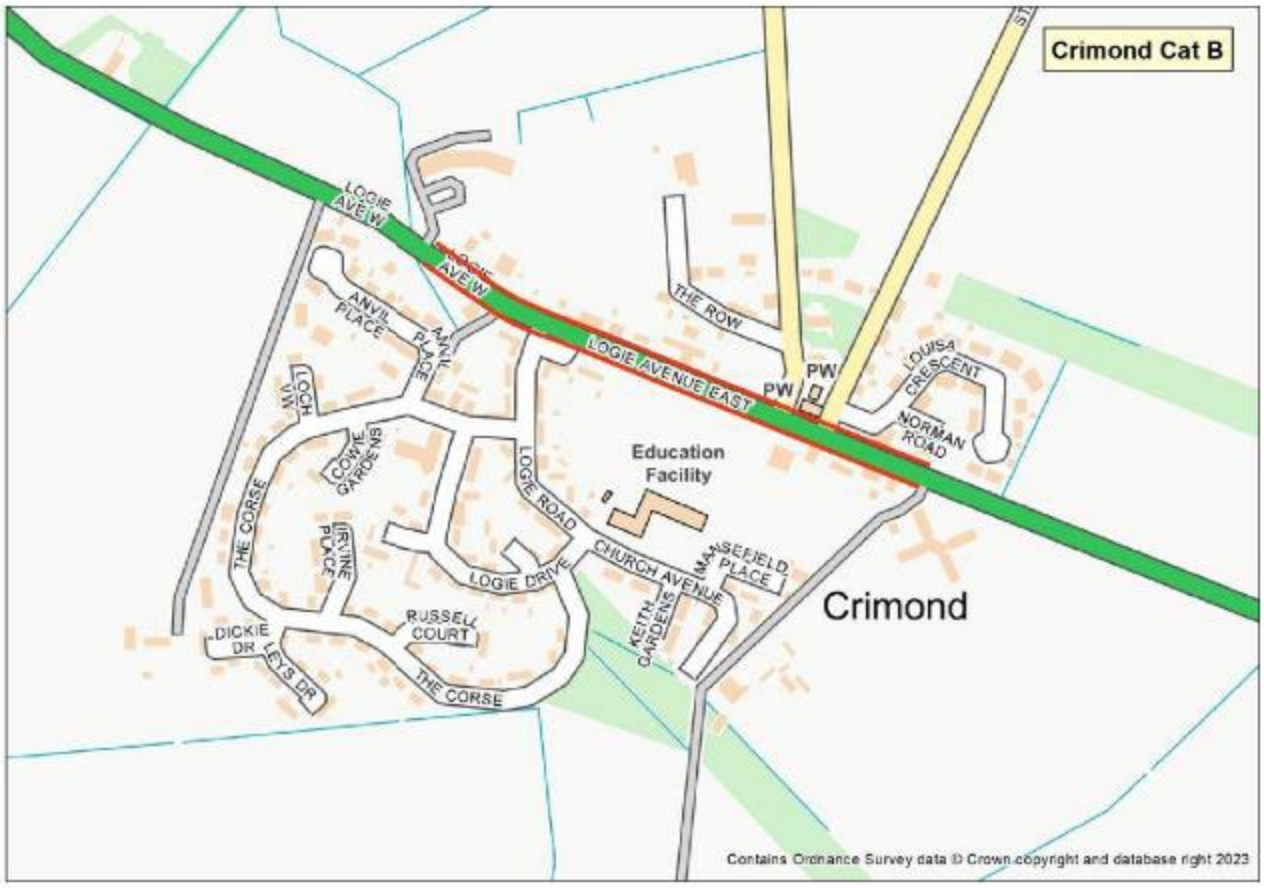
II. precautionary treatment routes for Cat A/B footways, footbridges and cycling facilities

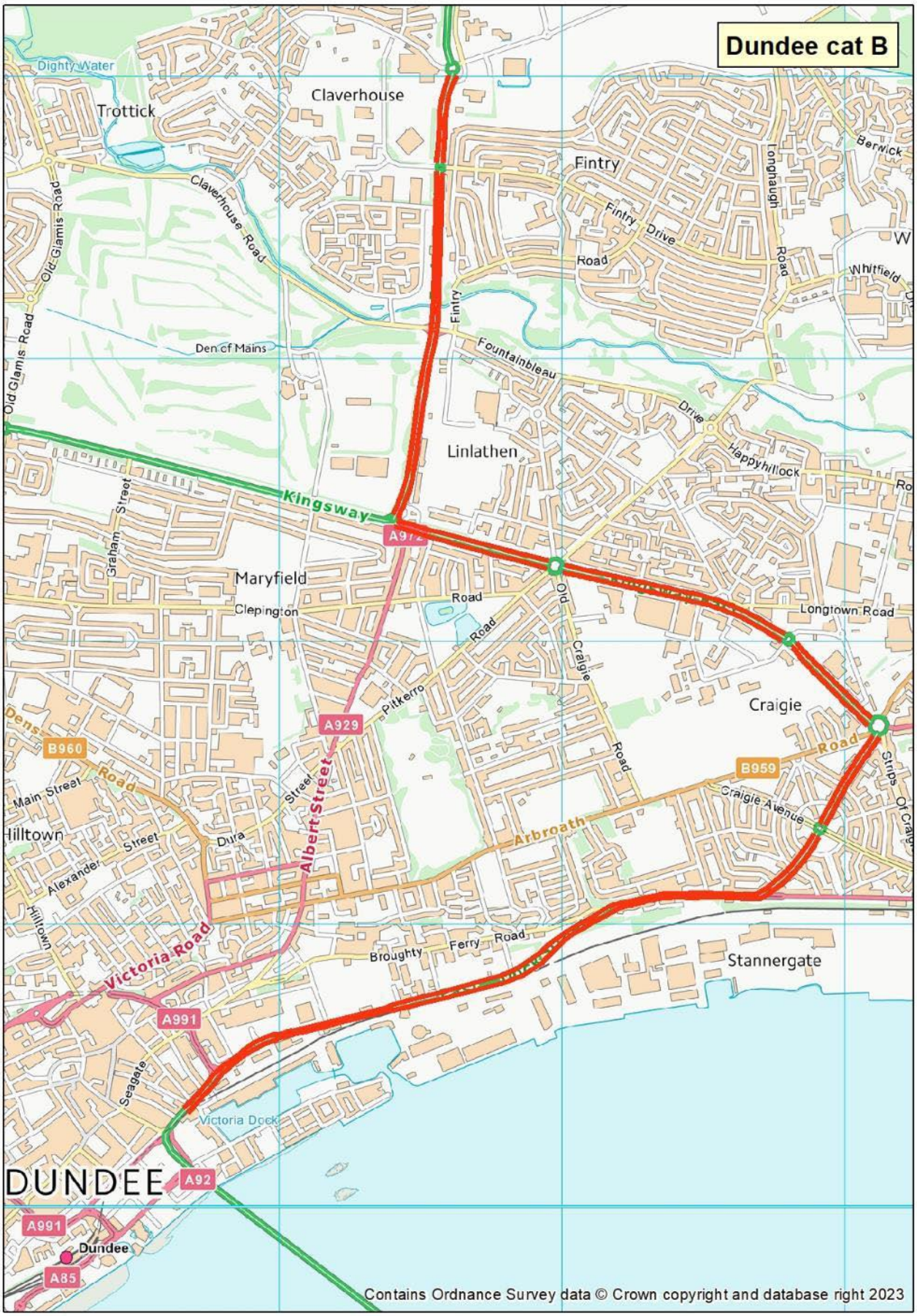


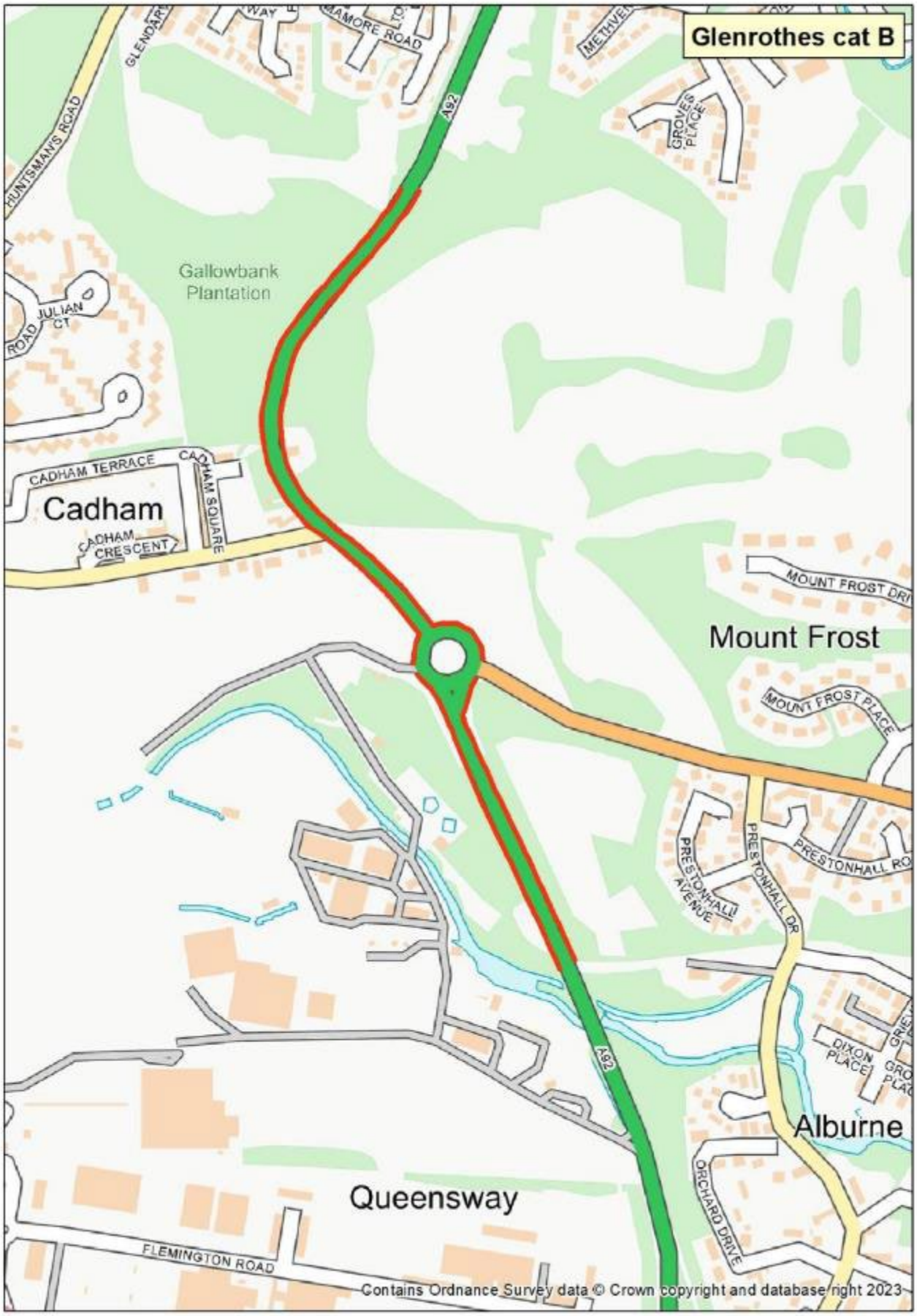


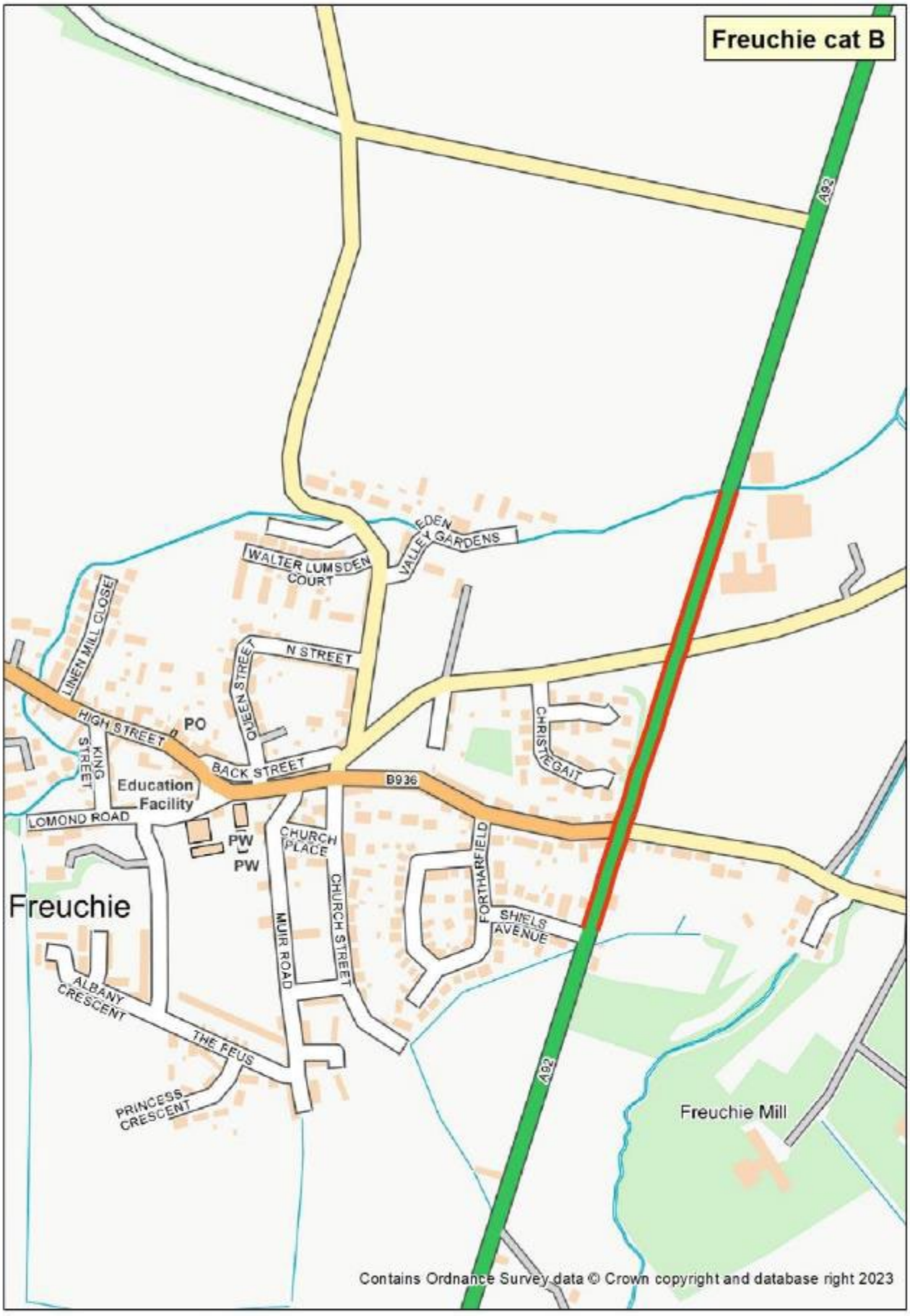


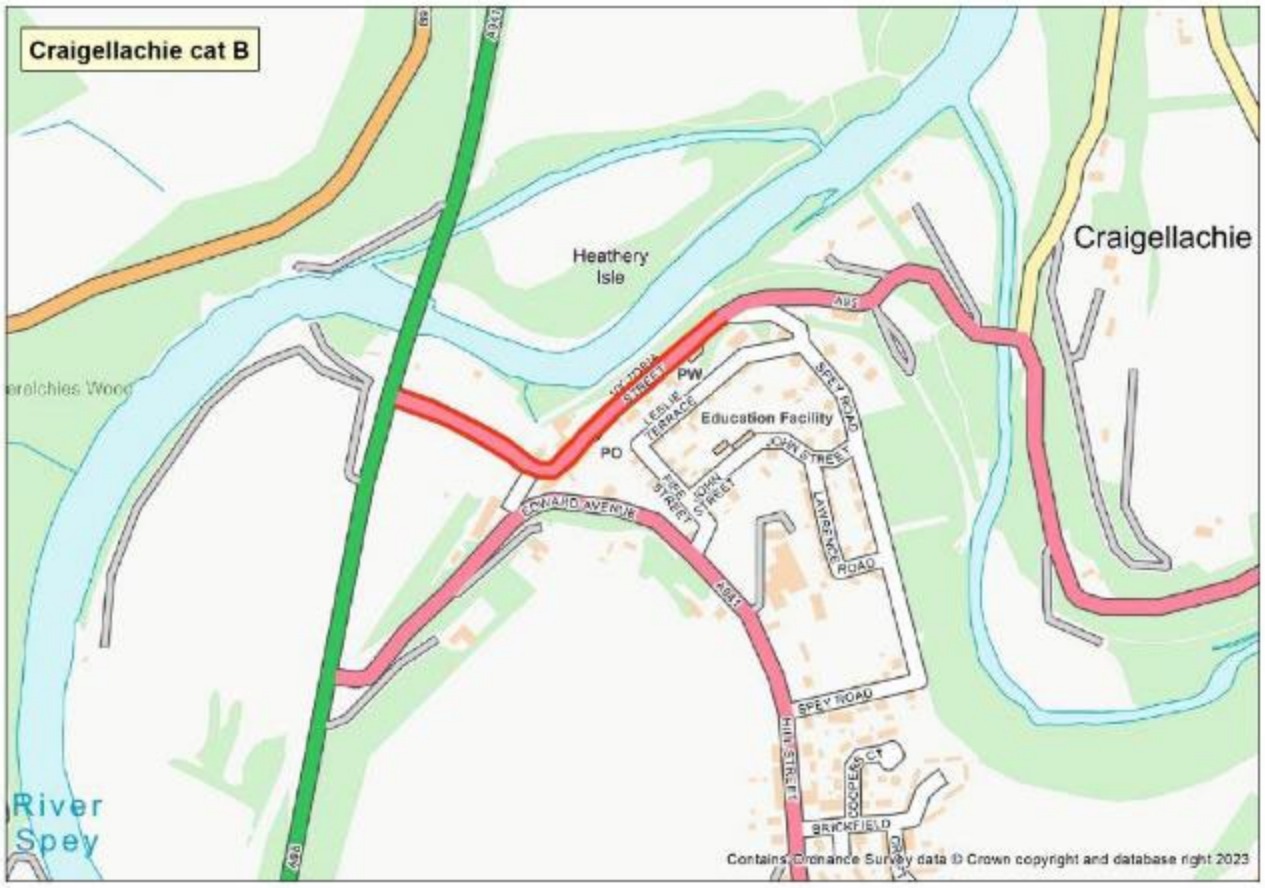
Winter Service Plan

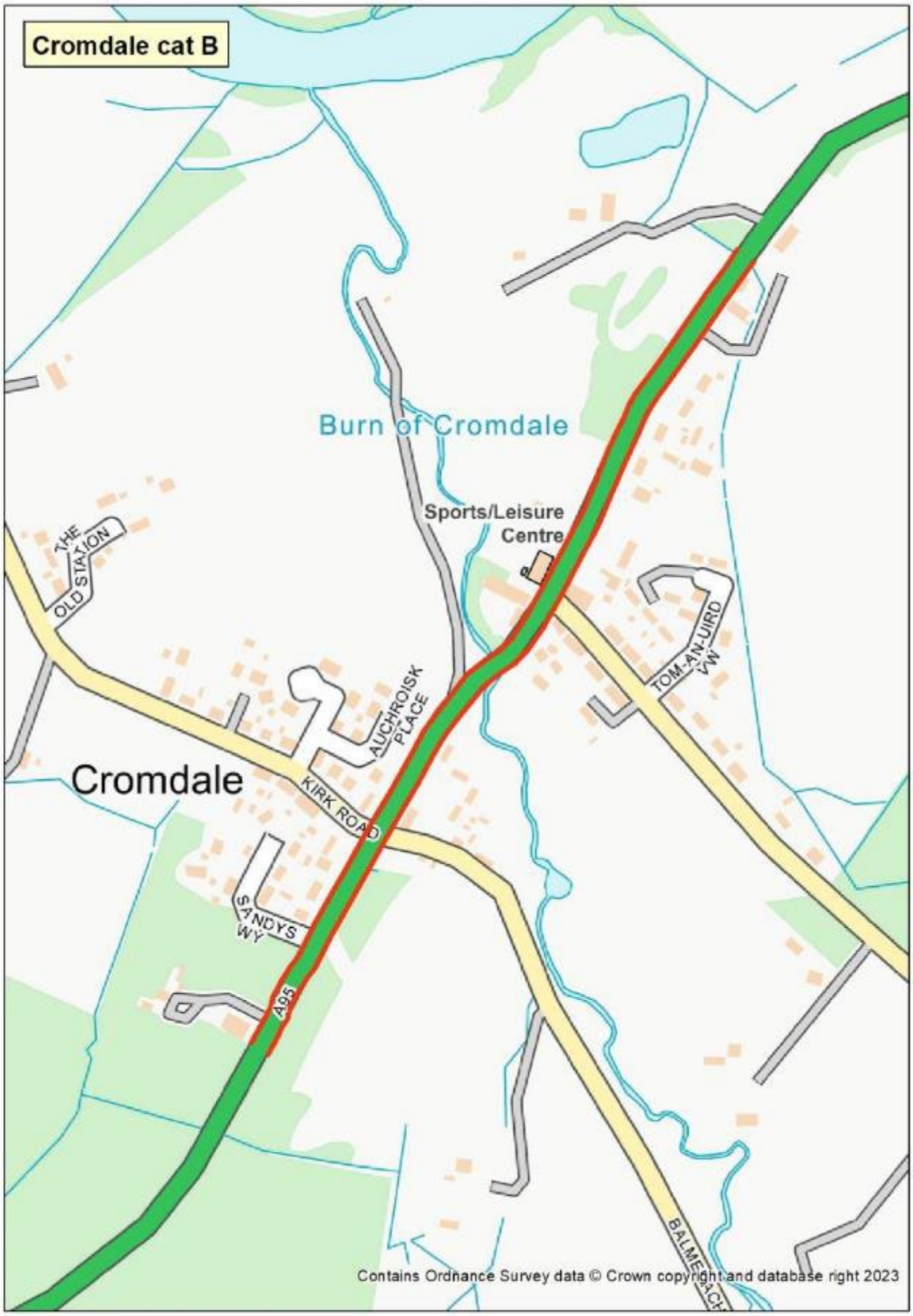


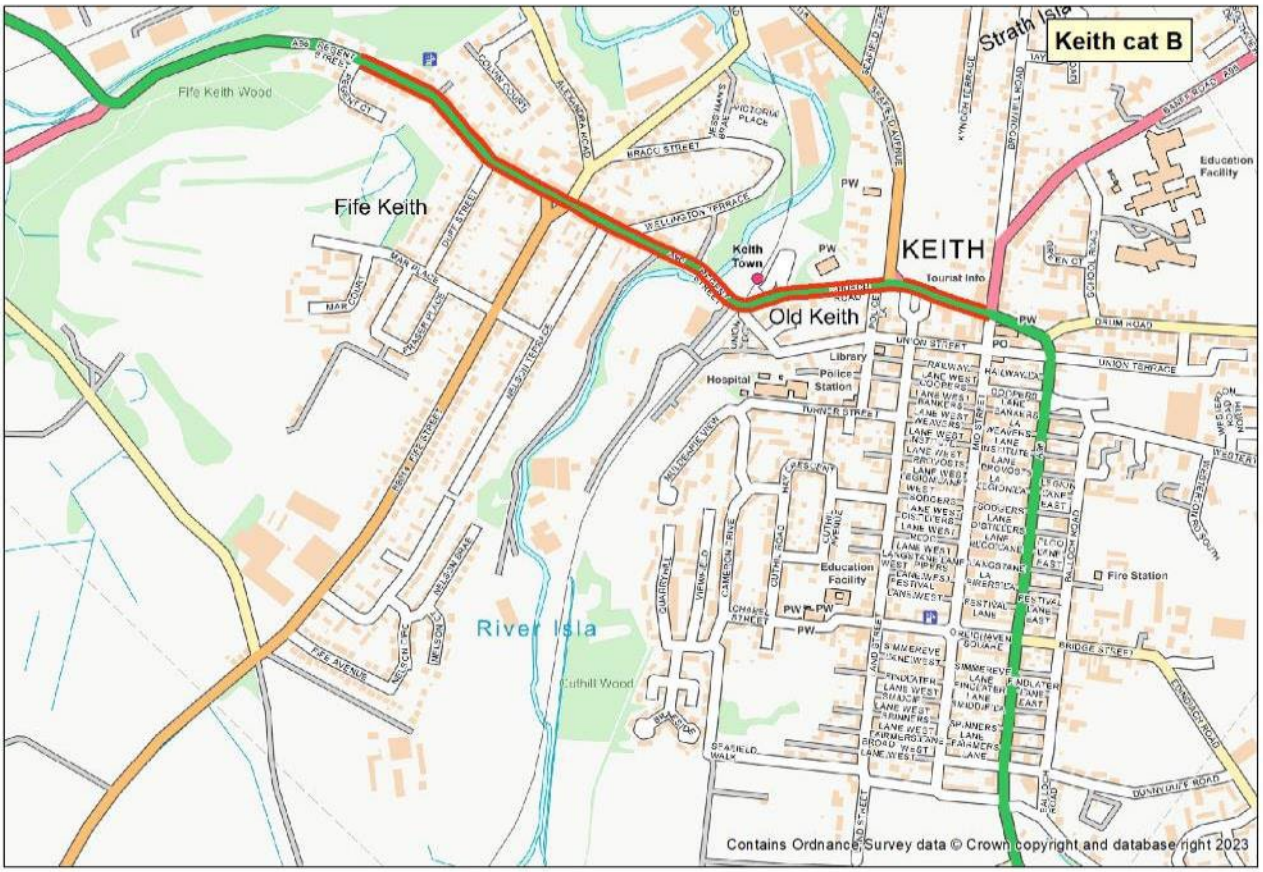


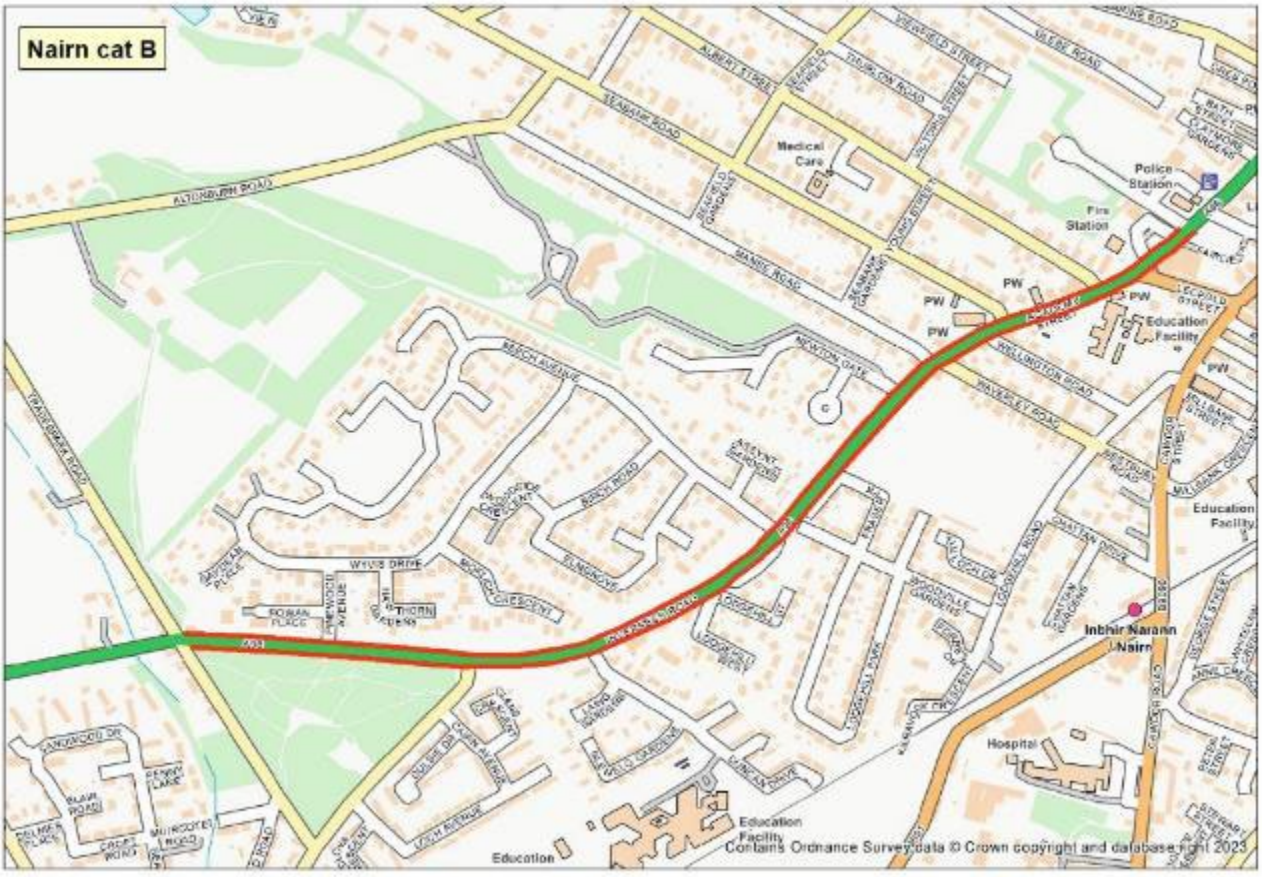


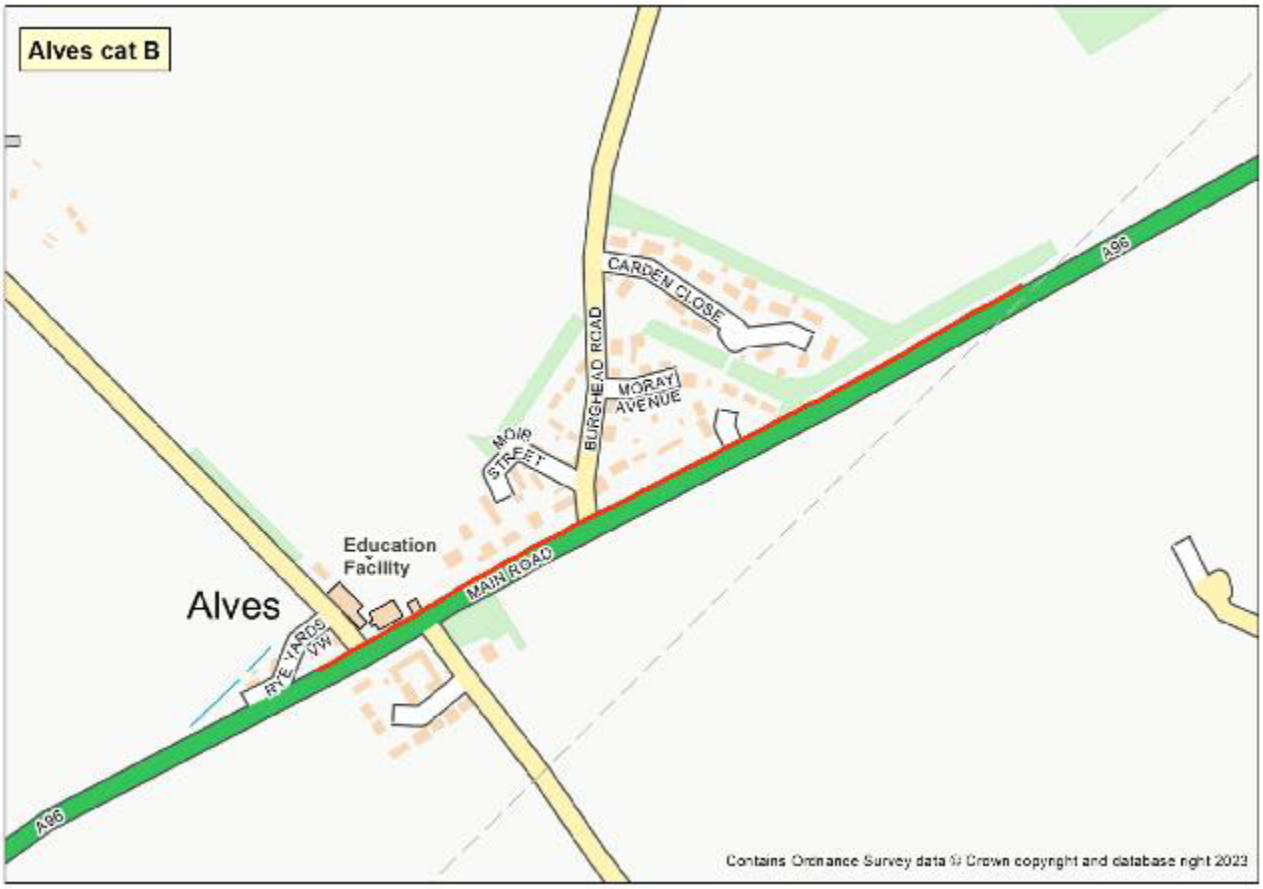




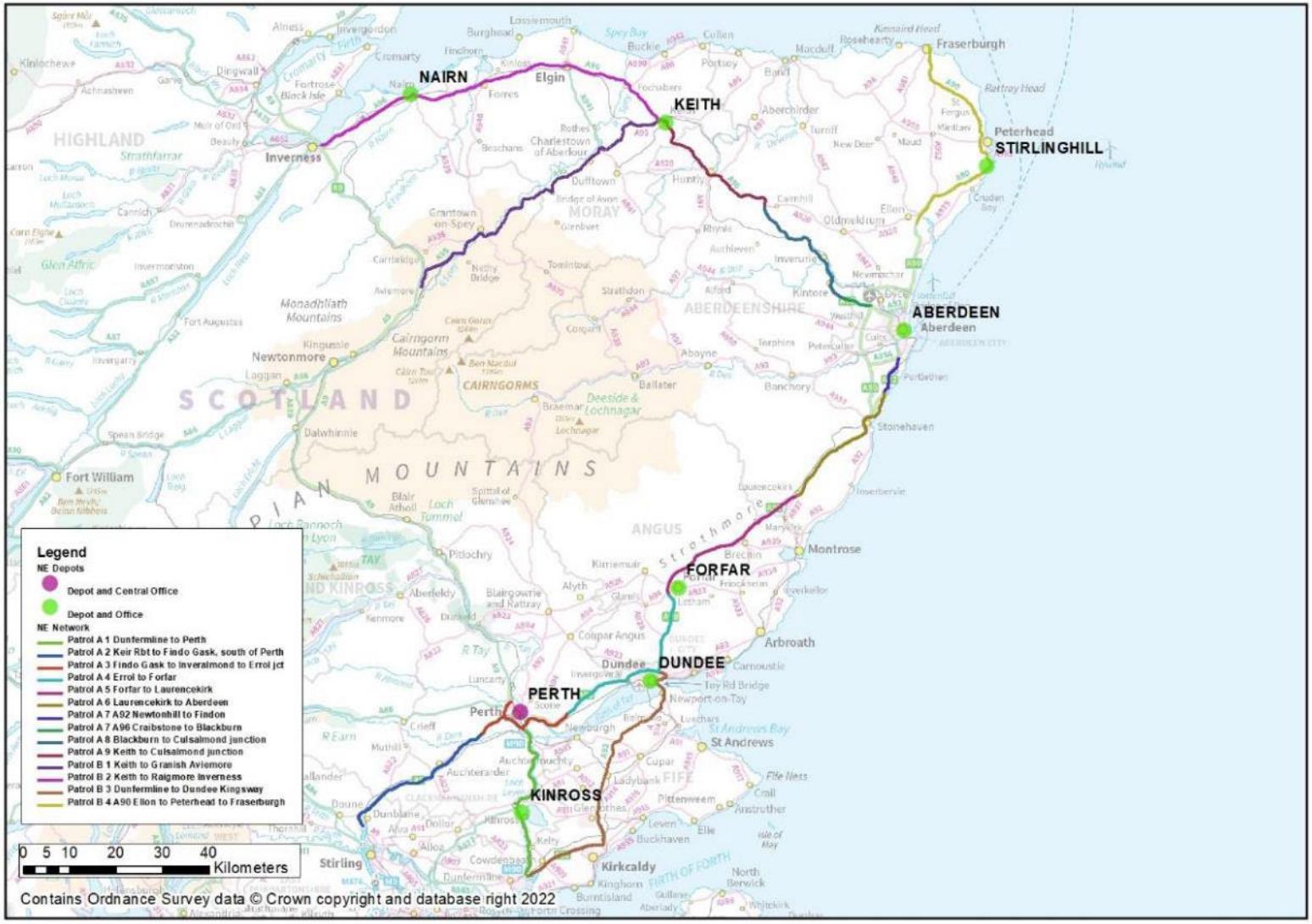


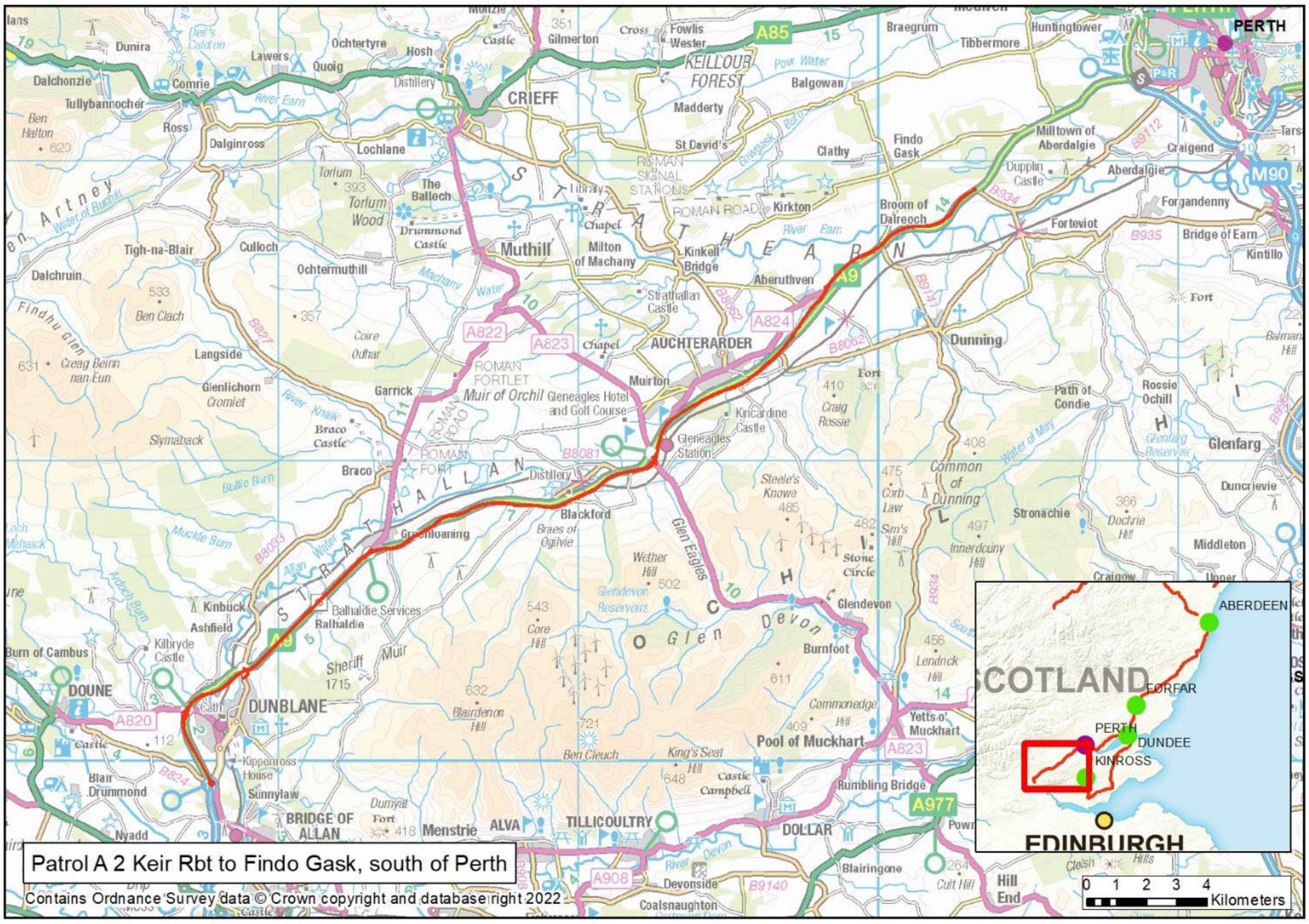






IV. Winter Service Patrol Routes





Patrol A 2 Keir Rbt to Findo Gask, south of Perth

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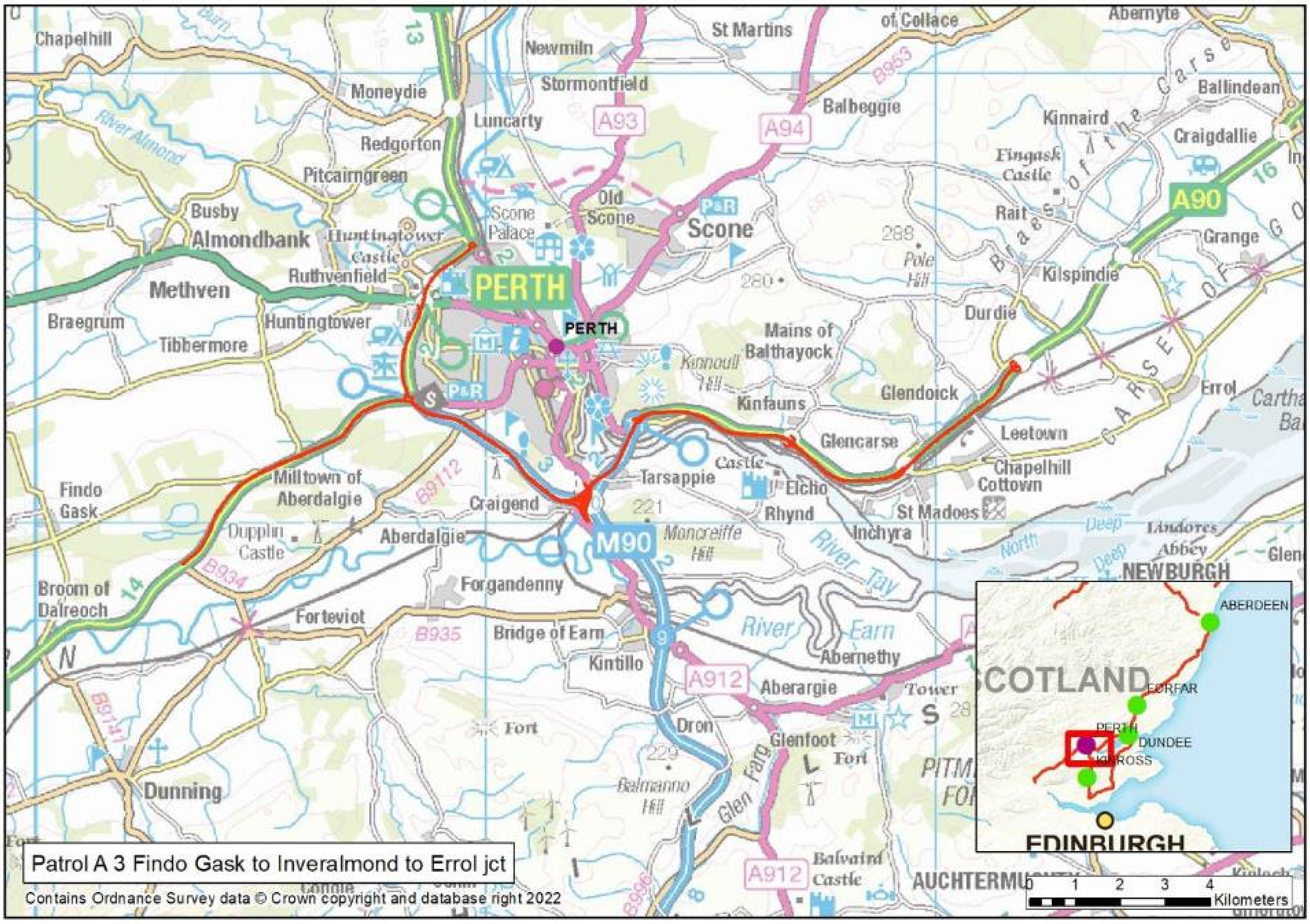

Patrol A 3 Findo Gask to Inveralmond to Errol jct

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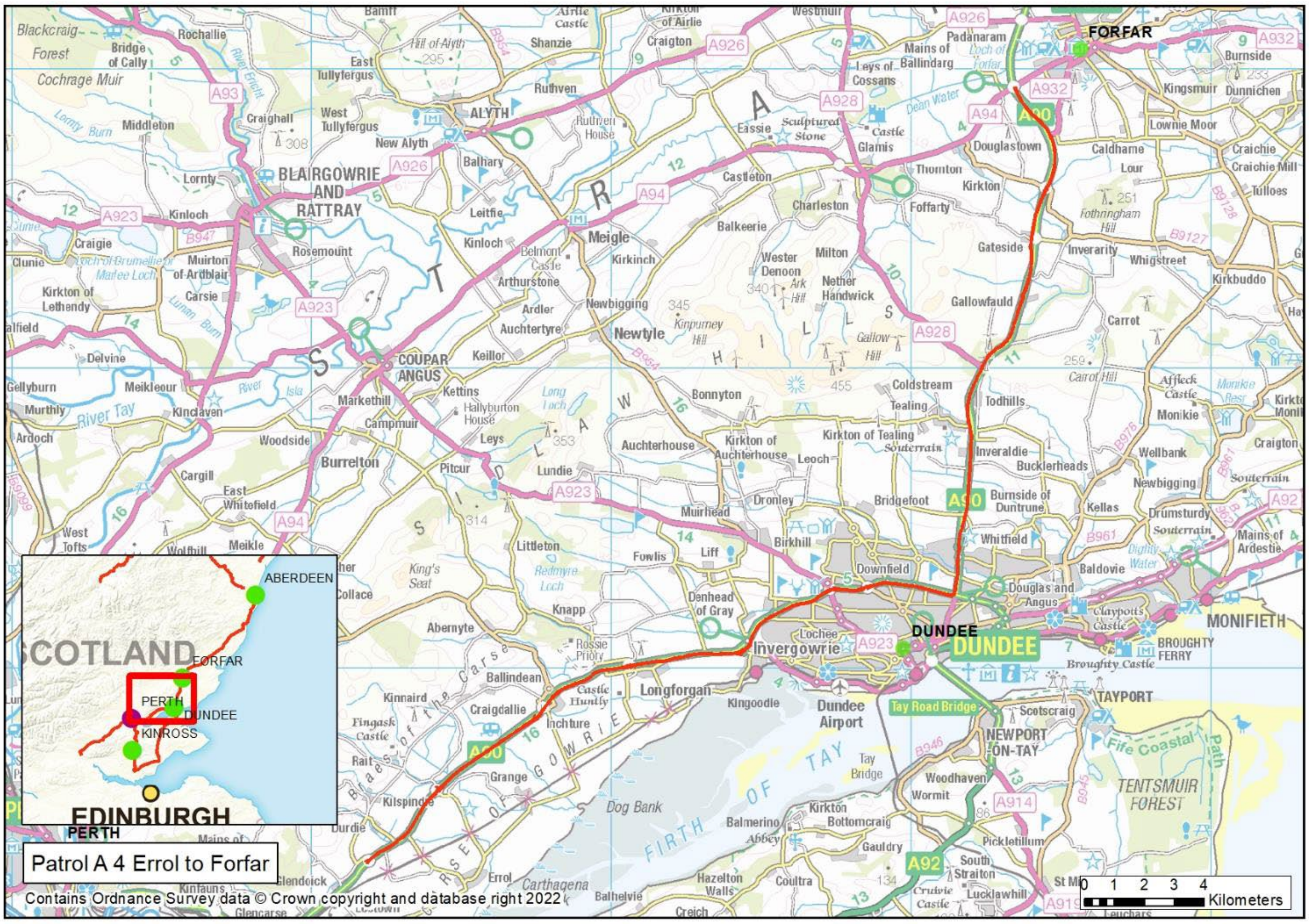

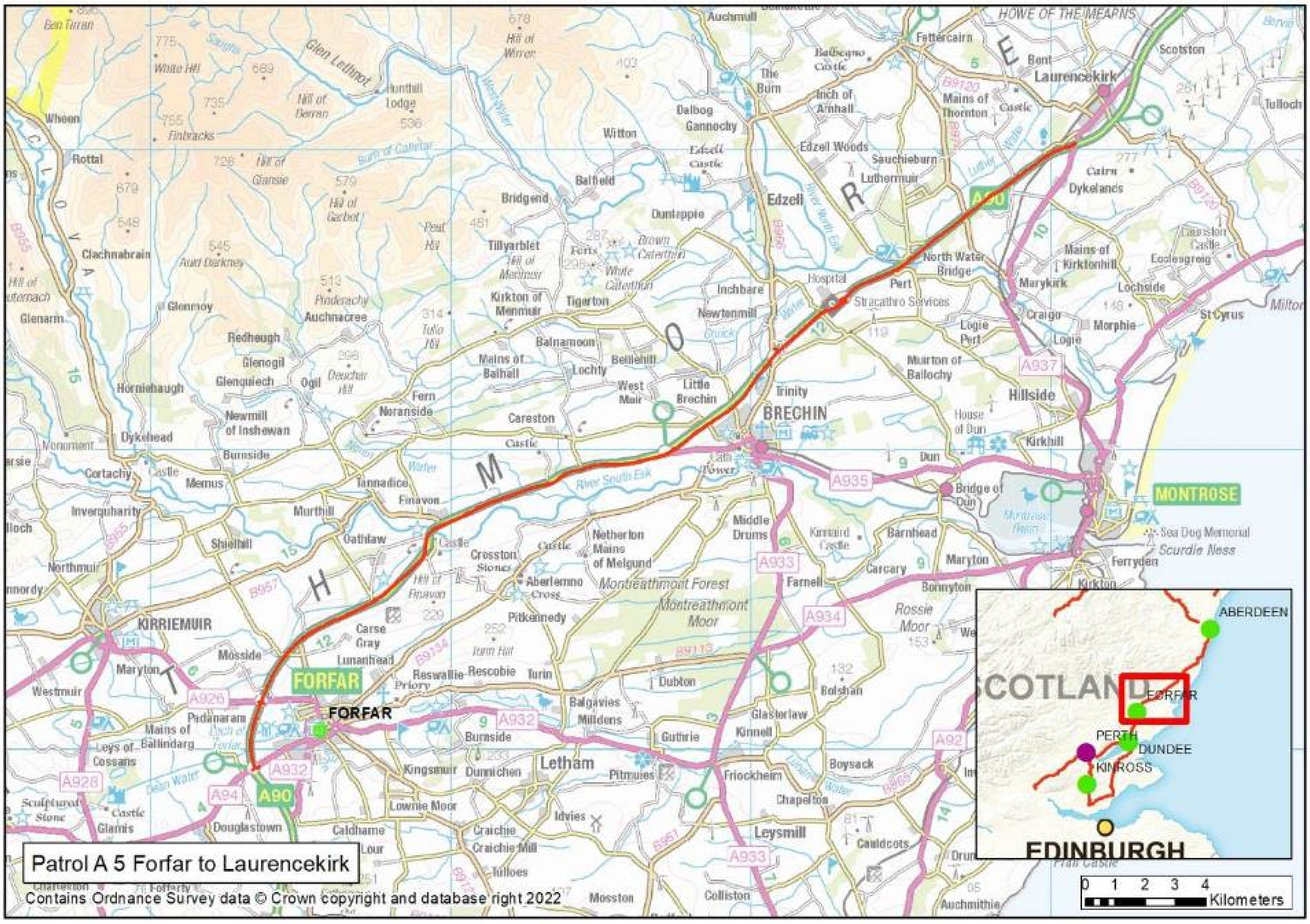

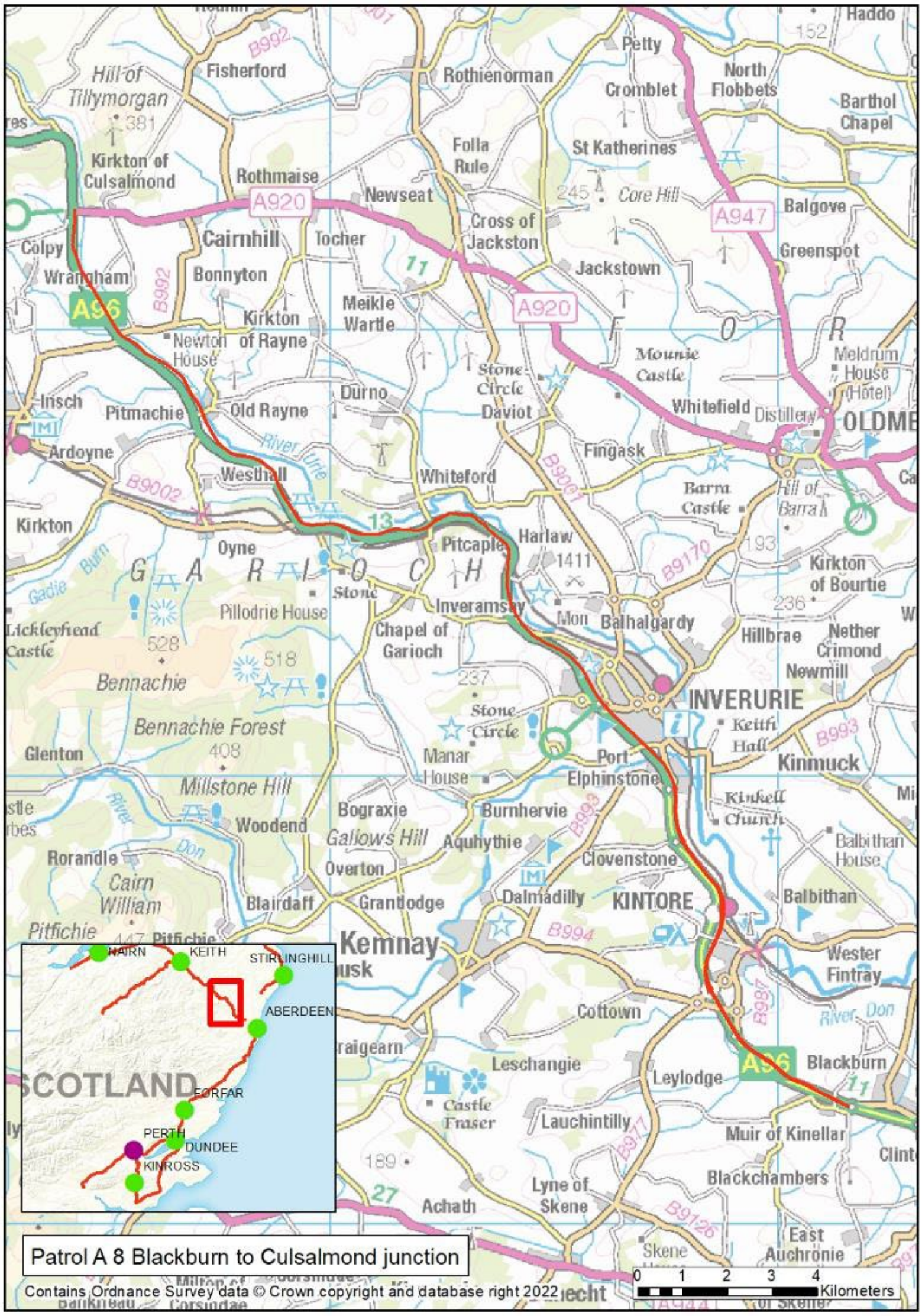

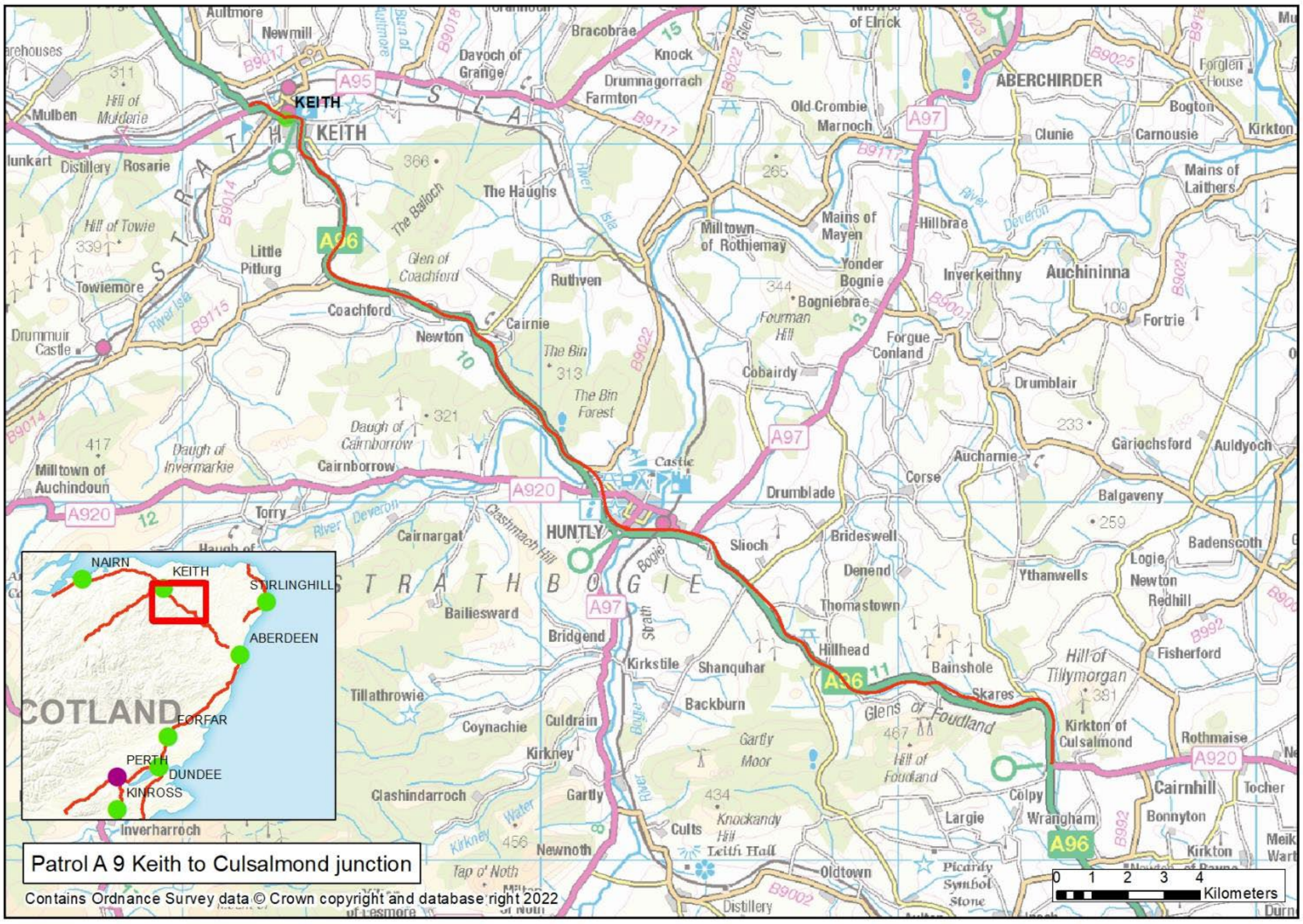

Patrol A 9 Keith to Culsalmond junction

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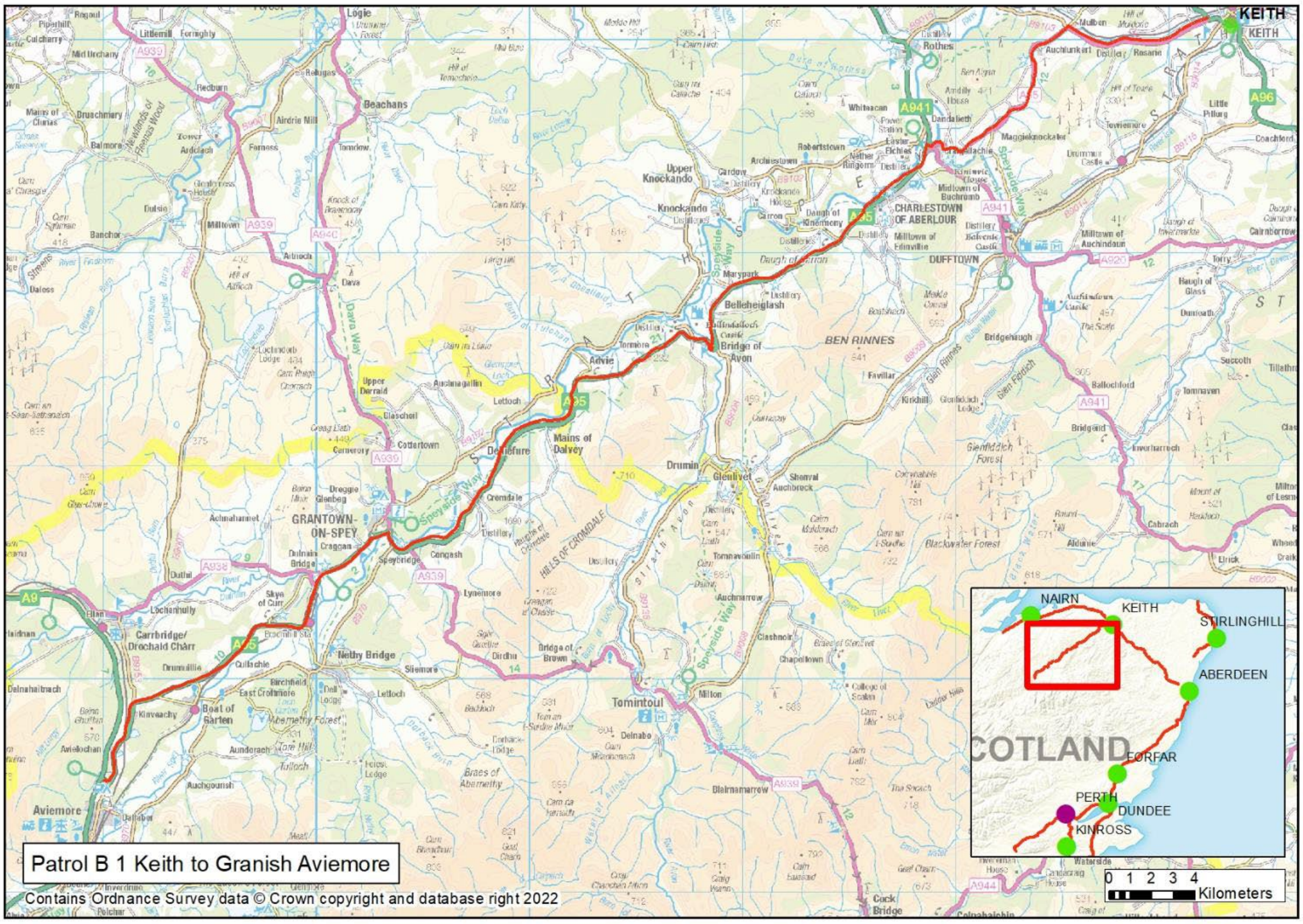

Patrol B 1 Keith to Granish Aviemore

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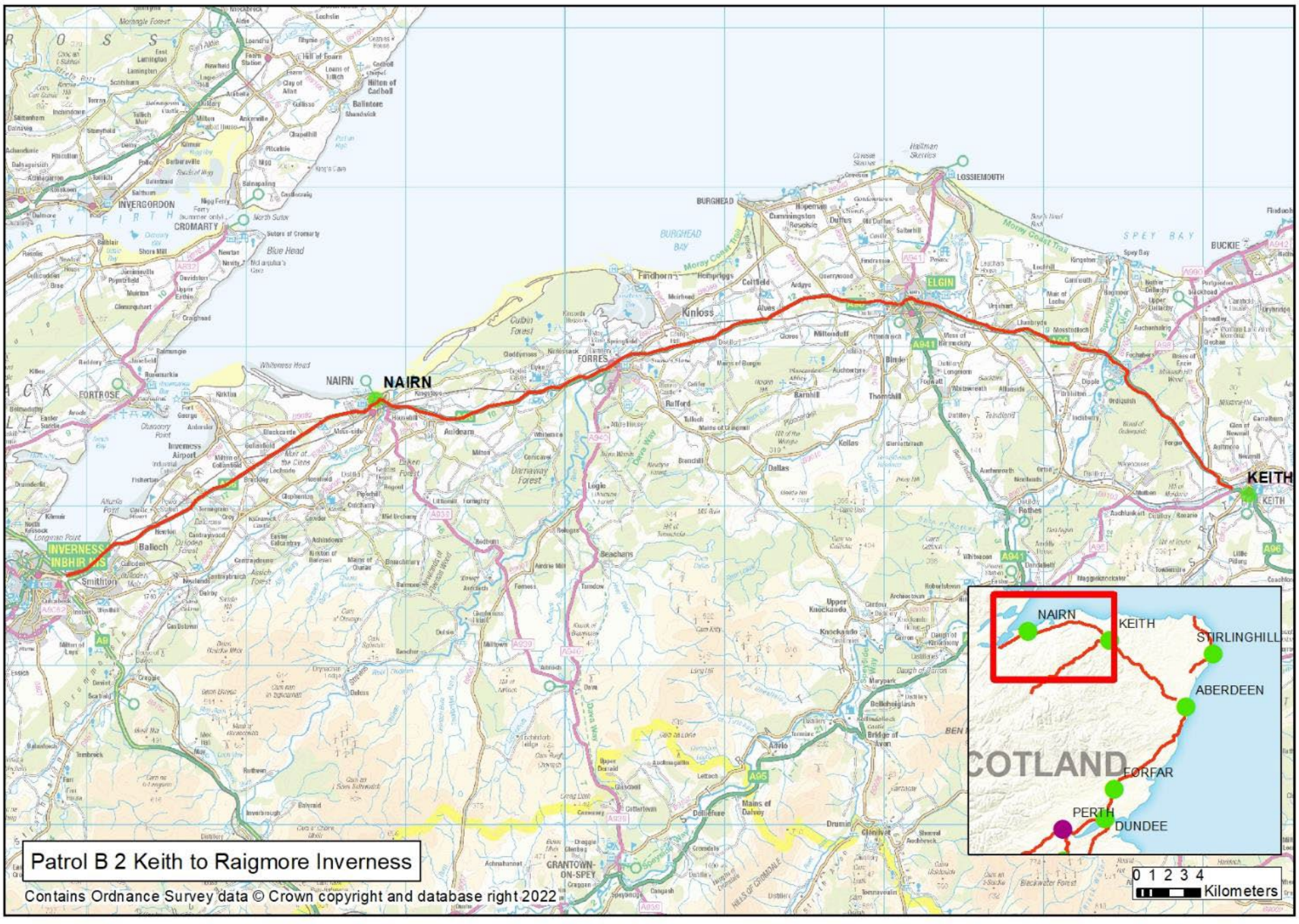


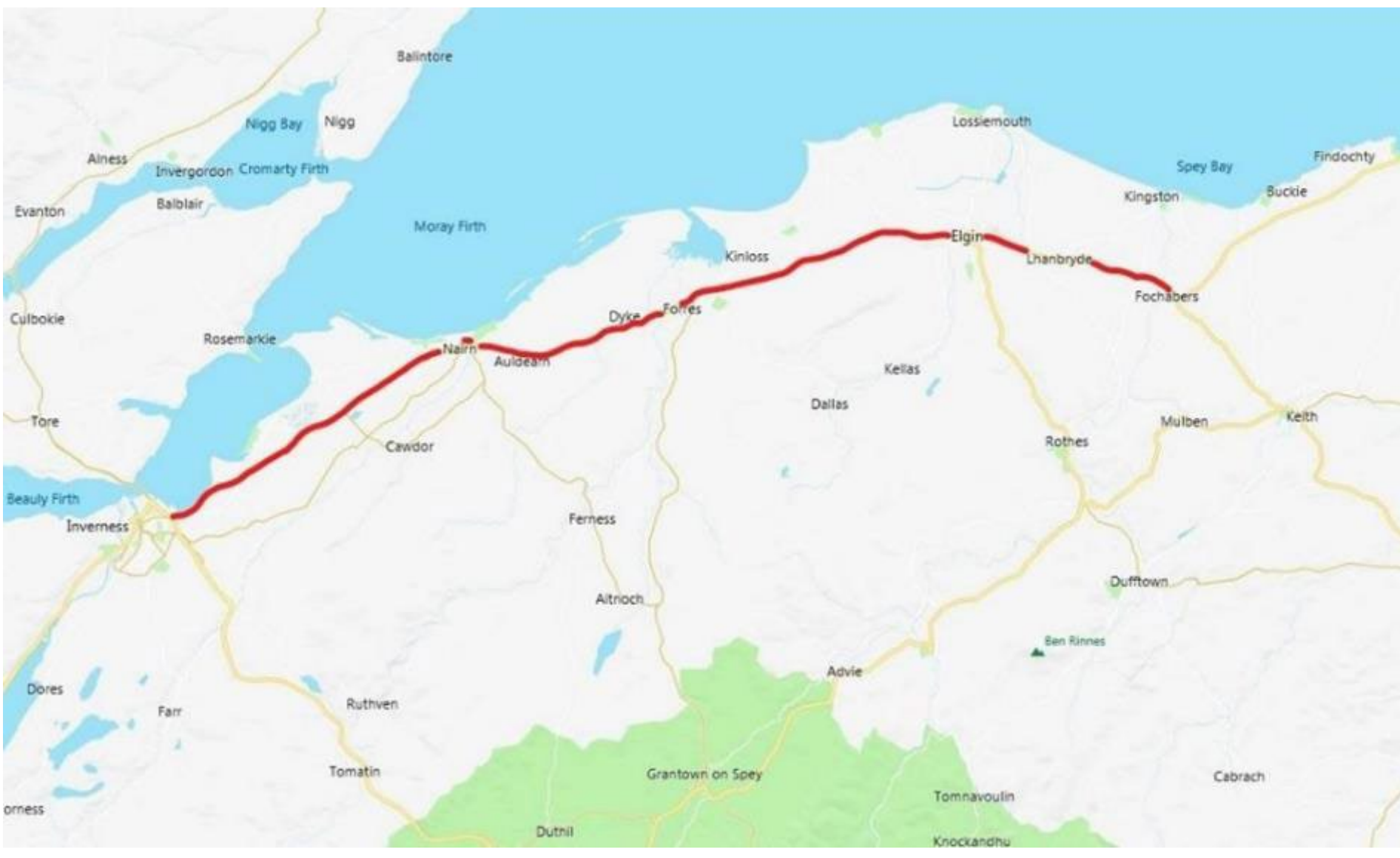
Patrol B 4 A90 Ellon to Peterhead to Fraserburgh

V. Resilience route maps

Resilience routes/Covid 19 routes based on 20g/m2 treatments.

20 RR 01

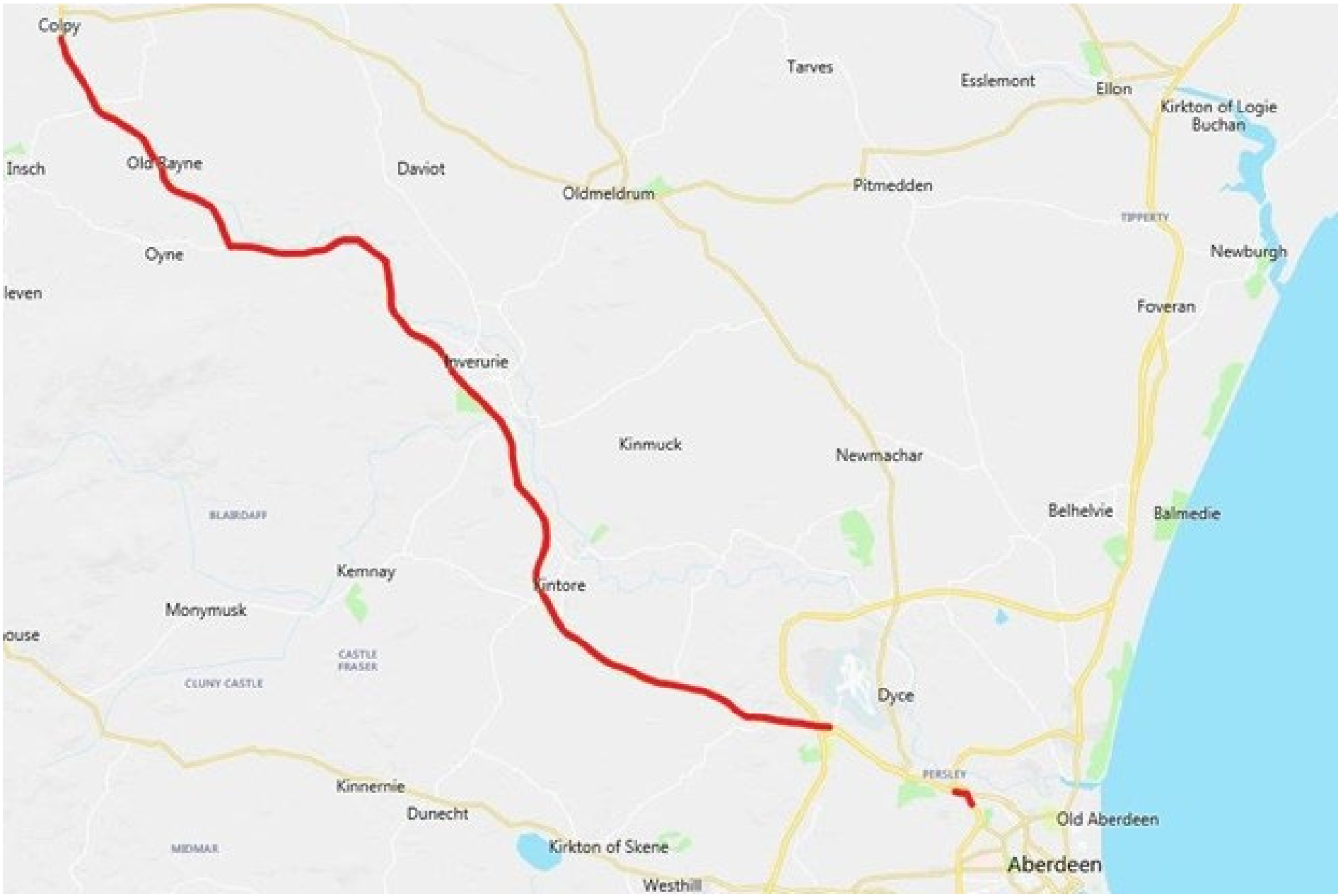
20 RR 02



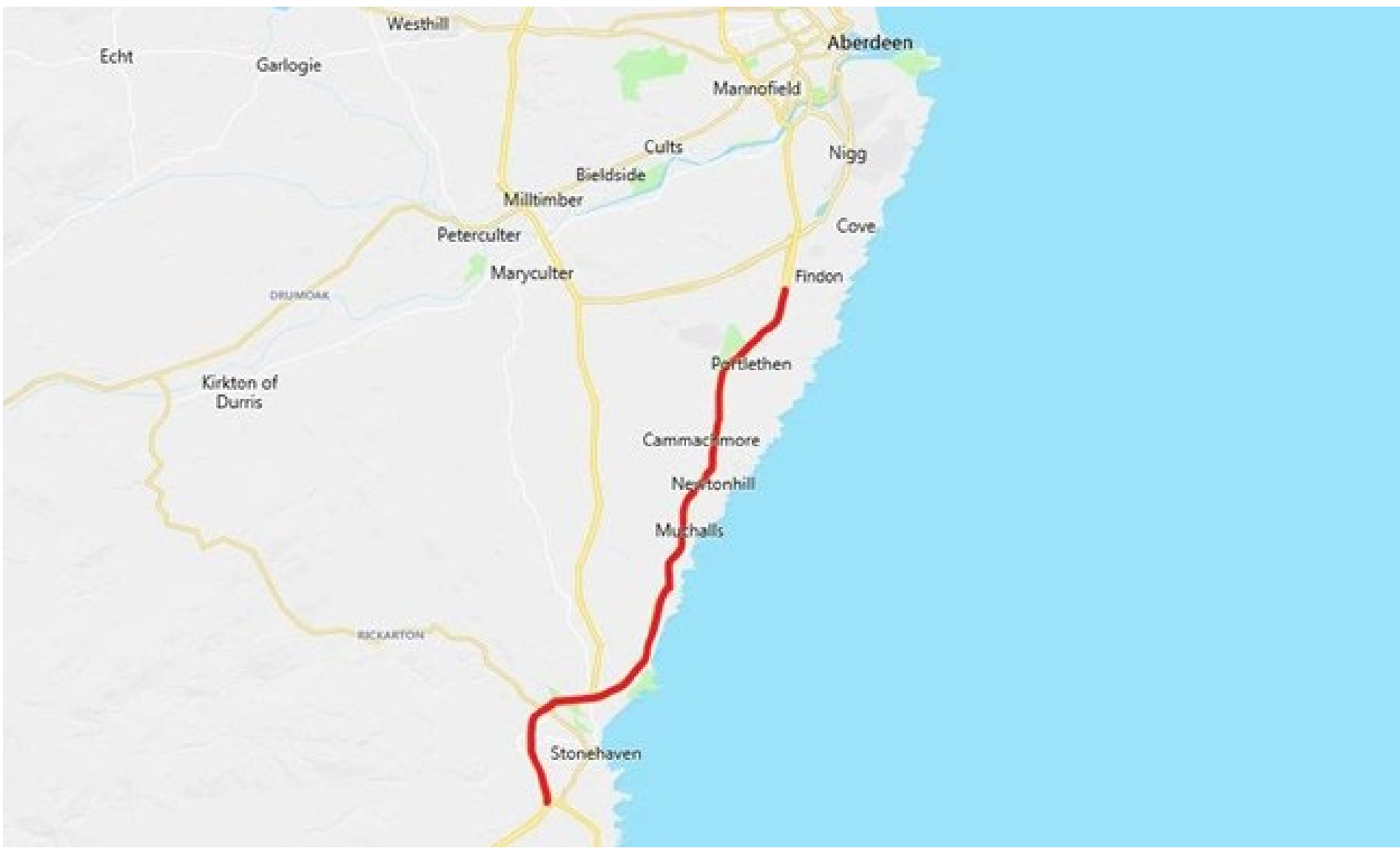
20 RR 03

20 RR 04

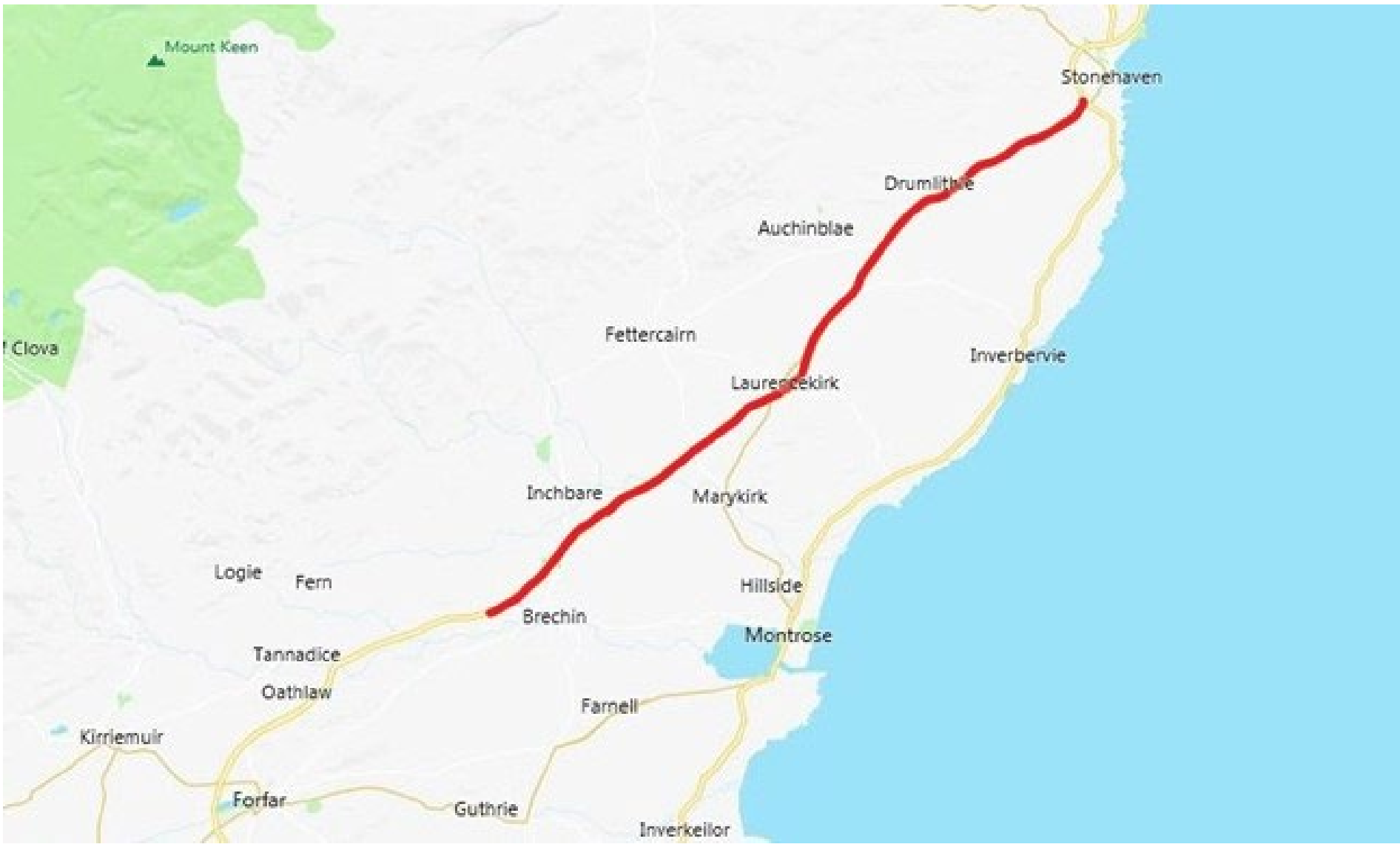
20 RR 05



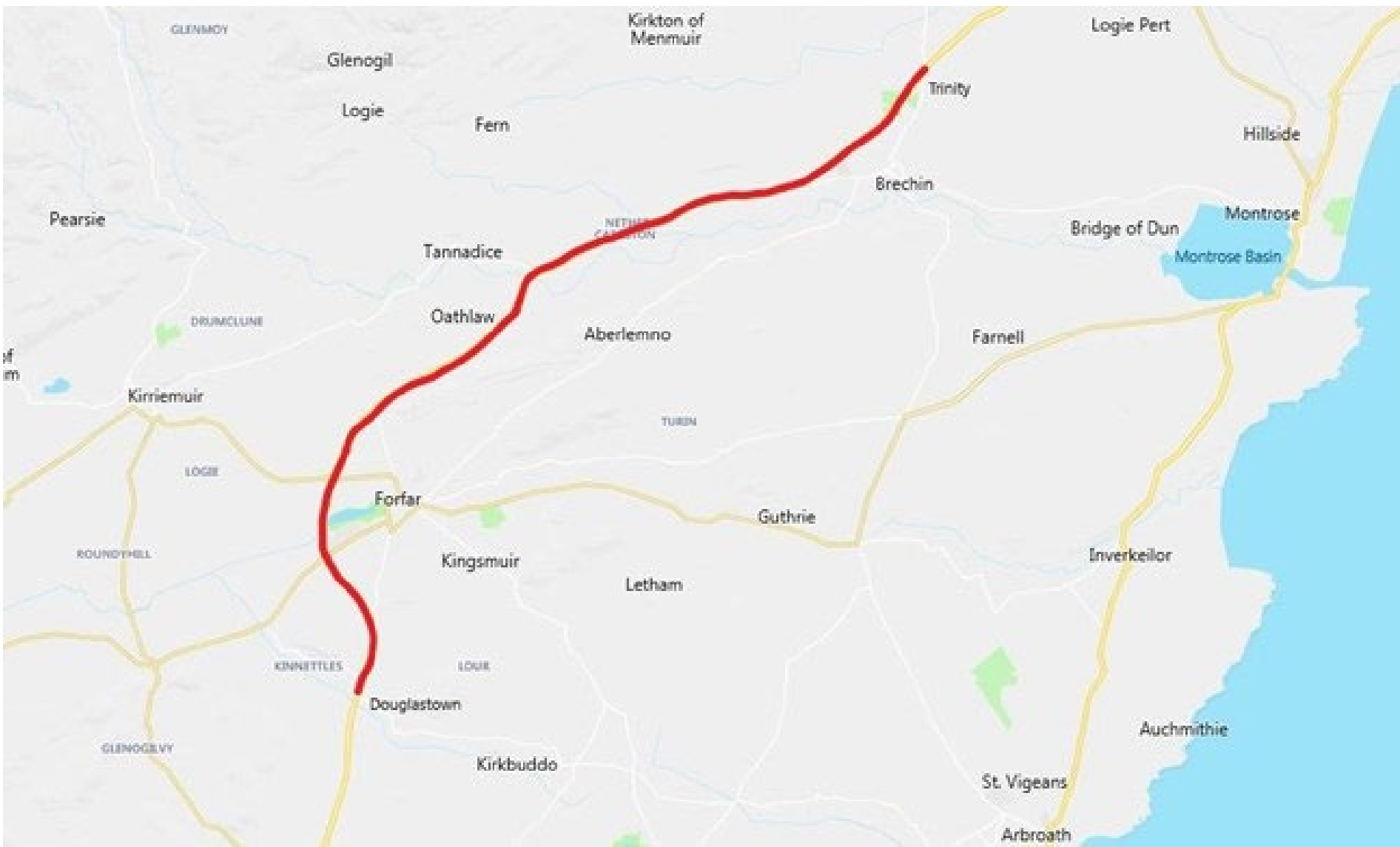
22 RR 06



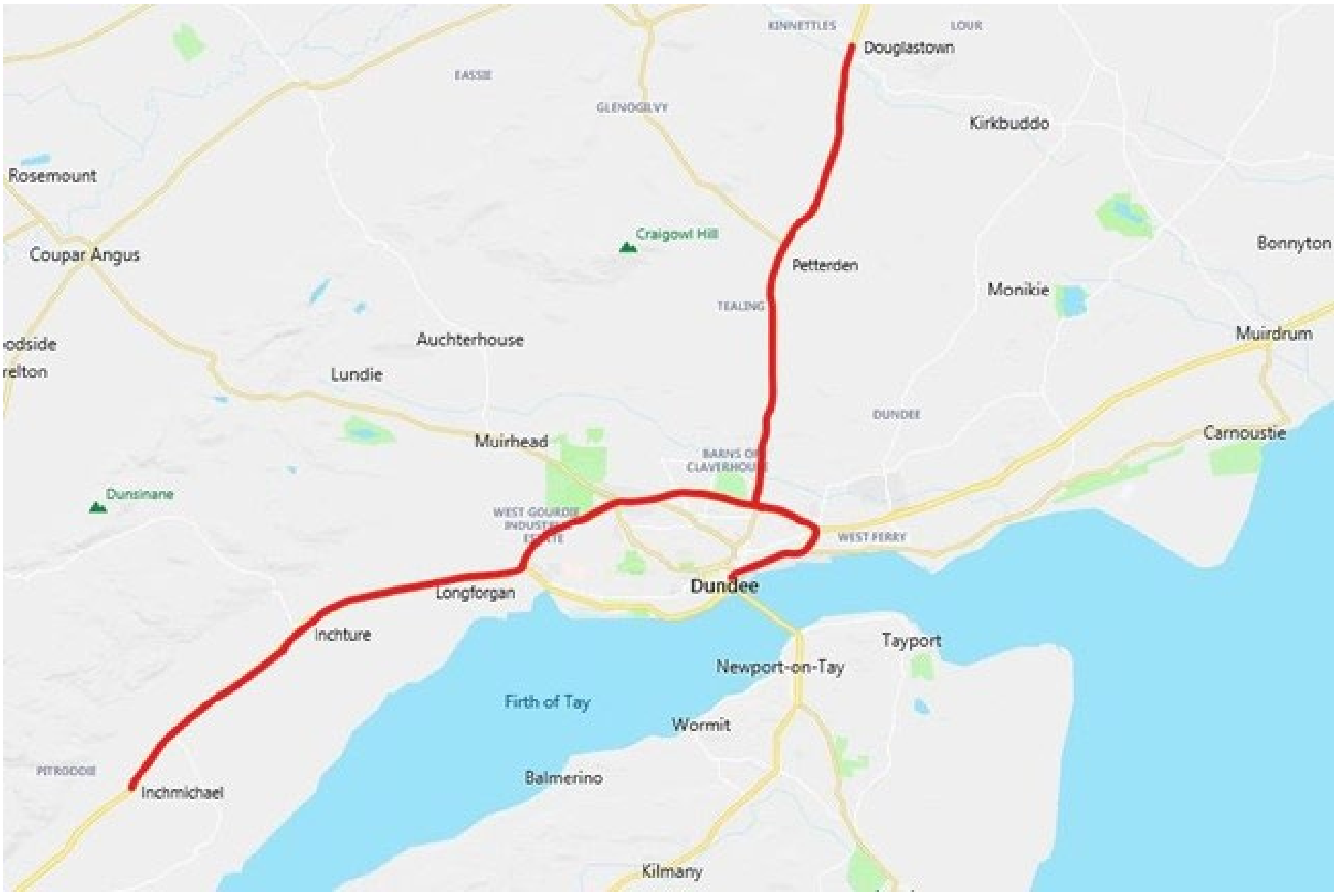
22 RR 07



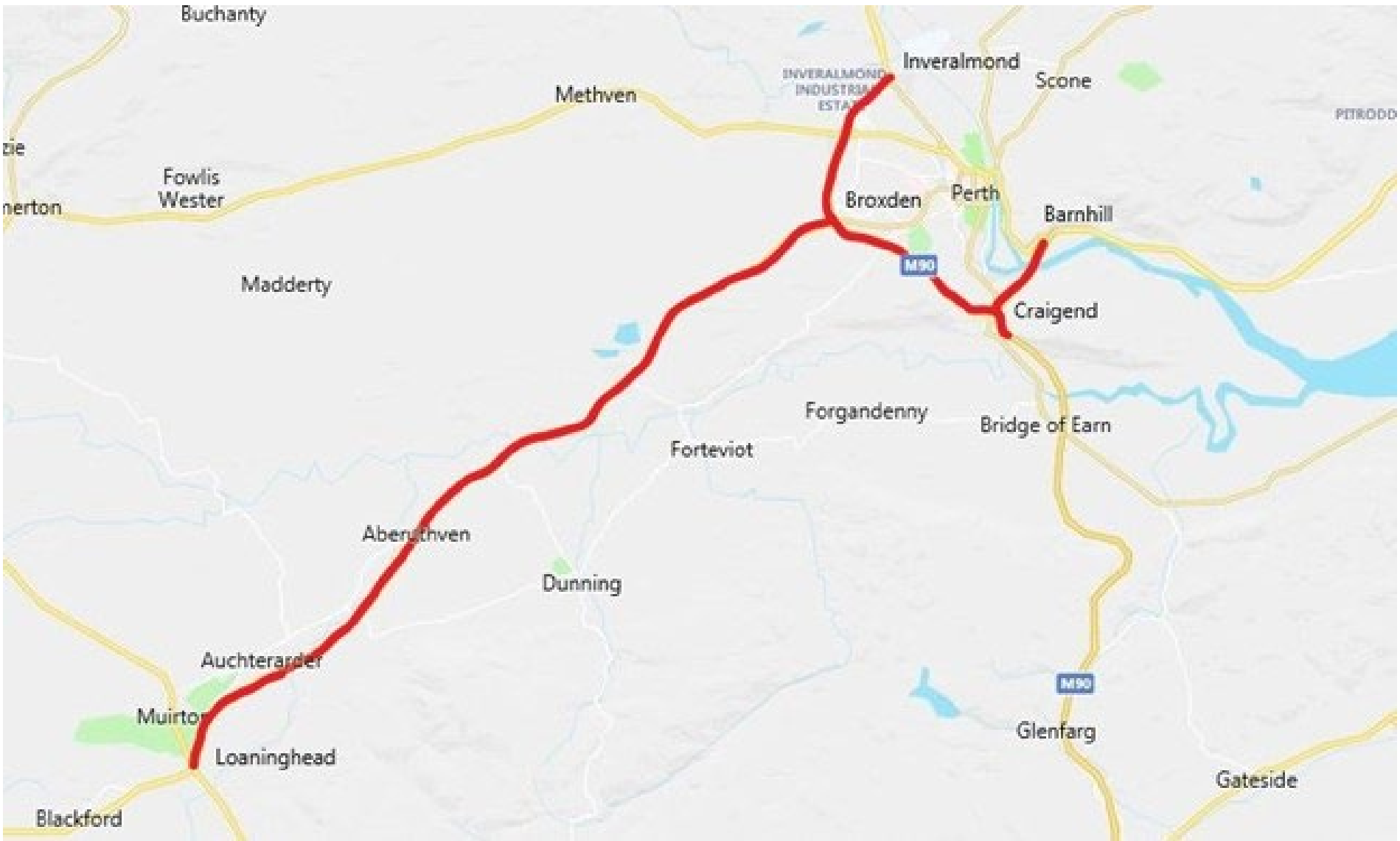
20 RR 08



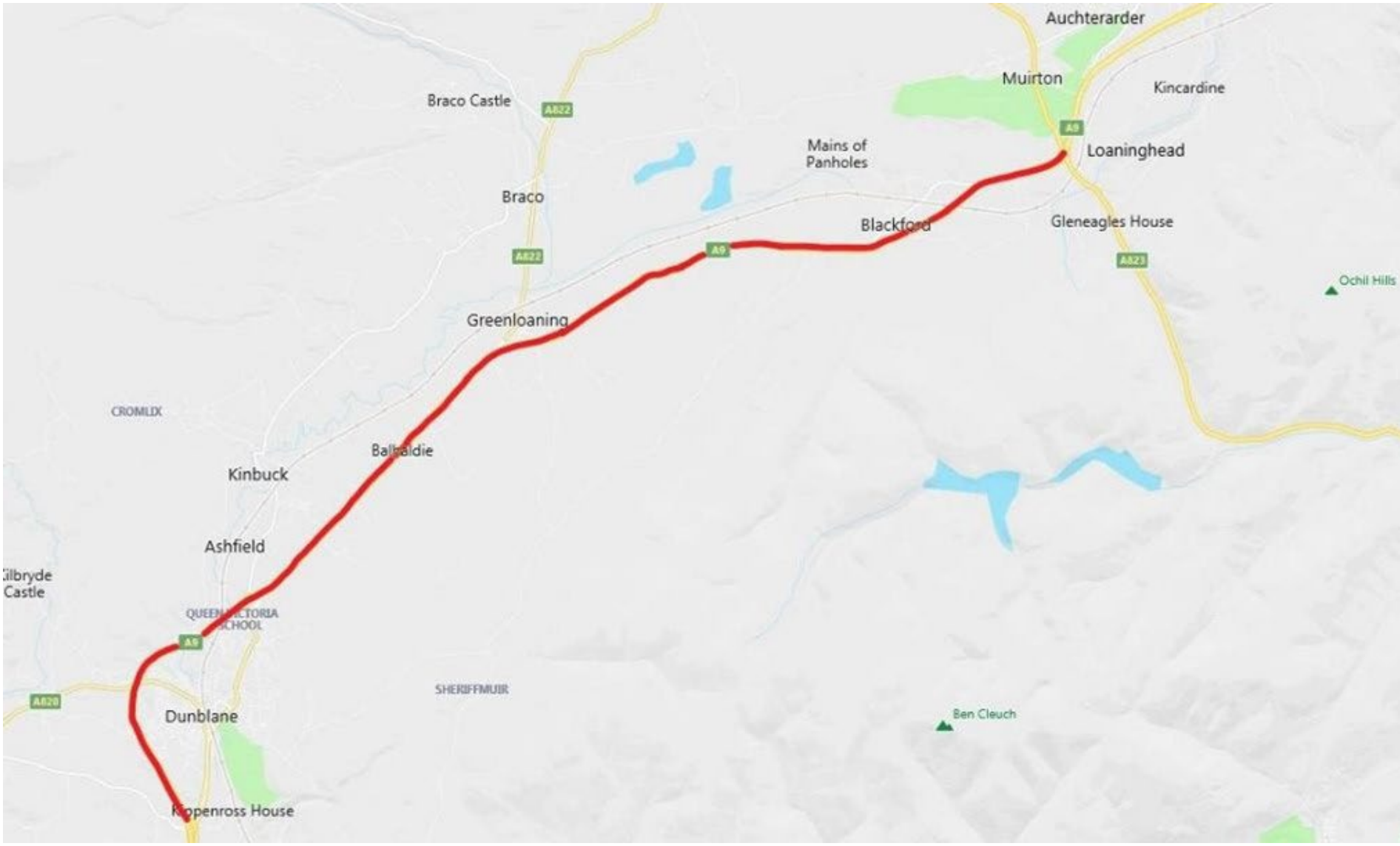
22 RR 09



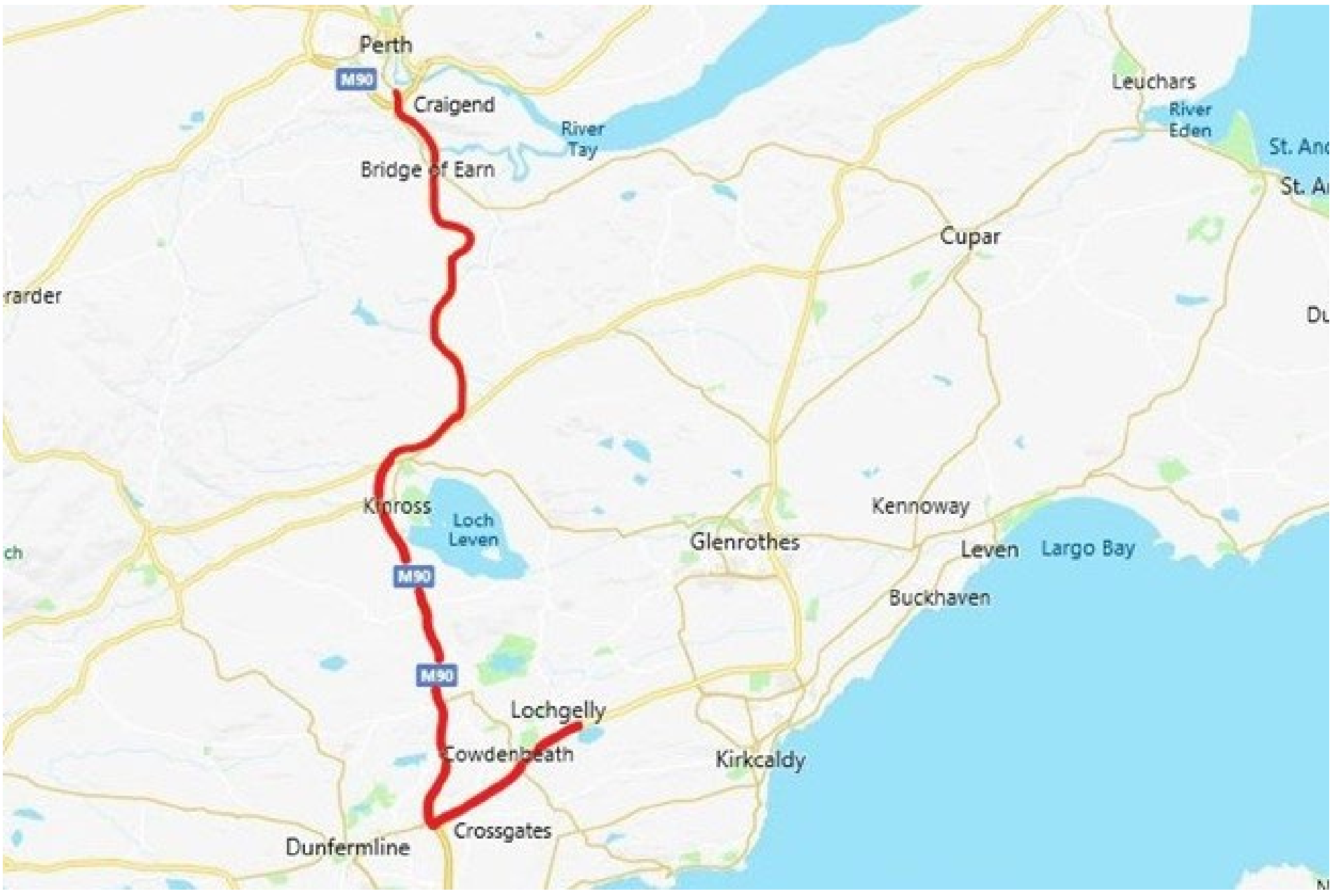
22 RR 10

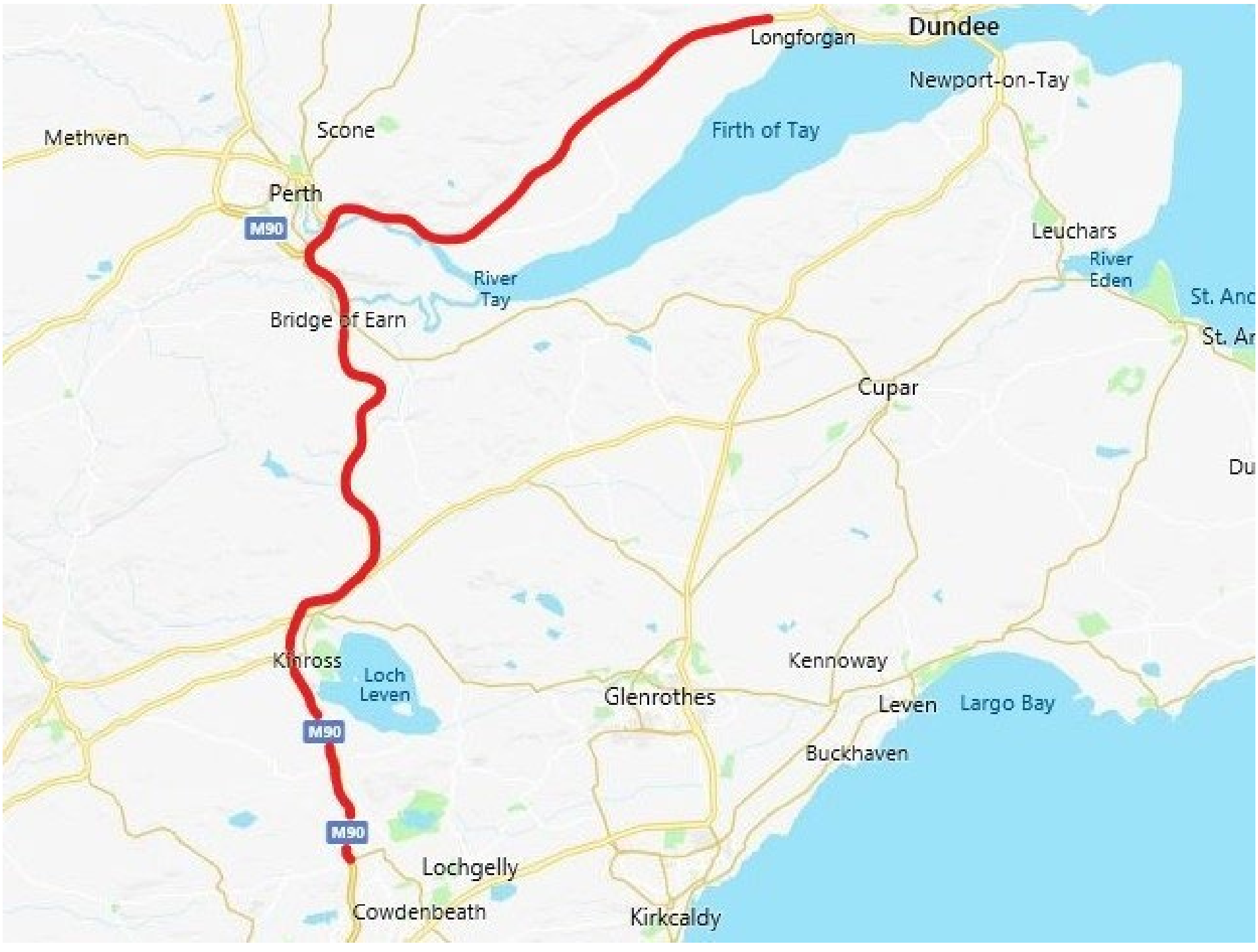


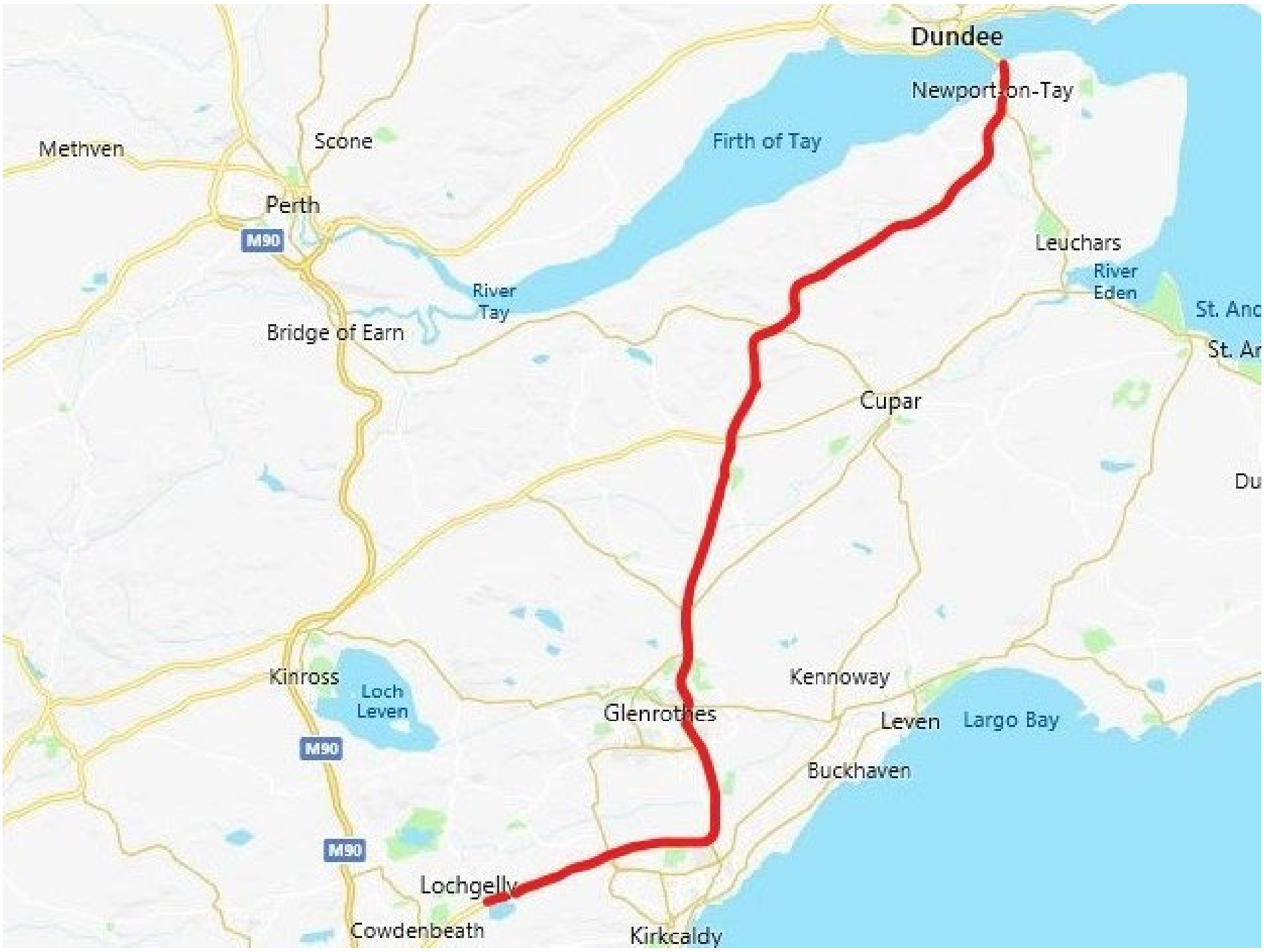
22 RR 11



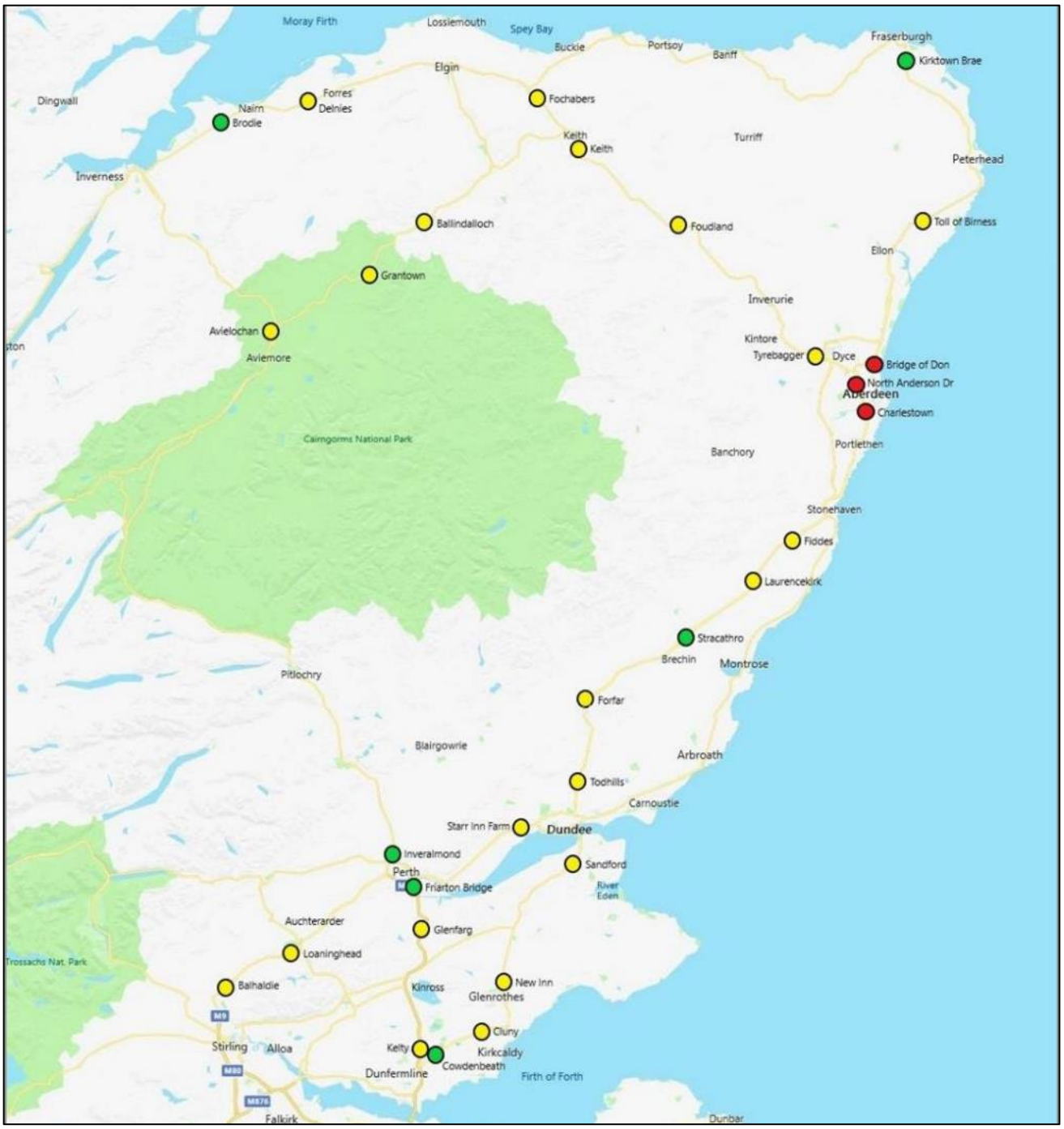
22 RR 12







VII. Weather stations including sensor types and where these sites are equipped with weather cameras



Ice Sensor Locations

- Sites with bi-directional cameras
- Sites with no cameras
- Sites no longer on the Northeast Unit

VI. Snow gates

Location of signs for Virtual Snow Gates

VII. Snow Fences – Kept under review. Design will be carried out when required. Design will be in accordance with the Transport and Road Research Laboratory Report LR 362 Snow Fences by L.E Hogbin.

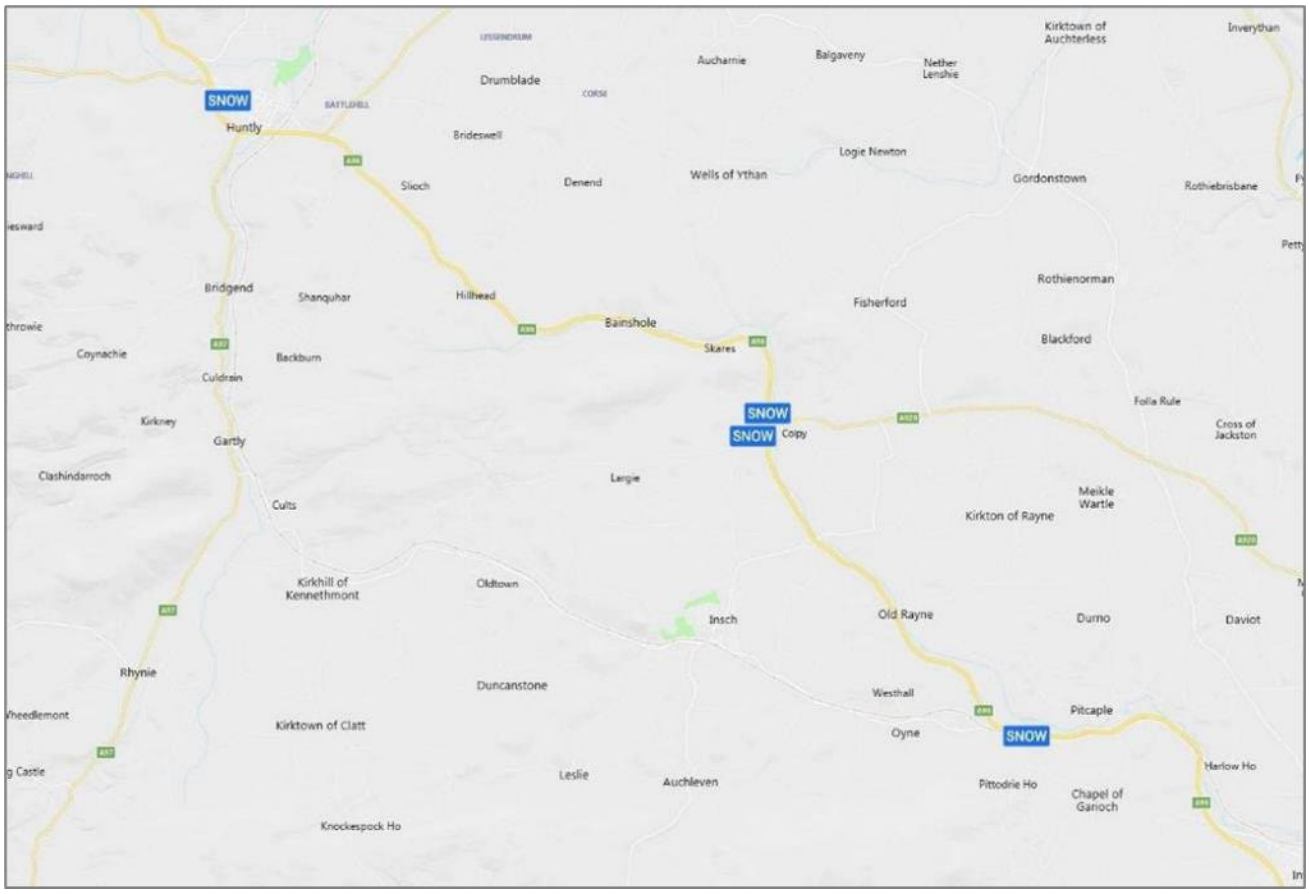
VIII. Shelter Belts – N/A

IX. Snow Poles

Location of Snow Poles

X. Snow or Ice and Hidden Message Signs

Road Number	Location	Detailed Description
A96	Huntly	Approach to Huntly roundabout southbound
A96	Colpy	At the A920 junction at Colpy facing traffic turning from the A920
A96	Colpy	At the A920 junction at Colpy facing northbound
A96	Oyne	Northbound approach to Oyne Fork Junction

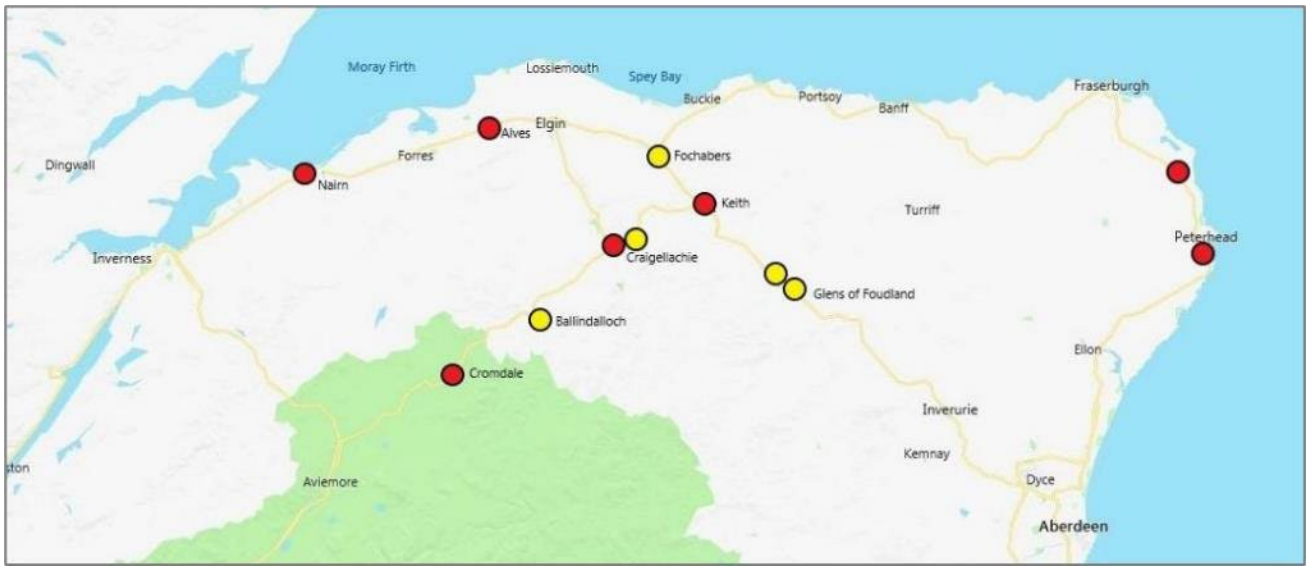


Location of Snow and Ice Hidden Message Signs

XII. Salt Bins

Locations and number of bins will be kept under review, consideration for additional bins will be reviewed each year and new locations will be updated in the WSP.

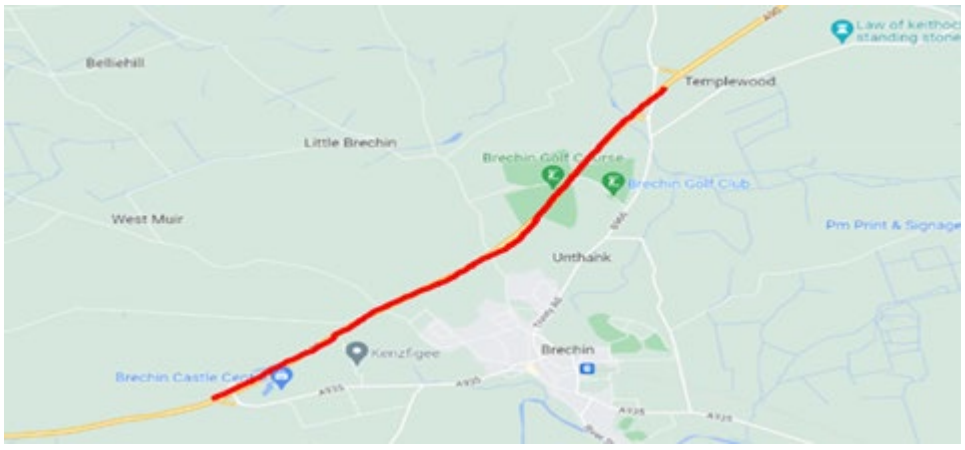
Road Number	Grit Bins (Number)	Salt Heaps (Number)
A90	5	-
A96	3	3
A95	2	2



Salt Heaps

Grit Bins

XIII. Vertical Concrete Barriers

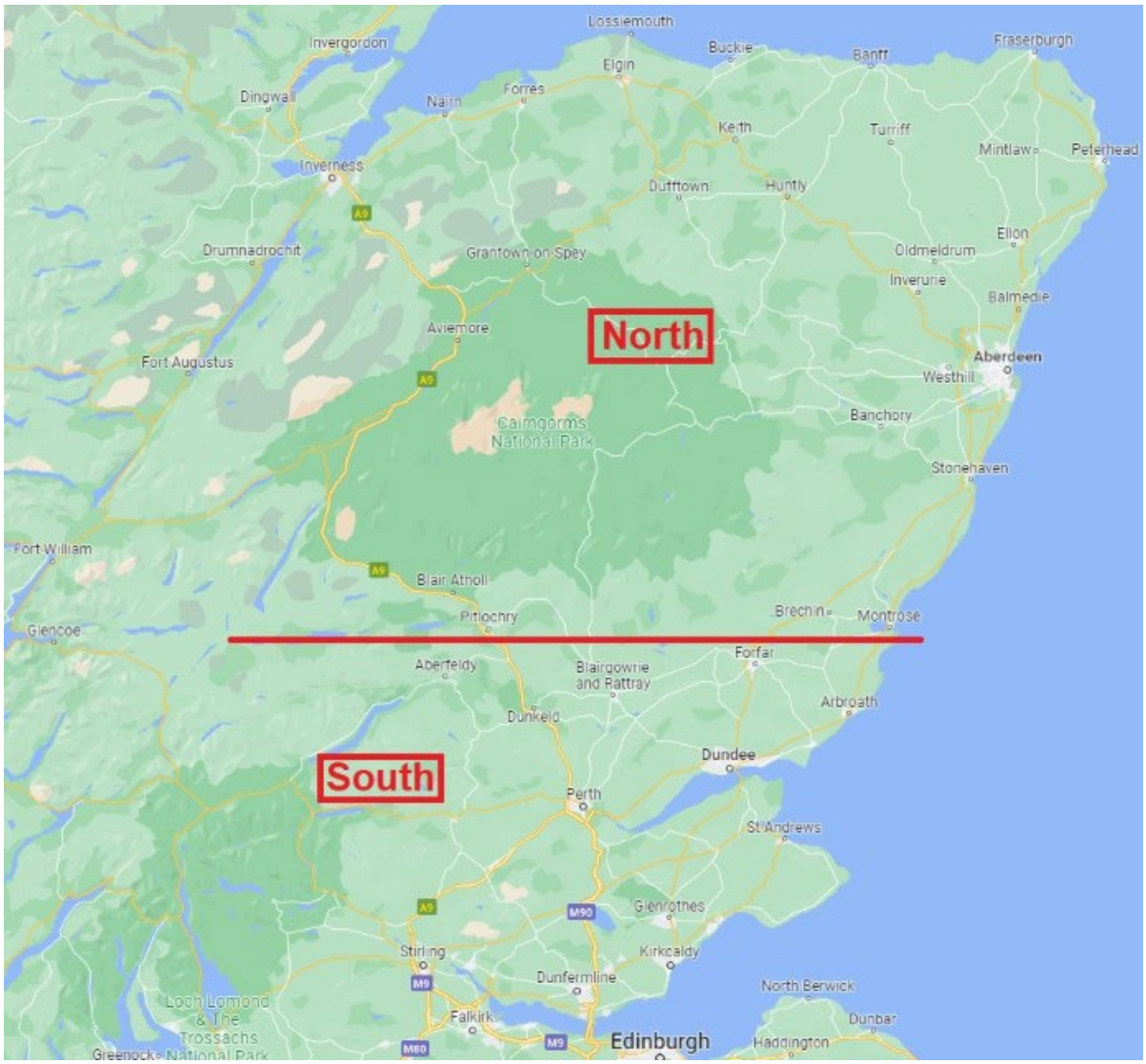


A90 Brechin Bypass

A90 Powries Brae N of Dundee

XIV. Other Facilities – N/A

XV. Climatic Domains – Used for 2-5 day forecast only



16. Compiling and Maintaining Records

Records of decisions, amendments to decisions, actions taken and patrol communications will all be entered in an electronic log by the Winter Service Duty Officer. The Winter Service Duty Officer shall ensure that all winter service records (electronic and paper copies) are referenced, filed securely, and maintained.

The spreader vehicle data logger reports will be reviewed for completeness of data and effectiveness of applied treatment. A daily report on the previous 24 hours' winter service operations will be prepared by the Winter Service Duty Officer and submitted to the Severe Weather Manager, highlighting any aspects where action may be required.

Amey will maintain accurate salt stock monitoring records and will submit stock levels to the CMS platform no later than 5pm on 1st working day in September, October, April & May as required by the Director.

Within 24 hours of completing each precautionary salting operation or other snow or ice removal operation reports will be completed and held electronically. The reports will detail the summary forecast and actual weather data, planned and actual spread rates, planned and actual commencement times, completion times for each route, amount of de-icing material spread on each route and any other relevant information. These records will be updated daily and held in a shared electronic storage facility, providing a remote access facility for the Director and the Performance Audit Group.

Prior to 31 May each year the Severe Weather Manager will submit a Winter Service report to the Directors prepared for the immediately preceding Winter Service period ending 15th May. This report will review the previous Winter Service Operations and shall help inform the requirements for the subsequent Winter Service Plan.

The following typical records will be held electronically; -

Item	Contents include:
1	Decisions taken, when and by whom,
2	Planned and actual treatment records,
3	Planned and actual response times achieved,
4	Planned and actual commencement times,
5	Planned and actual route times,
6	Planned and actual spread rates,
7	Observations and actions taken by the Winter Service Patrols,
8	Output from Winter Service Plant on-board data capture devices,
9	Winter Service Plant down time and software faults,
10	Winter Service Plant deployment records (including vehicle location records) and driver and operator logs,
11	Logs (both manual and electronic) for telephone, electronic mail and two way communication calls,
12	Loading point de-icing stocks and replenishment orders,
13	RWIS Records,
14	Weather forecasts and actual weather experienced,
15	Complaints by members of the public and Trunk Road users,
16	Accidents during winter conditions,
17	Road closures due to winter conditions,
18	Weights and volumes as appropriate for the amount of de-icing material(s) spread for each route,
19	Pre- and mid-season road sensor calibration systems,
20	Winter Service Plant calibration certificates, and
21	Actual salt stocks held including strategic salt stocks.

17. Snow Poles

Location of Snow poles in North East Unit

Snow poles will be inspected by inspectors both on safety inspections and detailed inspections in accordance with contract requirements. Defects will be categorised as appropriate, and repairs programmed to ensure compliance with such priorities.
Replacement of damaged or missing snow poles will be carried out in accordance with the required time scales.
Where a detailed inspection has identified a refurbishment programme of snow poles is required, a bid with costs will be submitted to the Director for approval. Once approval is given, works will be programmed as soon as possible after approval is received.
Due to location and numbers of snow poles in the North East Unit, a small reserve stock with a minimum of 25 snow poles shall be held at the Keith Depot.

Route - A96				
Link	**Section**	**Start Location**	**End Location**	**No.**
17640	00	A920 Junction	Ythanwells	16
17640	00	A920 Junction	Ythanwells	8
17640	14	Ythanwells	Clinkstone	8
17640	42	Whinbrae Climbing lane		6
17640	58	End of climbing lane	end of Newtongarry	19
17640	58	End of climbing lane	end of Newtongarry	23
17675	20	Buckie Junction	Mulben Junction	19
17675	20	Buckie Junction	Mulben Junction	18
17675	70	Dramlachs climbing lane		27
12640	95	Brodie climbing lane		12

Route - A95				
Link	**Section**	**Start Location**	**End Location**	**No.**
10935	05	Junction A970 Achnagonalin	Brig a Brown Junction	12
10935	05	Junction A970 Achnagonalin	Brig a Brown Junction	12
10940	05	Brig a Brown Junction	Balmenach Junction	36
10940	05	Brig a Brown Junction	Balmenach Junction	49
10945	45	Tormore	Moray Boundary	7
10950	05	Moray Boundary	Cragganmore	29
10950	20	Marypark	Carron Junction	78
10950	20	Marypark	Carron Junction	100
10960	30	Rosarie	Haughs Junction	40
10960	30	Rosarie	Haughs Junction	37

18. Snow Gates

Virtual Snow Gate Locations

Automated Signs (Virtual Snow Gates) are in place on the A96 just north of A920 near Kirkton of Culsalmond and east of the A96 near Huntly. The purpose of the signs is to allow rapid notification of a closure of the A96 between the gates. The point of closure is most likely to be at Glens of Foundland which has a history of closure during heavy snowfall.

The early notification will allow vehicles approaching the closed area the opportunity to turnaround and use an alternative route, or alternatively wait at a safer location until the road reopens. Where time permits a physical closure will be implemented to reinforce the warning.

Ongoing monitoring of the virtual gates shall be continued throughout the season to assess their effectiveness with de-briefings carried out following any implementation of the gates with both the Police Scotland & local authorities to identify any issues
The following procedure shall be used when the Virtual Gates are required to be closed:-

Implementation Procedure

Amey notify Police Scotland and Local authorities of need to close A96 due to snow (or stranded vehicle)
Police Scotland instruct the road to be closed.
Amey activate virtual gate signs.

Using a mobile phone send following text message to phone number **07778 286935** for North sign and **07778 286930** for South sign

SET 131,2

The reply will be 'Parameter set successfully'

If no reply from the sign resend the command again. There is a slight time delay on the North sign, possibly due to the signal.

5. Amey notify Traffic Scotland of closure.
6. Amey deploy staff to implement physical closure at a suitable turning point.
7. Traffic Scotland instigates VMS signing notifying of closure.
8. Traffic Scotland create incident, web story etc

Removal Procedure

7. Amey Scotland and the Police agree the road is fit to reopen.
8. Amey Scotland remove physical closure (if there was time to deploy)
9. Amey Scotland notifies the Police that the physical closure has been lifted.
10. Amey Scotland deactivate virtual gates

Using a mobile phone send following text message to phone number **07778 286935** for North sign and **07778 286930** for South sign.

SET 131,0

The reply will be 'Parameter set successfully'

If no reply from the sign, resend the command again. There is a slight time delay on the North sign, possibly due to the signal.

11. Amey Scotland notifies Traffic Scotland that the road has reopened.
12. Traffic Scotland advise A96 reopened on VMS, web etc.

19. Variable Message Snow and Ice and Hidden Message Signs

19.1.1 Amey will Liaise with the Traffic Scotland Control Room for activation and de-activation of the VMS signs throughout the Network with any specific messaging that is required in addition to the standard winter messages they already display. Amey Route teams will activate any hidden message signs should they be required for closures or warnings and will then ensure these are closed back up following cessation of the event. Details of the locations of variable message snow and ice and hidden message signs are contained in Section 15 Maps Drawings and Graphical Information Section 16 (x). These signs shall be maintained in accordance with the contract requirements. These signs shall be inspected prior to the commencement of each winter season to ensure their suitability for use throughout the Winter Service period. The Duty Officer/ Supervisor will liaise with Police Scotland to co-ordinate the activation of such signs when closing roads.

20. Salt Bins

20.1 Stock level monitoring and replenishment procedures

Salt bins will be placed on site prior to 30th September each year and fully stocked. They will be monitored throughout the winter period by the Route teams that are on the Network each day to ensure they are stocked and damage free. If any bin is missing or damaged they will be replaced within 48 hours. When the bins are only ¼ full the Route team will arrange to replenish the salt the following day to ensure there is always plenty of salt available for use. All bins will be collected at the end of the season, cleaned and hinges greased before being stored in the Depots available for the following season

21. Salt Measurement Apparatus and Equipment

21.1 Equipment and locations and recording methods

I. All frontline, reserve and patrol vehicles will have data logging and transmission equipment that will automatically measure the amount of salt, brine or potassium acetate being distributed and allow reports to be run and saved in the Management System. These figures will be used to keep stocks monitored and amounts used will be included in daily, weekly, and monthly reports.

II. All brine production will be produced using an automated facility using Marine salt to a concentration of 23% dissolved NaCL. and storage facilities shall have facilities to measure the concentration of brine in production and being delivered to the vehicles. These will be used to monitor usage, production and concentration levels and will be included in daily, weekly, and monthly reports.

Appendix A - Precautionary Treatment Route Cards

Route NE1 A90 Fraserburgh – Ellon Dual.

Operation	Route	Direction	Route Description	Distance (km)
Travel	A90	North	Travel Depot to start of Route	83
SALT	A90	South	A90 Fraserburgh A98 jct to A90 Ellon roundabout	53.0
Travel	A90	North	A90 Ellon roundabout to depot	29.5

Route NE2 A96 Craibstone R/B – Colpy Jct.

Operation	Route	Direction	Route Description	Distance (km)
Travel	A90	North	Tullos depot to Craibstone RBT	12
SALT	A96	West	Craibstone to Tavelty off slip	10.2
SALT	A96	West	Tavelty off slip to Tavelty on slip	0.2
Travel	A96	West	Tavelty On slip to Thainstone rbt	1.4
Travel	A96	East	Thainstone rbt to Tavelty offs lip	1.4
SALT	A96	East	Tavelty off slip to Tavelty on slip	0.2
Travel	A96	East	Tavelty on slip to Dunecht off slip	1.1
SALT	A96	South	Dunecht off slip to Dunecht on slip westbound	0.2
SALT	A96	West	Dunecht on slip to Colpy (Morgan McVeigh's layby)	22.7
Travel	A96	East	Colpy (Morgan McVeigh layby) to port Elphinstone rbt	19.13
SALT	A96	East	Port Elphinstone rbt to Craibstone rbt	12.7
Travel	A90	South	Craibstone rbt to Tullos Depot	12

Route NE3 A96 Keith to Colpy Jct

Operation	Route	Direction	Route Description	Distance (km)
TRAVEL	A96	West	Keith depot to A95/96 Jct	4.5
SALT	A96	East	A95/A96 Jcn to Blackhall Roundabout	34.6
			Totals	**39**

Route NE4 A96 Elgin Dr Grays R/B to A95 Aberlour

Operation	Route	Direction	Route Description	Distance (km)
Travel	A95	West	Keith depot to A95 Aberlour	26
SALT	A95	East	A95 Aberlour to A96 Keith	21.5
SALT	A96	North	A96 Keith to A96 Elgin, Dr Grays Rdbt inc all roundabouts	34.5
			Totals	**82**

Route NE5 A95 Aberlour to Granish

Operation	Route	Direction	Route Description	Distance (km)
Travel	A96	West	Keith Depot to A95 Aberlour	24
SALT	A95	South	A95 Aberlour to Granish	52
Travel	A95	North	A95 Granish to A96 Keith Depot	75

Route NE6 A96 Inverness Raigmore Interchange - A96 Elgin Dr Grays R/B

Operation	Route	Direction	Route Description	Distance (km)
Travel	A96	West	Nairn Depot to A96 Seafield Rdbt	28.3
Salt	A96	West	A96 Seafield Rdbt to A96 Raigmore Interchange	1
Salt	A96	East	A96 Raigmore Interchange to Dr Grays Rdbt (Elgin)	57
			Totals	**86.3**

Route NE7 A92/A90 Findon to Glasslaw

Operation	Route	Direction	Route Description	Distance (km)
Travel			Depot to start of route	5
SALT	A92 / A90	South	Findon Jct to Glasslaw Interchange	16.4
SALT	A90 / A92	North	Glasslaw Interchange to Findon Jct	16.4
Travel	A92	North	Findon Jct to Charlestown Jct	1.7
Travel	A92	South	Charlestown Jct to Findon SB onslip	2.0
SALT	A90	South	Findon SB onslip to end Findon SB onslip	0.5
Travel	A90	South	Findon SB onslip to Portlethen SB offslip	2.0
SALT	A90	South	Portlethen SB offslip to Portlethen SB onslip	0.5
Travel	A90	South	Portlethen SB onslip to Newtonhill SB offslip	3.7
SALT	A90	South	Newtonhill SB offslip to Newtonhill SB onslip	0.5
Travel	A90	South	Newtonhill SB onslip to Stonehaven SB offslip	7.0
SALT	A90	South	Stonehaven SB offslip to Stonehaven SB onslip	1.0
Travel	A90	South	Stonehaven SB onslip to Glasslaw SB offslip	4.0
SALT	A90	South	Glasslaw SB offslip to Glasslaw SB onslip	0.5
Turn	A90		Jcn South of Glasslaw	
Travel	A90	North	Jcn South of Glasslaw to Glasslaw NB offslip	1.0
SALT	A90	North	Glasslaw NB offslip to Glasslaw NB onslip	0.5
Travel	A90	North	Glasslaw NB onslip to Stonehaven NB offslip	4.0
SALT	A90	North	Stonehaven NB offslip to Stonehaven NB onslip	1.0
Travel	A90	North	Stonehaven NB onslip to Newtonhill NB offslip	7.0
SALT	A90	North	Newtonhill NB offslip to Newtonhill NB onslip	0.5
Travel	A90	North	Newtonhill NB onslip to Portlethen NB offslip	3.7
SALT	A90	North	Portlethen NB offslip to Portlethen NB onslip	0.5
Travel	A90	North	Portlethen NB onslip to Findon NB offslip	2.0
SALT	A90	North	Findon NB offslip to Findon NB onslip	0.5
Travel			Route to Depot	5

Route NE8 A90 B974 Jcn - A90 Stonehaven Glasslaw

Operation	Route	Direction	Route Description	Distance (km)
Travel			Travel to start of route A90 Glasslaw S/B	24
SALT	A90	South	Glasslaw Jcn SB offslip to A90 B974 Jcn	26.0
Travel/Turn	A90	North	A90 Glasslaw Jcn NB onslip to Spurryhillock Jcn	2.0
Travel	A90	South	Spurryhillock Jcn to Glasslaw Jcn SB offslip	2.0
SALT	A90	North	A90 B974 Jcn to A90 / A92 Glasslaw Jcn NB onslip	26.0
Travel			Route to Depot	24

Route NE9 A90 Parkford Jcn -A90 B974 Jcn

Operation	Route	Direction	Route Description	Distance (km)
Travel	A90	North	Depot to Route	7.1
SALT	A90	North	Parkford/Bogindollo Jcn to A90 B974 Jcn	25
Travel/Turn	A90	North	A90 B974 Jcn to A937 Jcn	4.5
Travel	A90	South	A937 Jcn to A90 B974 Jcn	4.5
SALT	A90	South	A90 B974 Jcn to Parkford/Bogindollo Jcn	25
Travel	A90	South	A90 Finavon to A926	5.5
SALT/Turn	A90	North	A926 Kirriemuir off slip (SB) to A926 Kirriemuir on slip (NB)	0.5
Travel	A90	North	A926 to St Annes Jcn NB offslip	17.4
SALT	A90	North	St Annes Jcn NB offslip to St Annes Jcn NB onslip	0.62
Travel	A90	North	St Annes Jcn NB onslip to Keithock NB offslip	6.0
SALT	A90	North	Keithock Jcn NB offslip to Keithock Jcn NB onslip	1.0
Travel	A90	North	Keithock Jcn NB onslip to A90 Stracathro NB offslip	2.8
SALT/Turn	A90	North/South	Stracathro NB offslip to Stracathro SB onslip	0.5
Travel	A90	South	Strathcathro to Keithock SB off slip	2.8
SALT	A90	South	Keithock Jcn SB offslip to Keithock Jcn SB onslip	0.5
Travel	A90	South	Keithock SB onslip to St Annes Jcn SB offslip	6.0
SALT	A90	South	St Annes Jcn SB offslip to St Annes Jcn SB onslip	0.5
Travel	A90	South	Route to Depot	18.2
			Totals	**128**

Route NE10 A90 Fintry Dr R/B - A90 Parkford Jcn

Operation	Route	Direction	Route Description	Distance (km)
Travel	A926	South	Depot to Route	1.2
SALT	A90	South	A926 Kirriemuir on slip to Fintry Drive Rbt	19.3
Turn/SALT	A90	North	Fintry Drive Rbt to Parkford/Bogindollo Jcn	24.5
Travel/Turn	A90	North	Parkford/Bogindollo Jcn to Finavon Jcn	2.1
Travel	A90	South	Finavon Jcn to Parkford/Bogindollo Jcn	2.1
SALT	A90	South	Parkford/Bogindollo Jcn to Kirriemuir A926 On slip	5.5
Travel	A90	South	Kirriemuir A926 On slip to A94 Glamis off slip	2.2
SALT	A90	South	A94 Glamis off slip to A94 Glamis on slip (SB)	0.5
Travel	A90	South	A94 Glamis to B9127 Douglastown	4.0
SALT	A90	South	B9127 Douglastown off slip to B9127 Douglastown on slip (SB)	1.0
Travel	A90	South	B9127 Douglastown to Gateside Rd	1.0
SALT	A90	South	Gateside Rd off slip to Gateside Rd on slip (SB)	0.5
Travel	A90	South	Gateside Rd to Muriyfaulds (AM Philip)	1.5
SALT/Turn	A90	South	Muriyfaulds (AM Philip)	0.5
Travel	A90	North	Muriyfaulds to Gateside RD	1.0
SALT	A90	North	Gateside Rd off slip to Gateside Rd on slip (NB)	0.5
Travel	A90	North	Gateside Rd to B9127 Douglastown	1.0
SALT	A90	North	B9127 Douglastown off slip to B9127 Douglastown on slip (NB)	1.0
Travel	A90	North	B9127 Douglastown to A94 Glamis	4.0
SALT	A90	North	A94 Glamis off slip to A94 Glamis on slip (NB)	0.5
Travel	A90	North	A94 Glamis to A926 Kirriemuir	2.2
SALT	A90	North	A926 Kirriemuir off slip (NB)	0.25
Travel	A90	North	Route to Depot	1.6
			Totals	**78**

Route NE11 A90 Fintry Drive R/B - Kingsway – Inchmichael

Operation	Route	Direction	Route Description	Distance (km)
Travel	Kings Cross Rd	North	Depot to Route	1.0
SALT	A90/ A972/ A92	East	Kings cross Rd on slip to East Marketgait Jcn	8.0
Turn	A90		City Quay Jcn	1.0
SALT	A92 / A972 / A90	West	East Marketgait to Forfar Road Junction	5.0
SALT/Turn	A90	North	Forfar Rd Jcn to Fintry Dr Rbt	1.6
SALT	A90	South	Fintry Dr Rbt to Forfar Rd Jcn	1.6
SALT/Turn	A90	West	Forfar Rd Jcn to Longforgan WB off slip	12.0
SALT	A90	East	Longforgan WB on slip to Start Kings Cross Rd on Slip	12.0
Travel/Turn	A90	East	Kings Cross Rd to Strathmatine Rbt	0.7
Travel	A90	West	STRATHMARTINE Rbt to Kings Cross off slip EB	0.2
SALT	A90	West	Kings Cross WB offslip to Kings Cross WB onslip	0.5
Travel	A90	West	Kings Cross WB onslip to Coupar Angus WB offslip	1.0
SALT	A90	West	Coupar Angus WB offslip to Coupar Angus WB onslip	0.5
Travel	A90	West	Coupar Angus WB onslip to Myrekirk R/b turn	2.0
Travel	A90	East	Myrekirk R/b to Coupar Angus EB offslip	2.0
SALT	A90	East	Coupar Angus EB offslip to Coupar Angus EB onslip	1.0
Travel	A90	East	Coupar Angus EB onslip to Kings Cross EB offslip	1.0
SALT	A90	East	Kings cross EB off slip	0.5
Travel	Kings Cross Rd	South	Route to Depot	1.0
			Totals	**53**

Route NE12 A90 Inchture –Perth

Operation	Route	Direction	Route Description	Distance (km)
Travel	A90	South	Depot to Route	10.0
SALT	A90	South	Longforgan WB off slip to North End Friarton Br (On slip Barnhill)	20
Travel	M90	South	North End Friarton Br to End off slip Mid Deck to Broxden	1.6
SALT	M90	South	End off slip to Broxden to Start On slip from Broxden	1.2
Travel / Turn	M90	South	On slip from Broxden to Bridge of Earn	3.2
Travel	M90/A90	North	Bridge of Earn to Kinfauns off slip	9.4
Salt	A90	North	Kinfauns off to Kinfauns on slip NB	0.5
Travel	A90	North	Kinfauns on slip to St Madoes off slip	2.4
SALT	A90	North	St Madoes off slip to Glen carse on slip	1.0
Travel / Turn	A90	North	Glen Carse on slip to Glendoick Off slip	2.6
SALT	A90	North	Glendoick EB offslip to Glendoick EB onslip	0.5
Travel	A90	North	Glendoick EB onslip to Inchmichael EB offslip	4.5
SALT	A90	North	Inchmichael EB offslip to Inchmichael EB onslip	1.0
Travel	A90	North	Inchmichael EB onslip to Inchture EB offslip	4.0
SALT	A90	North	Inchture EB offslip to Inchture EB onslip	1.0
Travel	A90	North	Inchture EB onslip to Longforgan EB offslip	2.0
SALT/Turn	A90	North/South	Longforgan EB offslip to Longforgan WB onslip	1.0
Travel	A90	South	Longforgan WB onslip to Inchture WB off slip	2.0
SALT	A90	South	Inchture WB off slip to Inchture WB on slip	1.0
Travel	A90	South	Inchture WB on slip to Inchmichael WB off slip	4.0
SALT	A90	South	Inchmichael WB off slip to Inchmichael WB on slip	1.0
Travel	A90	South	Inchmichael WB onslip to Glendoick WB offslip	1.5
SALT	A90	South	Glendoick WB offslip to Glendoick WB onslip	0.5
Travel	A90	South	Glendoick WB on slip to St Madoes off slip	3.9
SALT	A90	South	St Madoes off slip to St Madoes on slip	1.0
Travel	A90	South	St Madoes off slip WB to Kinfauns off slip WB	2.4
Salt	A90	South	Kinfauns off to Kinfauns on slip WB	0.5
Travel/Turn	A90	South/North	Kinfauns off slip to Barnhill/Tollhouse	4.4
SALT	A90	North	Toll house/Dundee Rd on-slip to Longforgan EB on slip	22.1
Travel	A90	North	Route to Depot	10.0
			Totals	**120.2**

Route NE13 A92 Redhouse-A92 Tay Bridge

Operation	Route	Direction	Route Description	Distance (km)
Travel	A92	South	Depot to Route	11.6
SALT	A92	South	Tay Bridge Roundabout to Redhouse Rbt (inclusive of all Roundabouts on route)	42.0
SALT	A92	North	Redhouse Rbt to End Merge after Preston Rbt	6.4
Travel	A92	North	End Merge after Preston to Approach Tullis Russell	0.4
SALT	A92	North	Approach Tullis Russell to Exit Roundabout	0.5
Travel	A92	North	Tullis Russell to Start Dual Balfarg	1.2
SALT	A92	North	Start Dual Balfarg to Exit New Inn Rbt	2.5
Travel	A92	North	New Inn Rbt to Forgan Rbt	28.0
SALT	A92	North	Forgan Rbt to Tay Bridge Roundabout	2.5
Travel	A92	North	Route to Depot	11.6
			Totals	**106.7**

Route NE14 A9 Loaninghead to Keir R/B

Operation	Route	Direction	Route Description	Distance (km)
Travel	A9	South	Perth Depot to start of Route	25
SALT	A9	South	Just before Gleneagles Southbound Off Slip to Keir Roundabout (including Roundabout)	22
SALT	A9	North	Keir Roundabout to Queen Victoria Northbound Off Slip	5
SALT	A9	North	Queen Victoria Northbound Off Slip	0.2
Travel	B8033	South	To start of Queen Victoria Southbound On Slip	0.4
SALT	A9	South	Queen Victoria Southbound On Slip	0.6
Travel	A9	South	To start of A820 Off Slip	1.8
SALT	A9	South	Start of A820 Off Slip to end of A820 On Slip	1.3
Travel	A9	South	Turn at Keir Roundabout	2.2
Travel	A9	North	To start of A820 Off Slip	1.9
SALT	A9	North	Start of A820 Off Slip to end of A820 On Slip	1.2
Travel	A9	North	To just before Queen Victoria Northbound Off Slip	1.9
SALT	A9	North	Just before Queen Victoria Northbound Off Slip to Greenloaning School junction	6.5
Travel	A822	South	Millhill Road to start of Southbound Overbridge	0.7
SALT	A822	South	Start of bridge deck to end of On Slip	0.6
Travel	A9	South	To start of Queen Victoria Off Slip	5

Operation	Route	Direction	Route Description	Distance (km)
SALT	A9	South	Queen Victoria Southbound Off Slip	5.3
Travel	B8033	North	To start of Queen Victoria Northbound On Slip	0.4
SALT	A9	North	Queen Victoria Northbound On Slip	0.3
Travel	A9	North	To Greenloaning School Junction	6.1
SALT	A9	North	Greenloaning School Junction to end of Gleneagles Northbound Off Slip	9.7
SALT	A9	South	Loaninghead Southbound On Slip	0.6
Travel	A9	South	To start of Blackford deceleration lane	2.8
SALT	A9	South	Blackford deceleration lane	0.2
Travel/ Turn			In Blackford	
SALT	A9	North	Blackford Northbound On Slip	0.4
Travel	A9	North	To start of Gleneagles Northbound Off Slip	2.8
SALT	A9	North	Main carriageway from start of Off Slip to End of Northbound On Slip	1
Travel	A9	North	End of Gleneagles On Slip to Start of Auchterarder Off Slip	0.7
SALT	A9	North	Start of Auchterarder off slip to end of Auchterarder On Slip	0.3
Travel	A9	North	Auchterarder Junction to Aberuthven Off Slip	6.7
SALT	A9	North	Aberuthven Northbound Off Slip	0.3
Turn			Industrial Estate	
SALT	A9	North	Start of Aberuthven On Slip to End of On Slip	0.3
			End of Route to Perth depot	16.2
			Totals	**130.4**

Route NE15 A9 Loaninghead to Inveralmond

Operation	Route	Direction	Route Description	Distance (km)
Travel			Perth Depot to start of Route	1.2
SALT	A9	South	Inveralmond Roundabout to Broxden Roundabout including both roundabout's	5.3
SALT	A9	North	Broxden to Inveralmond Roundabout	3.9
Travel	A9	South	Inveralmond Roundabout to A85 Off Slip	1
SALT	A9	South	Start of A85 Off Slip to end of A85 On Slip	1.2
Travel	A9	South	To Broxden Roundabout	2.2
SALT	A9	South	From Broxden Roundabout to end of Gleneagles Southbound Off slip	21.2
SALT	A9	North	Gleneagles Northbound On Slip to Broxden Roundabout	21
Travel	A9	North	Broxden Roundabout to A85 Northbound Off Slip	1.8
SALT	A9	North	A85 Northbound Off Slip	0.4
Travel		North	Link Road	0.5
SALT	A9	North	A85 Northbound On Slip	0.6
			End of Route to Perth depot	2
			Totals	**62.3**

Route NE16 Broxden to Milnathort

Operation	Route	Direction	Route Description	Distance (km)
Travel			Perth Depot to start of Route	5
SALT	M90	South	Broxden Roundabout to end of Milnathort Southbound Off Slip	25.5
SALT	M90	North	End of Milnathort Off Slip to end of Milnathort Northbound On Slip	1
Travel	M90	North	End of Milnathort On Slip to Bridge of Earn Off Slip Northbound	16
SALT	M90	North	Bridge of Earn Northbound Off Slip to end of Northbound On Slip	1
Travel	M90	North	Bridge of Earn On Slip to Start of Northbound Off Slip to Broxden	3
SALT	M90	North	Start of Northbound Off Slip to 200m prior to Friarton Bridge	0.7
SPRAY	M90	North	200m prior to Friarton Bridge to North end of Friarton Bridge Off Slip	1.3
SALT	M90	North	Friarton Bridge Off Slip around Barnhill to end of On Slip Southbound to Friarton Bridge	1
SPRAY	M90	South	200m prior to Friarton Bridge to 200m after Friarton Bridge	1.3
SALT	M90	South	200m after Friarton Bridge to Off Slip Craigend Mid deck	0.7
SALT	M90	North	Off Slip to Mid deck to Broxden Roundabout	4.5
SALT	M90	South	Dedicated lane from services to end of On Slip to M90	0.5
Travel	M90	South	End of On Slip to start of Off Slip to Friarton Bridge	4
SALT	M90	North	Start of Off Slip to Friarton Bridge to end of On Slip	1
Travel	M90	North	End of On Slip to A90 Kinfauns Northbound Off Slip	5
Travel	A90	North	Kinfauns Northbound Off Slip to end of Southbound On Slip	0.5
Travel	A90	South	End of Kinfauns Southbound On Slip to Barnhill Southbound Off Slip	3
SALT	A90	South	Barnhill Southbound Off Slip to Toll House	1
Travel			End of Route to Perth Depot	13
			Totals	**89 Km**

Route NE17 Halbeath –Milnathort

Operation	Route	Direction	Route Description	Distance (km)
Travel	M90	North	Depot to Route	0.32
SALT	M90	North	Start Onslip J6 to End Offslip J8	6.12
SALT	M90	South	Start Onslip J8 to J3 Halbeath	21.08
SALT	M90	North	J3 Halbeath Offslip round the Roundabout NB	0.64
SALT	M90	North	J3 Onslip to by J6 Onslip	15.45
Travel/Turn	M90	North	J6 Onslip to J8 Offslip then turn back round to SB Onslip	11.10
SALT	M90	South	J6 Off and Onslips	1.29
Travel	M90	South	J6 to J5	3.38
SALT	M90	South	J5 Off and Onslips	0.97
Travel	M90	South	J5 to J4	3.38
SALT	M90	South	J4 Off and Onslips	0.97
Travel	M90	South	J4 to J3 to Turn NB	5.15
Travel	M90	North	J3 to J4	4.83
SALT	M90	North	J4 Off and Onslips	1.13
Travel	M90	North	J4 to J5	3.22
SALT	M90	North	J5 Off and Onslips	0.97
Travel	M90	North	J5 to J6	3.54
SALT	M90	North	J6 Offslip Only	0.48
Travel	M90	North	J6 Offslip to Depot	0.32
			Totals	**84.17**

Route NE18 Halbeath - Redhouse

Operation	Route	Direction	Route Description	Distance (km)
Travel	M90	South	Depot to Route	16.09
SALT	A92	East	Crossgates I/C to Redhouse Roundabout	17.06
SALT	A92	West	Redhouse to Crossgates Offslip	16.74
SALT	A92	East	Crossgates Roundabout	0.48
Travel	A92	East	Crossgates Onslip to Cowdenbeath Offslip	3.22
SALT	A92	East	Cowdenbeath Off and Onslips	0.97
Travel	A92	East	Cowdenbeath to Lochgelly Offslip	2.41
SALT	A92	East	Lochgelly Off and Onslips	0.97
Travel	A92	East	Lochgelly to Kirkcaldy West	4.02
SALT	A92	East	Kirkcaldy Off and Onslips	0.97
Travel	A92	East	Kirkcaldy West to Opposite slip	7.56
SALT	A92	West	Kirkcaldy Off and Onslips	0.97
Travel	A92	West	Kirkcaldy to Lochgelly	4.18
SALT	A92	West	Lochgelly Off and Onslips	0.97
Travel	A92	West	Lochgelly to Cowdenbeath	2.09
SALT	A92	West	Cowdenbeath Off and Offslip	0.97
Travel	A92/M90	North	Route to Depot	19.31
			Totals	**98.01**

Route NE19 Friarton - Milnathort

Operation	Route	Direction	Route Description	Distance (km)
Travel	M90	North	Route to Depot	2.8
SALT	M90	North	Milnathort NB onslip to Craigend I/C	20.0
SALT	M90	North	Slip off to Broxden to End merge from Mid Deck	1.0
Travel / Turn	M90	South	End Merge from Mid Deck to Broxden	4.5
Travel / Turn	M90	South	Broxden to Bridge of Earn NB on slip	8.7
Travel	M90	North	Bridge of Earn NB on slip to Start Edinburgh Rd Slip lane	3.2
SALT	M90	North	Edinburgh Road Slip Lane	0.5
Travel/Turn	A912	North	End Slip lane to A912 Rbt	0.8
Travel	A912	South	A912 Rbt to Start Scoonieburn slip	0.8
SALT	M90	South	start Scoonieburn slip to end Scoonieburn slip	0.7
Travel / Turn	M90	South	End Scoonieburn Slip to Bridge of Earn SB off slip	3.0
SALT	M90	South	Br of Earn SB offslip to Br of Earn SB onslip	1.0
Travel	M90	South	Route to Depot	19.0
			Totals	**66**