

National Traffic Information Service

Publish Services

1 Introduction

Highways England is responsible for most Motorways and major A roads in England. Highways England has outsourced its National Traffic Information Service (NTIS) to a joint venture called Network Information Services (NIS) Ltd.

NTIS interfaces with a number of systems from different suppliers to obtain knowledge of Highways England's network of roads in England. It then collates and processes all of this data and intelligence to provide users of the services with the information they need, as quickly and as easily as possible, to help them make informed decisions about travel.

1.1 System Overview

NTIS connects to the various subsystems of the Highways England Traffic Management Systems (HATMS) at Regional Control Centres throughout England. These interfaces provide access to unplanned incidents, loop-based traffic data, CCTV images and the ability to set and receive Variable Message Signs and Matrix Signal settings. Connections to other systems provide various types of planned incidents such as roadworks, sporting and major events and adverse weather and other types of traffic data such as ANPR-based travel times to supplement our processing.

1.2 Purpose

This document gives details of the various services available from NTIS to help potential subscribers and their engineers to make best use of NTIS data. Although every endeavour has been made to ensure accuracy of documentation, the specifications are complex and there may be omissions or inaccuracies.

If you have any questions that are not answered in this document, or you would like to discuss which service would best suit your needs, further assistance can be sought using the contact details provided in the section 'Help and Assistance'.

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1.4 Abbreviations

AIL	Abnormal Indivisible Load
ANPR	Automatic Number Plate Recognition
CCTV	Closed Circuit Television
DATD	Daily Aggregated Traffic Data – A service from NTIS
DATEX II	Data Exchange 2 – European specifications for language independent exchange of traffic information
FVD	Floating Vehicle Data
HTTP	Hyper Text Transfer Protocol
MIDAS	Motorway Incident Detection and Automatic Signalling
NTIS	National Traffic Information Service
RCC	Regional Control Centre
RSS	Really Simple Syndication
TMU	Traffic Monitoring Unit
URL	Uniform Resource Locator
VMS	Variable Message Sign
XML	Extensible Markup Language

1.5 References/Related Documentation

1	WA119-08-007-002-03-02-21	Publish Services: DATEX II Webservice External Interface Design Document
2	WA119-08-007-002-03-02-18	Publish Services: NTIS Model External Interface Design Document
3	WA119-08-007-002-03-02-46	Publish Services: Email External Interface Design Document
4	WA119-08-007-002-03-02-33	Publish Services: DATD External Interface Design Document
5	NIS P TIH 008	DATEX II User Guide

2 Catalogue of Services

Highways England offers a range of traffic information services from either the National Traffic Information Service (NTIS) or from its website at <http://www.highways.gov.uk/traffic-information/traffic-information-services/>.

Which service is right for you?

- If you wish to re-publish NTIS data on a traffic information website, smartphone application or similar then DATEX II is the service for you.
- If you are a “Professional” user such as a local authority or the media but you are unable to use DATEX II then Email alerts may be of use.
- If you work in the highways sector and want to analyse the performance of the network then you are likely to need historical data from the Daily Aggregated Traffic Data service.
- If you are a driver and want to plan a journey then consider one or more our Traffic England, Social Media or Email alerts services.

Full details and documentation for the services from NTIS can be found on the subscriber pages of the Traffic England website at <http://trafficengland.com/subscribers>.

2.1 Real-time Information

2.1.1 Traffic England

The Traffic England website provides up-to-the-minute traffic information for those planning a journey. It includes details of incidents and roadworks and their expected impact on the roads as well as sign and signal settings.

Traffic England provides a range of services for different types of users:

- The public who do not wish to register can view the network at will.
- The public can register and save personalised views of our information.
- Registered “Professional” users such as local authorities and the media can use the website to filter information by County, Highways England-specific regions or any area of their choice. They can also receive incidents in RSS format.
- Subscribers can register for Email and DATEX II services and can use the website to filter information they receive by County, Highways England-specific regions or any area of their choice. Subscribers who do not wish to register can obtain DATEX II services from <http://data.gov.uk>.

2.1.2 Social Media

You can subscribe to various twitter feeds from Highways England from its website at <http://www.highways.gov.uk/traffic-information/traffic-information-services/>.

Find us on Facebook at <http://www.facebook.com/highwaysagencyofficial>.

2.1.3 Email Alerts

2.1.3.1 Organisations

You can subscribe to receive details of different types of incidents (Unplanned, Major Events, Roadworks, Abnormal Loads and Weather) via Email. We will notify you when they start, when they clear and as their details change. You can filter the emails for your area of interest by configuring required areas using the Traffic England website.

Note: Unplanned incidents include accidents, congestion, emergency roadworks, etc., Major Events include sports events, entertainment events such as exhibitions and concerts.

You need to agree to Highways England’s Acceptable Use and Operational Policy which can be found on the subscriber pages of the Traffic England website at <http://trafficengland.com/subscribers>.

See the Email Alerts External Interface Design Document (reference 3) available from the subscriber pages of the Traffic England website for full details of the service.

2.1.3.2 Filtering

The quantity of emails received by the subscriber can be reduced by filtering the subscription by geographic areas. The geographic areas can be chosen from Regional Control Centres, Highways England maintaining areas, Counties and User-Defined areas. Up to 10 areas of each type can be used in a subscriber’s filter and will be logically OR’d together.

See the Email Subscribers External Interface Design Document (reference 3) available from the subscriber pages of the Traffic England website for full details of the service.

2.1.3.3 General Public

For a simpler email alert service, see the Highways England website at <http://www.highways.gov.uk/traffic-information/traffic-information-services/>.

2.1.4 RSS

This service provides a summary of incidents in a simplified XML form suitable for displaying in a web browser or RSS reader. The incidents are formatted in XML like our DATEX II service but are aimed at end-users rather than traffic information applications. The DATEX II service contains much richer content including geo-location information required to display the information on mapping applications.

You can subscribe to various RSS feeds from Highways England from its website at <http://www.highways.gov.uk/traffic-information/traffic-information-services/>.

2.1.5 DATEX II

This service provides detailed information of incidents, VMS and Matrix Signal settings, and speeds, flows and journey times in a European standard (XML) format. Due to its complexity, design documentation is provided on the subscriber pages of the Traffic England website to aid software developers to develop their applications. The data is pushed to subscribers' servers within one minute of collection by NTIS. You can filter the data you will receive by configuring required areas of interest using the Traffic England website. As the data is provided in a European standard format, you can receive information from other sources such as Traffic Scotland with minimal effort. A directory of registered DATEX II services can be found at <http://www.datex2.eu>.

Highways England's Acceptable Use and Operational Policy can be found on the subscriber pages of the Traffic England website at <http://trafficengland.com/subscribers>.

Subscribers who do not wish to register can obtain DATEX II services from <http://www.data.gov.uk> but Highways England will be unable to provide any proactive support such as notification of planned service enhancements or outages. Access to data from <http://www.data.gov.uk> is covered by the Open Government Licence for public sector data found here: <http://www.nationalarchives.gov.uk/doc/open-government-licence/version/2/>.

See the DATEXII Subscribers External Interface Design Document (reference 1) available from the subscriber pages of the Traffic England website for full details of the service.

The document Publish NTIS Model External Interface Design Document (reference 2) is required to locate all assets such as MIDAS, TMU, ANPR, VMS and Matrix Signal equipment on Highways England's network.

Further guidance to developers intending to use the DATEX II service is available from the DATEX II User Guide (reference 5).

2.1.5.1 Update frequency

The data is pushed to subscribers' servers within one minute of collection by NTIS. The frequency of collection by NTIS is as below.

Information Product	Update Frequency
Unplanned Events	1 minute
Roadworks	1 minute
Major Organised Events	1 minute
Weather	1 minute

Information Product	Update Frequency
Abnormal Indivisible Loads	1 minute
Variable Message Signs/Matrix Signal settings	1 minute
Processed Traffic Data	1 minute
MIDAS Gold Loop-based Traffic Data	1 minute
TMU Loop-based Traffic Data	5 minutes
ANPR Travel Times	5 minutes
NTIS Model	Approx. fortnightly

If a subscriber does not keep up with the quantity of data being sent to him, data is discarded. If the connection to the subscriber fails for any reason, the service will continually attempt to reconnect and, once successful, will send a full refresh of all incidents and VMS/Matrix Signal settings (according to the subscriber's filters) so that you have a full picture of the state of Highways England's network.

2.1.5.2 Sizing

The data is pushed to subscribers in compressed form at a compression ratio of approx. 10:1. Be aware that the data volumes are significant and will take time and resources to receive, uncompress and process. The amount of data once uncompressed is as below.

Information Product	Approximate Quantity	Approximate Sizing
Unplanned Events		Variable
Roadworks		Variable
Major Organised Events		Variable
Weather		Variable
Abnormal Indivisible Loads		Variable
Variable Message Signs/Matrix Signal settings	3500 VMS 11000 signals	Full refresh: 12MB. Variable each min
Processed Traffic Data		
• Fused Sensor-only	6000 links	7MB/min
• Fused FVD and Sensor	15000 links	15MB/min
MIDAS Gold Loop-based Traffic Data	6000 sites	26MB/min
TMU Loop-based Traffic Data	2400 sites	18MB per 5 mins
ANPR Travel Times	1400 routes	17MB per 5 mins
NTIS Model	Updated approx. fortnightly	500MB

2.1.5.3 Filtering

The quantity of data received by the subscriber can be reduced by filtering the subscription by geographic areas. The geographic areas can be chosen from Regional Control Centres, Highways England maintaining areas, Counties and User-Defined areas. Up to 10 areas of each type can be used in a subscriber's filter and will be logically OR'd together.

2.2 Historic Data

Historic data is useful for analysis/research purposes as it records all information affecting Highways England's network each day.

2.2.1 Daily Aggregated Traffic Data

All of the data that is published via the DATEX II service in real-time including incidents, VMS and Matrix Signal settings, and speeds, flows and journey times and any data not received in real-time is made available for collection historically. Each day, the data will be made available by 4am available as a compressed file from both a website or programmatically from a web service.

For each day, we publish 3 files (Day 1, Day 5 and Day 8) each containing richer and more complete data than the previous one.

The Day 1 file contains all data received or generated by the system for the previous day (the target date of the publication). It consists of:

- All new events and updates of all types of event
- Full refresh of currently active events at end of day
- All VMS/Matrix Signal updates
- Full refresh of current state of all VMS/Matrix Signals at end of day
- All published MIDAS Gold data
- All published TMU data
- All published travel times
- All published Processed traffic data – Fused FVD and Sensor
- NTIS Model
- All data generated by the system for the target date (in-filled data).

The Day 5 file consists of:

- All data published in the target date's Day 1 file except in-filled data.
- All data for the target date received in the 4 days that followed Day 1 (catch-up data).
- All collected TAME data (not published in real-time)
- All data generated by the system for the target date (in-filled data).

The data for Day 8 consists of:

- All data published in the target date's Day 5 file except in-filled data.
- All data for the target date received in the 3 days that followed Day 5 (catch-up data).
- All data generated by the system for the target date (in-filled data).

You need to agree to Highways England's Acceptable Use and Operational Policy which can be found on the subscriber pages of the Traffic England website at <http://trafficengland.com/subscribers>.

See the Publish DATD External Interface Design Document (reference 4) and associated DATEXII Subscribers External Interface Design Document (reference 1) and Publish NTIS Model External Interface Design Document (reference 2) available from the subscriber pages of the Traffic England website for full details of the service.

2.2.1.1 Sizing

The data is added to the DATD publication in compressed form at a compression ratio of approx. 10:1. Be aware that the data volumes are significant and will take time and resources to download, uncompress and process and will require 64-bit compression

software to uncompress such large files. An indication of the amount of data once uncompressed is as below.

Information Product	Approximate Quantity	Approximate Sizing
Unplanned Events		Variable
Roadworks		Variable
Major Organised Events		Variable
Weather		Variable
Abnormal Indivisible Loads		Variable
Variable Message Signs/Matrix Signal settings	3500 VMS 11000 signals	Full refresh: 12MB. Variable each min
Processed Traffic Data		
<ul style="list-style-type: none"> • Fused Sensor-only 	6000 links	10GB/day
<ul style="list-style-type: none"> • Fused FVD and Sensor 	15000 links	21GB/day
MIDAS Gold Loop-based Traffic Data	6000 sites	37GB/min
TMU Loop-based Traffic Data	2400 sites	5GB/day
ANPR Travel Times	1400 routes	5GB/day
NTIS Model		Included daily 500MB
	Total	80GB/day

2.2.1.2 Filtering

No geographic filtering is applied to DATD publications so that all data is made available.

3 Help and Assistance

NTIS can provide help and advice to anyone wishing to subscribe to the services. We would encourage everyone considering DATEX II or DATD services to discuss their requirements with us before embarking on development.

3.1 Helpdesk

The NTIS Helpdesk is available to request assistance or to report service issues by email subscribersupport@nisjv.com.

Subscribers can register using the Traffic England website. Subscriptions will be set up on an individual basis and all access to NTIS data will be recorded. Specific connection details and user credentials will be provided as part of the subscription process.

Once approved, subscribers can request changes to their subscriptions or restrict data to required geographical areas using the Traffic England website.

3.2 Documentation

Full details and documentation for the services along with Highways England's Acceptable Use and Operational Policy can be found on the subscriber pages of the Traffic England website at <http://trafficengland.com/subscribers>.