

UK Real Time Information Group

Guidelines for the management of NaPTAN data with particular reference to RTI systems

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1 Introduction

1.1 About this document

- 1.1.1 This document has been produced by Centaur Consulting Limited (Centaur) for the Real Time Information Group (RTIG). It provides best practice guidelines for the management of NaPTAN data in order to improve the accuracy of Real Time Information (RTI) systems and the Real Time Passenger Information (RTPI) provided to travellers.
- 1.1.2 This best practice document is primarily aimed at local authority NaPTAN practitioners and acknowledges existing guidance from DfT, Traveline and ITOWorld. The text refers and provides web links to these documents throughout.

1.2 Context

- 1.2.1 The RTIG Data Suppliers Working Group has been collaboratively developing ways to improve the accuracy of RTPI through better handling of data.
- 1.2.2 This document is the result of the group's wish to compile a NaPTAN best practice guide for local authority NaPTAN practitioners, which will enable them to make sure their teams (including a NaPTAN manager) are fully aware of the importance of NaPTAN and the correct procedures necessary for accurate data and, ultimately, accurate RTI.
- 1.2.3 This document will also enable NaPTAN practitioners to provide evidence on the level of resources required for ensuring NaPTAN accuracy for both Real Time Passenger Information (RTPI) and for bus operators to provide Electronic Bus Service Registration (EBSR) data.

1.3 About NaPTAN

- 1.3.1 The National Public Transport Access Node Database is a UK nationwide system for uniquely identifying all the points of access to public transport in the UK. It is a core component of the UK national transport information infrastructure and is used by a number of other UK standards and information systems, including Transport Direct and Traveline.
- 1.3.2 Every UK station, coach terminus, airports, ferry terminals, bus stop, etc is allocated at least one unique NaPTAN identifier.
- 1.3.3 The NaPTAN schema is a UK national *de facto* standard sponsored by the UK Department of Transport and supports both the public registration of bus timetables by the Vehicle and Operator Services Agency (VOSA), and the data collection for the Transport Direct Portal. NaPTAN includes a related standard - the National Public Transport Gazetteer.
- 1.3.4 The NaPTAN database is currently maintained centrally under contract to the Department of Transport. The contractor as at August 2007 is Thales, but it is expected that this contract will be re-competed in the next few months. The document therefore refers to the 'current database contractor' throughout.
- 1.3.5 NaPTAN's integrity is essential for the correct functioning of downstream users, including RTPI and the provision of EBSR data by bus operators.

1.4 Document structure

- 1.4.1 This document is divided into two substantive sections and an appendix. The first section focuses on initial considerations that should be taken into account to ensure NaPTAN accuracy from the outset, such as:
- identifying the main stakeholders involved in maintaining and updating NaPTAN data;
 - inter-stakeholder relationships and key information flows;
 - stakeholder responsibilities;
 - useful NaPTAN tools that are currently available to stakeholders.
- 1.4.2 The second part presents guidelines on managing and maintaining NaPTAN data including:
- preparing and adding new stops;
 - the geocoding process;
 - naming stops correctly;
 - stop movement procedure;
 - data uploads.
- 1.4.3 The appendix provides key information on the resources required to maintain NaPTAN data in an accurate fashion.

2 Ensuring NaPTAN accuracy

2.1 Introduction

2.1.1 Ensuring that NaPTAN data is accurate will help with the following:

- RTPI accuracy;
- accuracy of service management tools used by bus operators;
- maintenance of an asset register of bus stops for local authorities;
- EBSR accuracy.

2.1.2 Before accuracy in these important areas can be achieved, there are a number of initial important considerations which need to be taken into account. The following will be addressed in this section:

- the identification of stakeholders, their roles, requirements and responsibilities;
- building relationships with stakeholders and maintaining the flow of information between them;
- key NaPTAN tools and web resources that are available to practitioners.

2.2 NaPTAN stakeholders and their requirements

2.2.1 There are a number of main stakeholders in the supply, use, maintenance and organisation of NaPTAN points. They include:

- local authorities;
- bus operators;
- systems suppliers;
- Traveline;
- VOSA;
- consultants.

2.2.2 Each will have a unique role to play, but all are intrinsically linked, so it is important to identify who is responsible for which aspect of NaPTAN data maintenance and accuracy.

2.2.3 Primary contacts for each stakeholder should be established from the outset. These contacts should be circulated and lines of communication established.

2.2.4 Stakeholders should communicate on a regular basis. It may be a good idea to set up regular meetings where issues, updates and concerns can be raised and discussed.

Local authorities

2.2.5 Accurate NaPTAN data will go a long way to providing the general public with accurate Real Time Passenger Information (RTPI), which is traditionally displayed at bus stops and terminals. It will also provide bus operators with the levels of accuracy required for real-time service operation management information. Important aspects of NaPTAN include:

- stop area;
- stop name;
- stop locational information (geocoding);
- stop bearing;
- stop description.

2.2.6 In addition, the following needs to be accurately maintained:

- addition of new stops – for AtcoCodes and NaptanCodes;
- removal/deletion of stops;
- movement of stops in a corridor/minor changes.

2.2.7 Any changes or updates to stop point data are then submitted to a central authority which validates and aggregates the data to the national NaPTAN database.

Bus operators

2.2.8 Bus operators will download the NaPTAN database for EBSR purposes and for providing timetable data etc for local authorities, RTI systems and for calculating timing points.

Systems suppliers

2.2.9 Systems suppliers should be provided with valid NaPTAN data on a regular basis, in order to maintain the RTI system and keep it running as accurately as possible. Systems suppliers should also be kept abreast of any future pending changes to the NaPTAN schema to allow time to update the RTI systems accordingly.

Traveline

2.2.10 Traveline answers enquires from the public, by internet, SMS and by phone. It also provides journey itineraries in terms of NaPTAN descriptions of stops and stations.

2.2.11 Traveline are responsible for feeding back errors in NaPTAN locations and names for stops back to the responsible NaPTAN manager/data owner.

VOSA

2.2.12 The TransXchange files received for EBSR purposes will contain NaPTAN references for all stops used by each route. Hence NaPTAN numbers for new stops must be available well in advance to allow preparation of files for registration of services with 56 days notice of service commencement or change.

Consultants

2.2.13 Can provide expertise on data management and should make sure that any data exchange processes are being handled responsibly and accurately.

2.3 Relationship building, data synchronisation and feedback loops.

2.3.1 It is important that local authorities communicate with their bus operators and vice versa. The data synchronisation process should be carefully outlined by both parties, so that all downstream users are made aware when any changes are made.

- 2.3.2 Specific contact points should be established for each stakeholder. This will help when communicating changes to NaPTAN and allowing for synchronisation of data. It is important to consider all known users of NaPTAN data.
- 2.3.3 Local authorities and bus operators should also communicate with systems suppliers, who can usually provide feedback on system performance and highlight areas where things are not performing as they should.
- 2.3.4 In addition, bus operators should communicate any systems issues with the suppliers in the first instance as this will speed up issue resolution and keep the RTI system performing with the best possible accuracy. Information flows between stakeholders are very important to NaPTAN accuracy and the accuracy of the system.
- 2.3.5 The following should be communicated by a local authority to their bus operators:
- key contact details for NaPTAN manager;
 - planned stop movements and details;
 - new stop plans and details;
 - stop removals.
- 2.3.6 The following should be communicated by bus operators to local authorities (ideally the NaPTAN manager):
- Key contact details for scheduler;
 - new route and stop location plans;
 - stop movement plans.
- 2.3.7 The following should be communicated to systems suppliers:
- inaccurate reporting/predictions at defined stops. These are often data issues either with incorrect data (e.g. stop co-ordinates inaccurate) or custom and practice differing to the data.
 - Data files reflecting correct usage of bus stops, such that when there is a change to the stops on a route a new TransXchange 2 file is produced and provided to update the RTI system. Ideally this should happen in advance of that change, with a start date for that timetable change encoded in the file.

2.4 Key tools

- 2.4.1 The following should be used to ensure accurate NaPTAN data:
- GPS positioning equipment for stop location data.
 - a NaPTAN Editor – available free of charge to LAs from TransonIQ (contact Roger Slevin at DfT for further information), however other editors are available such as Trapeze’s Routewise and Omnibus’ NaPTAN Editor.
 - NaPTAN Viewer – available from <http://www.transportdirect.info/naptanviewer>;
 - ITO World – visual representation tool available from Traveline;

2.5 Useful websites for local authorities

2.5.1 Staff should be made aware of the following links:

NaPTAN specific

- for information on NaPTAN – <http://www.naptan.org.uk>
- for detailed user guides, links to upload sites - <http://www.journeyweb.org.uk/ng.htm>

Editor specific

- for information on NaPTAN 2 Editor - <http://www.transoniq.co.uk/home/>

General information

- for Traveled data management advice – <http://www.travelinedata.org.uk>
- for information on ITO World - <http://itoworld.com/>

2.6 NaPTAN responsibilities

Local authorities

2.6.1 Responsibilities include:

- allocating and organising new stops in a timely fashion so bus services can be registered with the correct ATCO number for stops, 56 days in advance;
- procuring equipment/infrastructure;
- bus stop data – naming stops, collecting positional data, etc;
- input of data into local NaPTAN database;
- uploading changes to current database contractor;
- monitoring bus stop movements/deletions;
- working with bus operators;
- clearly notifying bus operators in a timely fashion of stop changes, and which services are affected;
- working with neighbouring local authorities to iron out cross-border NaPTAN issues;
- allocation of SMS codes;
- correcting data as identified in data reports, in a timely manner;

- communicate any RTI system issues to supplier and inform bus operator of what effect they may have on both RTPI and service management tools.

Bus operators

2.6.2 For operators, there are two key stages to the NaPTAN process: firstly downloading NaPTAN data from the website of the current database contractor, preparation and import into the scheduling system, then, secondly, incorporating any changes into the company's schedules. This latter task will be done in the local Commercial Office as it requires detailed knowledge, and may even involve the use of road staff. It will be completed more speedily if changes in NaPTAN data and affected routes can be easily identified.

2.6.3 Key responsibilities include:

- Regularly updating scheduling systems with latest NaPTAN data putting stop data on bus on-board computers;
- providing schedule information containing up to date NaPTAN references to LA or RTI supplier for RTI system, including revised files when a stop changes on a route;
- informing local authority when a new route is proposed and information on planned new stops/movement of existing stops;
- where inaccurate reporting or RTI predictions have been found at defined stops, ensure the bus stops are at the same physical location as identified in the NaPTAN stop details and liaise with LA as appropriate;
- communicating with DfT/NaPTAN database/EBSR with DfT;
- operators should also communicate any data anomalies/glitches to the NaPTAN manager/team;
- if responsible for the siting of new bus stops, any new stop details should be immediately communicated to the NaPTAN manager;
- communicate any RTI issues immediately to system supplier and local authority (if responsible for RTI system).

Other responsibilities and best practice

2.6.4 Some operators are responsible for street furniture – in particular, siting or moving bus stops. It is essential that the staff involved relay any changes through the Commercial Office to the local authority concerned so that NaPTAN can be maintained as accurately as possible.

2.6.5 In operators with multiple subsidiaries, where an authority's NaPTAN data is used by more than one operating company it is good practice to update all affected companies' databases at the same time, and in these cases to assign one company as the lead for communicating data errors etc to each authority.

2.6.6 It is recommended that the operator's stop data is maintained regularly rather than allowing a backlog to develop.

- 2.6.7 Good communications are essential, especially when the staff downloading from NaPTAN are not the same as those updating schedule information. Maintain contact details for all parties involved.
- 2.6.8 Operators should consult with local authorities about service changes prior to registration so that if there is a requirement for new stop(s), they can be added into NaPTAN prior to registration. This may avoid the need to assign temporary details which will need subsequent correction.
- 2.6.9 Bus operators should note that updated NaPTAN should be ready for use two working days after it has been uploaded by a local authority. Updated NaPTAN data WILL NOT appear on NaPTAN Viewer until two and a half weeks after it has been uploaded.

System suppliers

- 2.6.10 To provide feedback to bus operators and local authorities on any system issues that may require technical work.
- 2.6.11 Systems suppliers also have a responsibility to provide functionality to import NaPTAN data into the RTI system. The import process itself may be the responsibility of the system supplier, the bus operator or the local authority and will vary according by supplier and by contract.
- 2.6.12 The RTI system itself should have the functionality to carry out validation on imported data, and be able to highlight and provide feedback on any potential issues; for example, identification of stops that are not being detected by vehicles on specific routes and could therefore be incorrectly positioned within NaPTAN.

Traveline

- 2.6.13 Regional managers to monitor data quality in their region, with assistance from ITOworld tools.

DfT/Current database contractor

- 2.6.14 DfT/Current database contractor has the following responsibilities:
 - Keeps NaPTAN database;
 - Provides NaPTAN data to bus operators;
 - DfT provides NaPTAN guidelines;
 - Current contractor validates files, and runs quality checks.

3 Maintaining and managing NaPTAN

3.1 Introduction

3.1.1 This section offers guidelines for the following key steps when maintaining and managing NaPTAN data:

- Preparation and addition of new stops;
- Correct naming of stops;
- Bus stop movement and deletion;
- Monitoring stop changes and general maintenance;
- Uploading to the web.

3.2 Preparation and addition of new bus stops

Collecting geocode data

- 3.2.1 The collection of positional base data should be done by obtaining a GPS coordinate from the proposed stop location, using an appropriate GPS measurement tool. The resulting northing and easting should then be fed into the database (Transoniq, etc) by a NaPTAN manager or operative, alongside key stop details (such as street name, landmark and stop name).
- 3.2.2 To ensure accuracy of GPS data, leave the data tool for 20-30 seconds before taking a reading. There will always be a 5 metre zone of discrepancy due to the nature of GPS, but this can be checked by using a visualisation tool.
- 3.2.3 Positional accuracy should be checked using NaPTAN Viewer, ITOWorld software or Google Maps (if available). NaPTAN Viewer is available free of charge, ITOWorld is now available to local authorities from Traveline and has been rolled out to all regions and Google Maps are being used in some Traveline regions to map bus stops.
- 3.2.4 New stops may have to be added with temporary details if a road has previously been unserved by a bus route. If this is the case, the ATCO code should be issued to the operator on request as this will be needed for the EBSR files.

Local authority roles and responsibilities for NaPTAN management

- 3.2.5 Often, the majority of site-specific, logistical and procurement work will be carried out by an infrastructure team, planning team or public transport development team. If two or more are involved (this is often the case), ensure that they communicate in the first instance to establish roles and responsibilities, when new stops are being discussed.
- 3.2.6 Any NaPTAN specific information should be shared with the NaPTAN manager. It may also be beneficial to involve any bus operator partners at this stage, as some are responsible for the siting of bus stops.
- 3.2.7 A general way of summarising roles and responsibilities is as follows:

- NaPTAN manager – entry of NaPTAN data into the NaPTAN database and then uploading to Current contractor. The NaPTAN manager may also be responsible for compiling and maintaining a list of suitable SMS codes for bus stops, as well as dealing with bus operator partners and any cross border issues. The NaPTAN manager will also be responsible for using ITOWorld to check accuracy.
- Transport Development Team – location of suitable sites for new stops, monitoring of bus stop movements, deletions.
- Transport Planning Team – compiling of stop details for new stops (street name, landmarks, stop name etc) and recording of GPS co-ordinates for locational information.

Useful information

3.2.8 The following information should be considered in order to ensure accuracy of data:

Data collection and stop development

- Data collection should be accurate from the outset. If this is done, problems will be fewer in the long term. Double check locational information, use visualisation tools and any errors should be kept to a minimum.
- Let Infrastructure/Transport Planning/Public Transport Development teams handle initial stop development, but ensure that the NaPTAN manager is informed of any plans to add new stops so that they can begin to create the data necessary and prepare the data base. Clear communication is key.
- With regard to hail and ride stops, it is important that NaPTAN codes are obtained for these. This should also include the mid-way timing point.

Uploading new/updated information

- Use Naptan v2 Editor (or an alternative editor) to add new stops and upload. Accuracy has been improved since this software was introduced, and is available to all local authorities. The Editor can also validate data and check for any existing NaPTAN or SMS codes being replicated. It also prevents stops with shared GPS coordinates from being uploaded.
- Uploads should be done in a disciplined fashion and on a regular basis. Uploads do not take a great deal of time and should not be considered as resource intensive.

Checking your data and minimising errors

- Address NaPTAN accuracy on a route-by-route basis, only moving on to the next route when you are convinced that accuracy is as it should be.
- Use visualisation tools such as GIS or NaPTAN viewer, with photographs to cross-check position (correct side of road, direction of travel etc). Make sure the names are correct – compare with timetable name, Traveline name and the name you have given.
- Thorough checking is key out to insure that stops are in the right place and that this information is reflected in NaPTAN. It may be helpful to link a digital photograph of the stop to the database.

- If you are not sure about an aspect of the data, use the tools and resources at your disposal to double check. ITOWorld is especially helpful.
- There is less chance of mistakes by using the NaPTAN Viewer to look at positional information. You can search for places names, rather than pick them from a drop-down list as before, which improves accuracy and prevents incorrect naming.
- **Important: never remove a stop from the database, or re-use an AtcoCode.**

Communication

- NaPTAN managers should also communicate new changes or new stops to bus operators, including which services may be affected and alternative stop usage arrangements if a stop is removed etc, as a matter of process. These changes will be reflected in the NaPTAN data as they downloaded, but it is helpful to provide operators with a 'heads up' in advance.

Stop names

- It is important that stops have names that are easily recognisable by the public (see 3.3 below for correct naming of stops).

AtcoCodes

- Once AtcoCodes have been allocated, they must appear in the local NaPTAN database even if the new stop is never created for whatever reason. In such circumstances, the record should be flagged as Deleted.

3.3 Correct naming of stops

- 3.3.1 Correct naming and consistency is key to RTPi accuracy and should be addressed from the offset. The correct naming of stops is the responsibility of the NaPTAN manager, who should be in complete control of the process.
- 3.3.2 Stops should be given a simple CommonName – typically the name of a nearby landmark, or a nearby side-street or (in some cases) the name of the street on which the stop is located. It should **NOT** be a composite of two street names, or of a landmark and a street name.
- 3.3.3 Displays for real-time systems, ticketing systems, etc may require a shorter name – the ShortCommonName – and provision exists in NaPTAN v2 for such a short version to exist.
- 3.3.4 If a stop is landmarked against a public house and it changes its name, it is often good practice to keep the name of the old pub as an alternative name in NaPTAN.

3.4 Bus stop movement

- 3.4.1 If a stop is to be moved temporarily, NaPTAN makes provision for such events in the Stop Availability section of the schema to keep a record of temporary changes, specifying when the change takes effect and when it will cease.

- 3.4.2 If a stop is being moved permanently a matter of metres from the old location, new GPS coordinates should be taken from the new location and the original AtcoCodes and NaPTANcodes should remain. Stop name, locality-association, stoptype can all be changed to reflect the stop's new position.
- 3.4.3 If a stop is being permanently moved more than 20m, it must be deleted and a new one created.
- 3.4.4 Ensure communication with those who need to know about changes, updates etc. In many cases this will be with the NaPTAN manager who is in charge of compiling and uploading NaPTAN data. Teams should rely on efficient cross-communication for updates and changes.
- 3.4.5 Changes should be communicated to the NaPTAN manager as quickly as possible, in order for the database to be kept as accurate as possible which will assist in maintaining accurate RTPI.
- 3.4.6 Communicate any changes to the bus operator as a matter of practice. Schedule a regular meeting if necessary.
- 3.4.7 Use NaPTAN visualisation tools to check the new position.

3.5 Bus stop removal

- 3.5.1 If a stop ceases to exist it should never be deleted from the NaPTAN database, it is essential that each NaPTAN record is retained permanently. Stops which cease to exist should instead be marked as Deleted and an explanation of what has happened should be included in the notes field. Deleted stops should not be excluded from the export file as this will create Pending records.

3.6 Monitoring stop changes and general maintenance

- 3.6.1 This will generally be ongoing and should be monitored closely. Regular site survey work and observation should be used to ensure location accuracy. Changes to bus stops, landmark information etc., should all be monitored on a regular basis and communicated to NaPTAN manager in the first instance. Points to remember are:
 - Use NaPTAN Viewer regularly to review and check NaPTAN points, including names and directions. This is a particularly useful tool for visualising data and is accessible via the internet.
 - In many cases, Traveline will report back any NaPTAN points that are causing errors – this will also help with data review and monitoring.
 - Keeping an open line of communications with your bus operator is beneficial. This way, an operator can inform the LA of any issues that may arise with stop position, etc. A positive step would be to include an update on NaPTAN issues in regular RTI meetings with bus operators.
 - Working with a neighbouring authority to overcome boundary NaPTAN problems is also essential.

3.7 Uploading changes to current database contractor

3.7.1 Good practice when uploading NaPTAN data to current contractor include:

- Use an editor to validate and convert files to XML. The editor will then produce a file which will then need to be uploaded via HTTP via the following URL: http://www.journeyweb.org.uk/file_upload.htm. This makes it easier for the current contractor to manage the data and provide timely updates.
- In some circumstances zipped files can be emailed to Current contractor, but this is generally discouraged.

A NaPTAN resource guide

A.1 Introduction

- A.1.1 The following resource guide gives local authority and bus operator stakeholders an idea of the level of resources required to maintain a NaPTAN database and ensure that accuracy is upheld for the sake of the RTI system and for EBSR.

A.2 Resources required for local authorities

NaPTAN manager

- A.2.1 Local authorities should nominate one member of the transport team who should have full access to the NaPTAN database as part of his day to day responsibilities. It isn't necessary to have a dedicated NaPTAN manager as the work required can be done by an existing team member. A certain level of training/knowledge is required for use of a NaPTAN editor, NaPTAN Viewer and the ITOWorld visual tool.
- A.2.2 The NaPTAN Manager will normally be a nominated person who is also responsible for other tasks, with NaPTAN being but one part of their day job.
- A.2.3 Also required are a team of transport planners and public transport developers who are responsible for locating new stop sites and providing key details (locational, names, landmarks etc) to the NaPTAN manager for entering into the database. Having such a team is normal practice in local authorities in the UK.
- A.2.4 Managing NaPTAN shouldn't be resource intensive, but instead should be a relatively simple and quick process than can be carried out by a nominated member of staff. Estimates of how many man hours are spent on NaPTAN maintenance range from less than half an hour to correct stop data every couple of weeks, to 1-2 hours per month to add new stops as required.
- A.2.5 It is recommended that staff should 'keep on top of' NaPTAN maintenance and not let a backlog build up.
- A.2.6 NaPTAN managers should seek to hold regular meetings with their bus operator partners and Traveline.

A.3 Resources required for bus operators

- A.3.1 The amount and structure of the resource will depend on the size and organisation of the operator, software used and its configuration. In small companies, this can be done by few people on a part-time basis at local level, whereas in the larger groups data may be stored and maintained centrally; even then some local input will be required. Except in some rare cases, the people involved will have other work to do as well as maintaining stop data.
- A.3.2 At least one person in each organisation should have a reasonable working knowledge of the NaPTAN schema, basic data management and the use of aids such as the NaPTAN Viewer and ITOWorld tool (where available).