Darwin User Guide

Live Departure Boards Staff Version Web Service

National Rail Enquiries

WA063A02411 issue 5

12 May 2016

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Contents

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DISTRIBUTION

1   Project Master File
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ISSUE RECORD

Issue	Date	Purpose
1	18/05/12	First issue
2	14/08/14	Updated for Darwin R3.3
3	08/06/15	Updated for Darwin R3.6
4	27/11/15	Updated for Darwin R3.8
5	12/05/2016	Updated for Darwin R3.9

1 Introduction

This document describes how to interface to the Live Departure Boards (LDB) Staff Version Web Service. The service is implemented as a standard SOAP XML web service over an HTTP transport.

The reader is expected to be IT literate and so the use of operating systems is not covered in this document.

1.1 References

1. WA063A01601 RTTI2 FDS
2. WA063A01707 Darwin SSS

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2   LDB Staff Version Web Service

The current WSDL interface schema for the service can be found at
"https://realtime.nationalrail.co.uk/ldbsvws/wsdl.aspx?ver=yyyy-mm-dd&refver=yyyy-mm-dd".

The WSDL for any supported previous versions of the service can be found at
"https://realtime.nationalrail.co.uk/ldbsvws/wsdl.aspx?ver=yyyy-mm-dd", where yyyy-mm-dd
is replaced by the correct version number (obtained from the targetNamespace of the
schema). Clients should always use the current version, but previous versions will continue
to be maintained whenever possible. However, this cannot be guaranteed for all future
changes, so developers should periodically check this page and the WSDL for new versions
and migrate their clients to the latest version as soon as possible.

There are two version identifiers that may be supplied. The "ver" identifier is used for
selecting a specific version of the LDBSVWS schema. The "refver" identifier is used for
selecting a specific version of the LDBSVWS reference data schema. Any combination of
these parameters may be supplied.

It is expected that a client will use an automatic proxy generation tool to produce the client
proxy objects used to interface to the web service. Such a tool can be simply pointed at the
URL given above, or the required WSDL & XSD files can be downloaded and used locally.

A client should always enable compression on the HTTP transport when making requests,
whenever this is supported.

Note. For the avoidance of doubt, be aware that the web service end-point, as defined in the
WSDL interface, expects a SOAP XML message and cannot be accessed from a Web
browser.

2.1   Token

Licensed users whose IP address is not known to the service will be issued with a Token
code to access staff web services. This token shall be passed as a SOAP Header value.
The service will reject all requests with no Token or an incorrect Token code.

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2.2   LDBSV Web Service Operations

The LDB Staff Version Web Service implements the following operations:

StationBoard **GetArrivalDepartureBoardByCRS**(numRows, crs, time, timeWindow, filtercrs, filterType, filterTOC, services, getNonPassengerServices)

StationBoard **GetArrivalDepartureBoardByTIPLOC**(numRows, tiploc, time, timeWindow, filterTiploc, filterType, filterTOC, services, getNonPassengerServices)

StationBoard **GetArrivalBoardByCRS**(numRows, crs, time, timeWindow, filtercrs, filterType, filterTOC, services, getNonPassengerServices)

StationBoard **GetArrivalBoardByTIPLOC**(numRows, tiploc, time, timeWindow, filterTiploc, filterType, filterTOC, services, getNonPassengerServices)

StationBoard **GetDepartureBoardByCRS**(numRows, crs, time, timeWindow, filtercrs, filterType, filterTOC, services, getNonPassengerServices)

StationBoard **GetDepartureBoardByTIPLOC**(numRows, tiploc, time, timeWindow, filterTiploc, filterType, filterTOC, services, getNonPassengerServices)

StationBoardWithDetails **GetArrBoardWithDetails**(numRows, crs, time, timeWindow, filtercrs, filterType, filterTOC, services, getNonPassengerServices)

StationBoardWithDetails **GetDepBoardWithDetails**(numRows, crs, time, timeWindow, filtercrs, filterType, filterTOC, services, getNonPassengerServices)

StationBoardWithDetails **GetArrDepBoardWithDetails**(numRows, crs, time, timeWindow, filtercrs, filterType, filterTOC, services, getNonPassengerServices)

DeparturesBoard **GetNextDepartures**(crs, filterList, time, timeWindow, filterTOC, services)

DeparturesBoard **GetFastestDepartures**(crs, filterList, time, timeWindow, filterTOC, services)

DeparturesBoardWithDetails **GetNextDeparturesWithDetails**(crs, filterList, time, timeWindow, filterTOC, services)

DeparturesBoardWithDetails **GetFastestDeparturesWithDetails**(crs, filterList, time, timeWindow, filterTOC, services)

ServiceList **QueryServices**(serviceID, sdd, filterTime, filtercrs, tocFilter)

ServiceDetails **GetServiceDetailsByRID**(rid)

ReasonDescription **GetReasonCode**(reasonCode)

ReasonDescription[] **GetReasonCodeList**()

DisruptionItem[] **GetDisruptionList**(crs[])

SourceInstanceName[] **GetSourceInstanceNames**()

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HistoricDepartureBoard **GetHistoricDepartureBoard**(numRows, crs, historicDateTime, historicDateTimeSpecified, depBoardDate, depBoardDateSpecified, depBoardTime, depBoardTimeSpecified, timeWindow, filterCRS, filterCRSType, filterCRSTypeSpecified, filterTOC)
HistoricServiceDetails **GetHistoricServiceDetails**(serviceUID, scheduleStartDate, scheduleStartDateSpecified, historicDateTime, historicDateTimeSpecified)

HistoricTimeLine **GetHistoricTimeLine**(serviceUID, scheduleStartDate, scheduleStartDateSpecified, historicDateTime, historicDateTimeSpecified, fullTiploc)

HistoricServiceList **QueryHistoricServices**(serviceID, historicDateTime, historicDateTimeSpecified, scheduleStartDate, scheduleStartDateSpecified, timeFilter, timeFilterSpecified, routeCRSFilter, tocFilter)

The station board operations are of 3 types: a board listing departures only, a board listing arrivals only and a board that lists combined arrivals and departures. A client should request the most specific board needed for their use. For example, if only departures from a station are required then the GetDepartureBoardByCRS or GetDepartureBoardByTIPLOC operation should be used, rather than the GetArrivalDepartureBoardByCRS or GetArrivalDepartureBoardByTIPLOC operation.

When requesting a station board, 4 mandatory parameters must be supplied. The four mandatory parameters are the maximum number of rows that should be returned in the station board, the CRS code of the requested station (or TIPLOC where requesting a board based on TIPLOC), the start time of the required station board and the number of minutes added to the time parameter to give the end time of the station board. It is the caller's responsibility to maintain a list of valid CRS codes. A current list of CRS codes may be obtained using the reference data functionality defined in this document.

The web service client should only request the number of rows that are required for display of the required station board. For example, if the user interface only has space to display a list of 10 services, then numRows should always be set to 10. The Web Service will impose a maximum limit on the size of a station board, that may change dynamically according to the load on the service. At any time, the service may return less than the requested number of rows.

For each of the station boards, an optional "filter" may be applied. The filter allows the station board to be restricted by services that are going either to or from another station. The **filterCrs** and **filterTiploc** parameters identify which station the returned station board is filtered by (depending on which operation is requested). If this parameter is not supplied then the returned board will be un-filtered. If the parameter is present then the **filterType** parameter determines if the board is filtered by services either "from" or "to" the filterCrs or filterTiploc location. The default value of the filterType parameter is "to".

An optional **filterTOC** parameter can be supplied. This parameter specifies the TOC of services required to be returned in the station board.

An optional **services** parameter can also be supplied. This parameter specifies the type of services required to be returned in the station board. This value is a mask of characters that identify each type of service required. The values that can be passed are :

P   Train Services (Default value if no parameter is supplied).

B   Bus Services.

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S   Ship Services.

The optional parameter **getNonPassengerServices** is a boolean and a client must be configured (in Darwin) with the ability to use this parameter in order for it to take effect. Darwin processes the parameter as follows:

- **If** getNonPassengerServices = false (default) **or** the client is not configured to use the parameter **then** only services which make a passenger call at the crs/tiploc location and a passenger call at the filtercrs/ filterTiploc location (if supplied) will be considered.
- **If** getNonPassengerServices = true **and** the client is configured to use the parameter **then** only services which make a passenger call or operational call at the crs/tiploc location and a passenger call or operational call at the filtercrs/filterTiploc location (if supplied) will be considered.

The **QueryServices** operation has been defined to allow the querying of services and will return a list of matching services. This list of ServiceListItems is returned by supplying a start date and either one of the following three identifiers:

UID   The ITPS Unique Train Identifier of the service required.

RSID   The ITPS Retail Service ID of the service required.

TrainID   The TrainID (Headcode) of the service required.

The **GetServiceDetailsByRID** operation can then be used with a unique RID returned by QueryServices to get the full details for a single service.

For the **QueryServices** operation, an optional "filterTime" may be applied. The filter time filters the returned list of services. Only services that are scheduled to run during the supplied time will be returned. The **filterCrs** parameter identifies which station the returned ServiceList is filtered by. If this parameter is not supplied then the returned list will be un-filtered. An optional **filterTOC** parameter can also be supplied. This parameter specifies the TOC of services required to be returned in the list

Two operations are also provided to retrieve either a complete list of Reason Codes or details of an individual Reason Code.

If an error occurs during execution of an operation (including detection of invalid parameter values, or the unavailability of the underlying LDB service), it will be communicated back to the client by means of a SOAP Fault. This will usually be translated by the user's proxy generation tools to an exception in the generated language code.

A departure board is similar to but not identical with the station board. The departure board contains a list of service items each one associated with one of the CRS codes in the supplied crs filter list.

When requesting a departure board, 2 mandatory parameters must be supplied. The two mandatory parameters are the CRS code of the requested station and a list of CRSs that are the destinations of the requested services.

3　Popular Departure Boards

3.1　GetNextDepartures

Returns the next service to depart from the current location and arrive at the requested location(s), based on the forecast departure time from the current location. If there are no services to a requested destination the response contains the CRS code and an empty ServiceItem.

The operation GetNextDepartures has the following parameters:

crs	The CRS code of a requested station origin.
filterList	A list of CRS codes that are the destinations from the above CRS
time	Time of departure board. (Optional)
timeWindow	The number of minutes added to the time parameter to give the end time of the departure board.
filterTOC	An optional TOC code that will filter the returned departure board. (Optional)
services	See sec. 2.2. Default = "PBS", i.e. trains, buses and ships

The operation returns a Departure board which contains the following repeated members:

crs	The CRS code of the destination
ServiceItem	Service item, described above

3.2　GetFastestDepartures

Returns the next service to depart from the current location and arrive at the requested location(s), based on the forecast arrival time at the requested location. If there are no services to a requested destination the response contains the CRS code and an empty ServiceItem.

The operation GetFastestDepartures has the following parameters:

crs	The CRS code of a requested station origin.
filterList	A list of CRS codes that are the destinations from the above CRS
time	Time of departure board. (Optional)
timeWindow	The number of minutes added to the time parameter to give the end time of the departure board.
filterTOC	An optional TOC code that will filter the returned departure board. (Optional)
services	See sec. 2.2. Default = "PBS", i.e. trains, buses and ships

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The operation returns a Departure board which contains the following repeated members:

crs	The CRS code of the destination
ServiceItem	Service item, described above

4   LDBSV Reference Data Web Service Operations

The reference data web service is also available via LDBSVWS. This provides reference information that clarifies the data returned from the real time train information operations provided by LDBSVWS. This service exposes the following functions.

ReasonDescription **GetReasonCode**(reasonCode)

This operation provides the same functionality as the LDBSV equivalent.

ReasonDescription[] **GetReasonCodeList**()

This operation provides the same functionality as the LDBSV equivalent.

SourceInstanceName[] **GetSourceInstanceNames**()

This operation provides the same functionality as the LDBSV equivalent.

GetTOCListRespose **GetTOCList(**currentVersion**)**

The currentVersion parameter may be empty.

Provides a reference list of current train operating companies configured in Darwin.

Where the currentVersion parameter is not the same as the version of the reference data, or empty, returns a reference data set of TOC information, consisting of TOC code and TOC name pairs, and the current version of the reference data information.

Where the currentVersion parameter is the same as the version of the reference data, an unchanged result is returned.

GetStationListResponse **GetStationList(**currentVersion**)**

The currentVersion parameter may be empty.

Provides a reference list of possible public calling locations configured in Darwin.

Where the currentVersion parameter is not the same as the version of the reference data, or empty, returns a reference data set of public calling point information, consisting of Location Name and CRS code pairs, and the current version of the reference data information.

Where the currentVersion parameter is the same as the version of the reference data, an unchanged result is returned.

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5   Data Interpretation

Each of the station board operations returns either a StationBoard or StationBoardWithDetails object. This object contains the following members:

generatedAt	The time at which the station board was generated.
locationName	The name of the location that the station board is for.
crs	The CRS code of the location that the station board is for.
filterLocationName	If a filter was requested, the location name of the filter location.
filtercrs	If a filter was requested, the CRS code of the filter location.
filterType	If a filter was requested, the type of filter.
stationManager	The name of the TOC that manages this station, or a generic name (e.g. "Bus Station") where there is no manager.
stationManagerCode	The code of the TOC that manages this station.
nrccMessages	An optional list of textual messages that should be displayed with the station board. The message may include embedded and xml encoded HTML-like hyperlinks and paragraphs. The messages are typically used to display important disruption information that applies to the location that the station board was for. Any embedded <p> tags are used to force a new-line in the output. Embedded <a> tags allow links to external web pages that may provide more information. Output channels that do not support HTML should strip out the <a> tags and just leave the enclosed text.
platformsAreHidden	If this flag is present with the value true, then Darwin is configured never to show platforms at this location and any platforms supplied should not be used for public display.
qos	A value to indicate the "quality of service" at a particular station. The value ranges from 0.0 to 1.0, where 1.0 means good and 0.0 means bad. Note this value may not be returned if the client is not configured accordingly.
isTruncated	Will be present with the value "true" if more services exist in the time window but have not been returned because the request limit has been reached.
servicesAreUnavailable	An optional value that indicates if services are currently available for this station board. If this value is present with the value "false" then no services will be returned in the service lists. This value may be set, for example, if access to a station has been closed to the public at short notice, even though the scheduled services are still running. It would be usual in such cases for one of the nrccMessages to describe why the list of services has been suppressed.
trainServices busServices ferryServices	Each of these lists contains a ServiceItem object for each service of the relevant type that is to appear on the station board. Each or all of these lists may contain zero items, or may not be present at all. Where the call is to a "WithDetails" function, this will contain a list of

	ServiceItemWithCallingPoints objects.

The ServiceItem and ServiceItemWithCallingPoints objects in the station board service lists have the following members:

rid	A unique RTTI ID for this service that can be used to obtain full details of the service.
uid	The ITPS Train UID value for this service, or if one is not available, then an RTTI allocated replacement.
trainid	The Train ID value (headcode) for this service.
rsid	The Retail Service ID for this service, if known.
sdd	The Scheduled Departure Date of this service.
operator	The Train Operating Company of this service.
operatorCode	The Train Operating Company code of this service.
origin	A list of EndPointLocation objects giving origins of this service. Note that a service may have more than one origin, if the service comprises of multiple trains that join at a previous location in the schedule. Origins will only be available for Arrival and Arrival & Departure station boards.
destination	A list of EndPointLocation objects giving destinations of this service. Note that a service may have more than one destination, if the service comprises of multiple trains that divide at a subsequent location in the schedule. Destinations will only be available for Departure and Arrival & Departure station boards.
currentOrigins	A list of origins of this service. Note that a service may have more than one origin.
currentDestinations	A list of destinations of this service. Note that a service may have more than one destination.
isCharter	If present with the value "true" then this is a charter service.
isPassengerService	f present with the value "false" then this is not a passenger service and it shall not be published to the public.
sta	An optional Scheduled Time of Arrival of the service at the station board location. Arrival times will only be available for Arrival and Arrival & Departure station boards but may also not be present at locations that are not scheduled to arrive at the location (e.g. the origin).
ata	The actual time of arrival. Will only be present if sta is also present and arrivalType has the value "Actual".
eta	An optional Estimated Time of Arrival of the service at the station board location. Arrival times will only be available for Arrival and Arrival & Departure station boards and only where an sta time is present.
arrivalType	The type of arrival forecast at this location. Will only be present if sta is also present.
std	An optional Scheduled Time of Departure of the service at the

	station board location. Departure times will only be available for Departure and Arrival & Departure station boards but may also not be present at locations that are not scheduled to depart at the location (e.g. the destination).
atd	The actual time of departure. Will only be present if std is also present and departureType has the value "Actual".
etd	An optional Estimated Time of Departure of the service at the station board location. Departure times will only be available for Departure and Arrival & Departure station boards and only where an std time is present.
departureType	The type of departure forecast at this location. Will only be present if std is also present.
platform	An optional platform number for the service at this location. This will only be present where available and if the station board platformsAreUnreliable value is "true" should not be used for public display.
isCircularRoute	If this value is present and has the value "true" then the service is operating on a circular route through the network and will call again at this location later on its journey. The user interface should indicate this fact to the user, to help them choose the correct service from a set of similar alternatives.
isCancelled	If present with the value "true" then the service is cancelled at this location.
adhocAlerts	A list of Adhoc Alers related to this locationa for this service.
filterLocationCancelled	A boolean to indicate that if there is any filter location exist its cancelled or not.
filterLocationOperational	A boolean to indicate that the filter location (if any) is an operational call. This will only be set if "isOperationalCall" is not present or has a "false" value.
isOperationalCall	If present with the value "true" then this is an operational call at the location and the service shall not be published to the public.
platformIsHidden	If present with the value "true" then the platform number should be treated as advisory only and is not displayed to the public.
serviceIsSupressed	If present with the value "true" then the service has been suppressed and will not be displayed at the station.
arrivalSource	The source code of the forecast/movement of expected time of arrival.
arrivalSourceInstance	The source description of the forecast/movement of expected time of arrival.
departureSource	The source code of the forecast/movement of expected time of departure.
departureSourceInstance	The source description of the forecast/movement of expected time of departure.
cancelReason	The cancellation reason for this service.

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delayReason	The delay reason for this service.
category	The ITPS Train Category code for this service.
isReverseFormation	True if the service is operating in the reverse of its normal formation.
activities	The ITPS activity codes for this location.
length	The train length (number of units) at this location. If not supplied, or zero, the length is unknown.
detachFront	True if the service detaches units from the front at this location.
previousLocations subsequentLocations	These elements will only appear in "WithDetails" requests. Contains lists of calling points relevant to the location the service is being view from.

The 'WithDetails' requests return arrays of ServiceItemLocation objects which have the following members:

locationName	The display name of this location
tiploc	The Tiploc code of this location
crs	The CRS code of this location, if available
isPass	If present with the value "true" then this is a passing location. There will be no arrival times supplied and the departure times should be interpreted as pass times. Note that passing locations are only supplied to clients that have been configured to receive them
isCancelled	Indicates that the service is cancelled at this location. Note that if this value is set to "true" then no eta/etd will be supplied, but an ata/atd may be present
platform	The platform number that the service is expected to use at this location, if known
platformIsHidden	If present with the value "true" then the platform number should not be displayed to the public.
sta	The scheduled time of arrival of this service at this location. If no sta is present then this is the origin of this service or it does not set down passengers at this location
ata	The actual time of arrival. Will only be present if sta is also present and arrivalType has the value "Actual".
eta	The estimated time of arrival. Will only be present if sta is also present and arrivalType has the value "Forecast".
arrivalType	The type of arrival forecast at this location. Will only be present if sta is also present.
std	The scheduled time of departure of this service at this location. If no std is present then this is the destination of this service or it does not pick up passengers at this location.
atd	The actual time of departure. Will only be present if std is also

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	present and departureType has the value "Actual".
etd	The estimated time of departure. Will only be present if std is also present and departureType has the value "Forecast".
isOperational	If present with the value "true" then this is an operational calling location. Any scheduled arrival and departure times supplied will be working times, rather than the usual public times. Note that operational locations are only supplied to clients that have been configured to receive them.
serviceIsSuppressed	If present with the value "true" then the service has been suppressed at this location and will not be displayed at the station.
departureType	The type of departure forecast at this location. Will only be present if std is also present.
arrivalSource	The source code of the forecast/movement of expected time of arrival.
arrivalSourceInstance	The source description of the forecast/movement of expected time of arrival.
departureSource	The source code of the forecast/movement of expected time of departure.
departureSourceInstance	The source description of the forecast/movement of expected time of departure.
associations	A list of Assocations that occur at this location
lateness	a number to indicate the value of lateness if the train is overdure.
adhocAlerts	A list of active Adhoc Alert texts for to this location.

Each of the departure board operations returns either a DepartureBoard or DepartureBoardWithDetails object. This object contains the following members:

generatedAt	The time at which the station board was generated.
locationName	The name of the location that the station board is for.
crs	The CRS code of the location that the station board is for.
filterLocationName	If a filter was requested, the location name of the filter location.
filtercrs	If a filter was requested, the CRS code of the filter location.
filterType	If a filter was requested, the type of filter.
stationManager	The name of the TOC that manages this station, or a generic name (e.g. "Bus Station") where there is no manager.
stationManagerCode	The code of the TOC that manages this station.
nrccMessages	An optional list of textual messages that should be displayed with the station board. The message may include embedded and xml encoded

	HTML-like hyperlinks and paragraphs. The messages are typically used to display important disruption information that applies to the location that the station board was for. Any embedded <p> tags are used to force a new-line in the output. Embedded <a> tags allow links to external web pages that may provide more information. Output channels that do not support HTML should strip out the <a> tags and just leave the enclosed text.
platformsAreHidden	If this flag is present with the value true, then Darwin is configured never to show platforms at this location and any platforms supplied should not be used for public display.
servicesAreUnavailable	An optional value that indicates if services are currently available for this station board. If this value is present with the value "false" then no services will be returned in the service lists. This value may be set, for example, if access to a station has been closed to the public at short notice, even though the scheduled services are still running. It would be usual in such cases for one of the nrccMessages to describe why the list of services has been suppressed.
trainServices busServices ferryServices	Each of these lists contains a DepartureItem object for each service of the relevant type that is to appear on the station board. Each or all of these lists may contain zero items, or may not be present at all. Where the call is to a "WithDetails" function, this will contain a list of DepartureItemWithCallingPoints objects.

The DepartureItem and DepartureItemWithLocations objects in the DepartureBoard service lists have the following members:

rid	A unique RTTI ID for this service that can be used to obtain full details of the service.
uid	The ITPS Train UID value for this service, or if one is not available, then an RTTI allocated replacement.
trainid	The Train ID value (headcode) for this service.
rsid	The Retail Service ID for this service, if known.
crs	The CRS code of the location.
sdd	The Scheduled Departure Date of this service.
operator	The Train Operating Company of this service.
operatorCode	The Train Operating Company code of this service.
origin	A list of EndPointLocation objects giving origins of this service. Note that a service may have more than one origin, if the service comprises of multiple trains that join at a previous location in the schedule. Origins will only be available for Arrival and Arrival & Departure station boards.
destination	A list of EndPointLocation objects giving destinations of this service. Note that a service may have more than one destination, if the service comprises of multiple trains that divide at a subsequent

	location in the schedule. Destinations will only be available for Departure and Arrival & Departure station boards.
sta	An optional Scheduled Time of Arrival of the service at the station board location. Arrival times will only be available for Arrival and Arrival & Departure station boards but may also not be present at locations that are not scheduled to arrive at the location (e.g. the origin).
ata	The actual time of arrival. Will only be present if sta is also present and arrivalType has the value "Actual".
eta	An optional Estimated Time of Arrival of the service at the station board location. Arrival times will only be available for Arrival and Arrival & Departure station boards and only where an sta time is present.
arrivalType	The type of arrival forecast at this location. Will only be present if sta is also present.
arrivalIsUncertain	If present with the value "true" then the eta is to be treated as an "uncertain" value.
currentOrigins	A list of origins of this service. Note that a service may have more than one origin.
currentDestinations	A list of destinations of this service. Note that a service may have more than one destination.
atd	The actual time of departure. Will only be present if std is also present and departureType has the value "Actual".
etd	An optional Estimated Time of Departure of the service at the station board location. Departure times will only be available for Departure and Arrival & Departure station boards and only where an std time is present.
departureType	The type of departure forecast at this location. Will only be present if std is also present.
departureIsUncertain	If present with the value "true" then the etd is to be treated as an "uncertain" value.
platform	An optional platform number for the service at this location. This will only be present where available and if the station board platformsAreUnreliable value is "true" should not be used for public display.
isCircularRoute	If this value is present and has the value "true" then the service is operating on a circular route through the network and will call again at this location later on its journey. The user interface should indicate this fact to the user, to help them choose the correct service from a set of similar alternatives.
isCancelled	If present with the value "true" then the service is cancelled at this location.
isDeleted	If present with the value "true" then the service is deleted. Refer to the documentation for the meaning of deleted services.
isDelayed	If present with the value "true" then the service has been delayed.

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adhocAlerts	A list of Adhoc Alers related to this locationa for this service.
arrivalSource	The source code of the forecast/movement of expected time of arrival.
arrivalSourceInstance	The source description of the forecast/movement of expected time of arrival.
isPassengerService	If present with the value "false" then this is not a passenger service and it shall not be published to the public. Note that non-passenger services are only supplied to clients that have been configured to receive them.
filterLocationCancelled	A boolean to indicate that if there is any filter location exist its cancelled or not.
filterLocationOperational	A boolean to indicate that the filter location (if any) is an operational call. This will only be set if "isOperationalCall" is not present or has a "false" value.
isOperationalCall	If present with the value "true" then this is an operational call at the location and the service shall not be published to the public.
platformIsHidden	If present with the value "true" then the platform number should be treated as advisory only and is not displayed to the public.
serviceIsSupressed	If present with the value "true" then the service has been suppressed and will not be displayed at the station.
delayReason	A delay reason for this service (if any)
cancelReason	The cancellation reason for this service (if any).
category	The ITPS Train Category code for this service.
isReverseFormation	True if the service is operating in the reverse of its normal formation.
activities	The ITPS activity codes for this location.
length	The train length (number of units) at this location. If not supplied, or zero, the length is unknown.
detachFront	True if the service detaches units from the front at this location.

The EndPointLocation object has the following members:

locationName	The name of the location.
crs	The CRS code of the location.
tiploc	The Tiploc code of this location.
via	An optional via text that should be displayed after the location, to indicate further information about an ambiguous route. Note that vias are only present for ServiceLocation objects that appear in destination lists.
isOperationalEndPoint	If present with the value "true" then this is an operational end point, not to be advertised to passengers
futureChangeTo	A text string containing service type (Bus/Ferry/Train) to which will be changed in the future

The four operations to retrieve details of a Service by differing identifiers return a ServiceDetails object. This object contains the following members:

generatedAt	The time at which the service details were generated.
rid	A unique RTTI ID for this service.
uid	The ITPS Train UID value for this service, or if one is not available, then an RTTI allocated replacement.
trainid	The Train ID value (headcode) for this service.
rsid	The Retail Service ID for this service, if known.
sdd	The Scheduled Departure Date of this service.
operator	The Train Operating Company of this service.
operatorCode	The Train Operating Company code of this service.
serviceType	The type of service (train, bus, ferry) that these details represent. Note that real-time information (e.g. eta, etd, ata, atd, isCancelled, etc.) is only available and present for train services.
isPassengerService	If present with the value "false" then this is not a passenger service and it shall not be published to the public. Note that non-passenger services are only supplied to clients that have been configured to receive them.
category	The ITPS Train Category code for this service.
isReverseFormation	True if the service is operating in the reverse of its normal formation.
isCharter	If present with the value "true" then this is a charter service.
cancelReason	A cancellation reason for this service (if any)
delayReason	A delay reason for this service (if any)
locations	A list of the ServiceLocations in the schedule. This may, or may not, contain passing locations, depending on the permissions granted to the caller.

The Overdue object has the following members:

odtime	The time at which RTTI expected the service to make a report.
isOverdueAt	True if the service is Overdue at a station location (station1). If the value is false then the service has become Overdue at a non-station point between two station locations (station1 and station2). Note that these station locations might be passing locations and will not necessarily appear in the service's Locations list.
odStation1	The name of the station where the report should have been received, or immediately before the location where the report should have been received.
odStation1CRS	The CRS code of the station where the report should have been received, or immediately before the location where the report should have been

	received.
odStation1Tiploc	The Tiploc code of the station where the report should have been received, or immediately before the location where the report should have been received.
odStation2	The name of the station immediately after the location where the report should have been received.
odStation2CRS	The CRS code of the station immediately after the location where the report should have been received.
odStation2Tiploc	The Tiploc code of the station immediately after the location where the report should have been received.

The ServiceLocations object has the following members:

locationName	The display name of this location
tiploc	The Tiploc code of this location
crs	The CRS code of this location, if available
isPass	If present with the value "true" then this is a passing location. There will be no arrival times supplied and the departure times should be interpreted as pass times. Note that passing locations are only supplied to clients that have been configured to receive them
isCancelled	Indicates that the service is cancelled at this location. Note that if this value is set to "true" then no eta/etd will be supplied, but an ata/atd may be present
isOperational	If present with the value "true" then this is an operational calling location. Any scheduled arrival and departure times supplied will be working times, rather than the usual public times. Note that operational locations are only supplied to clients that have been configured to receive them.
platform	The platform number that the service is expected to use at this location, if known
falseDest	A False Destination that should be displayed for this location.
fdTiploc	The Tiploc code of a False Destination.
sta	The scheduled time of arrival of this service at this location. If no sta is present then this is the origin of this service or it does not set down passengers at this location
ata	The actual time of arrival. Will only be present if sta is also present and arrivalType has the value "Actual".
eta	The estimated time of arrival. Will only be present if sta is also present and arrivalType has the value "Forecast".
arrivalType	The type of arrival forecast at this location. Will only be present if sta is also present.
std	The scheduled time of departure of this service at this location. If no std is present then this is the destination of this service or it does

	not pick up passengers at this location.
atd	The actual time of departure. Will only be present if std is also present and departureType has the value "Actual".
etd	The estimated time of departure. Will only be present if std is also present and departureType has the value "Forecast".
departureType	The type of departure forecast at this location. Will only be present if std is also present.
arrivalSource	The source code of the forecast/movement of expected time of arrival.
arrivalSourceInstance	The source description of the forecast/movement of expected time of arrival.
departureSource	The source code of the forecast/movement of expected time of departure.
departureSourceInstance	The source description of the forecast/movement of expected time of departure.
associations	A list of Assocations that occur at this location
platformIsHidden	If present with the value "true" then the platform number should be treated as advisory only and is not displayed to the public.
serviceIsSupressed	If present with the value "true" then the service has been suppressed and will not be displayed at the station.
adhocAlerts	A list of Adhoc Alers related to this location for this service.
activities	The ITPS activity codes for this location.
length	The train length (number of units) at this location. If not supplied, or zero, the length is unknown.
detachFront	True if the service detaches units from the front at this location.
lateness	a number to indicate the value of lateness if the train is overdue.

The Associations object has the following members:

category	The association category, either Join or Divide or Linked-From or Linked-To.
rid	A unique RTTI ID for this service that can be used to obtain full details of the service.
uid	The ITPS Train UID value for this service, or if one is not available, then an RTTI allocated replacement.
trainid	The Train ID value (headcode) for this service.
rsid	The Retail Service ID for this service, if known.
sdd	The Scheduled Departure Date of this service.
origin	The origin location of the associated service.
originCRS	The origin CRS code of the associated service.
originTiploc	The origin Tiploc code of the associated service.

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destination	The destination location of the associated service.
destCRS	The destination CRS code of the associated service.
destTiploc	The destination Tiploc code of the associated service.
isCancelled	If present with the value "true" then this association is cancelled and will no longer happen.

The operation QueryServices returns an object called ServiceList. This object contains the following members:

scheduleStartDate	The Scheduled Departure Date of the services.
serviceList	A list of ServiceListItem as detailed below

The object ServiceList contains a list of an object called ServiceListItem. This object contains the following members:

rid	A unique RTTI ID for this service.
uid	The Train UID value for this service.
trainid	The Train ID value (headcode) for this service.
rsid	The Retail Service ID for this service, if known.
originName	The display name of the origin station of this historic service timeline.
originCRS	The CRS code of the origin station of this historic service timeline.
destinationName	The display name of the destination of this historic service timeline.
destinationCRS	The CRS code of the destination of this historic service timeline.
sheduledDeparture	A timestamp of the time that this service is scheduled to departure from origin.
sheduledArrival	A timestamp of the time that this service is scheduled to arrive at destination.

The two operations to retrieve a list of Reason Codes or details of a reason code return an array of ReasonDescription objects or a ReasonDescription object respectively. This object contains the following members:

code	The Reason Code value of this reason.
delayReason	The delay reason for this Reason Code.
cancReason	The cancellation reason for this Reason Code.

The operation GetDisruptionList returns a list of DisruptionItem objects. This object contains the following members:

generatedAt	A timestamp of the time this item was generated.
crs	The CRS code of a requested station.
disruptions	A list of the DisruptionMessages active at this station.

The DisruptionMessage object contains the following members:

id	The unique identifier value of this message.
category	The Category of the message, as defined by one of the following values (Train service, Station, Connecting services, System related, Miscellaneous, Prior (trains), Prior (other)).
severity	The Severity of the message, as defined by one of the enumerated values.
isSuppressed	If present with the value "true" then the departure board at this station is suppressed.
xhtmlMessage	The message text, which may include embedded and xml encoded HTML-like hyperlinks and paragraphs.
description	A short description of the message content.

6 Historic Enquiry Port

Special Notice: Access to historic data is restricted to authorised users only and must be enabled on a per-user by special request to NRE.

There is no access to historic data via OpenLDBSVWS.

6.1 GetHistoricDepartureBoard

The operation GetHistoricDepartureBoard has got the following parameters:

numRows	The maximum number of services that are required to be returned.
crs	The CRS code of a requested station.
historicDateTime	The start time of the required historic departure board. (Optional)
depBoardDate	Date of historic departure board. Previous, same or next day. (Optional)
depBoardTime	Time of historic departure board. (Optional)
timeWindow	The number of minutes added to the time parameter to give the end time of the departure board.
filterCRS	An optional CRS code that will filter the returned historic departure board. (Optional)
filterCRSType	A string to specify the type of CRS filter which can be "to" or "from". (Optional)

filterTOC	An optional TOC code that will filter the returned historic departure board. (Optional)
services	See sec. 2.2. Default = "PBS", i.e. trains, buses and ships
getNonPassengerServices	See sec. 2.2

The operation GetHistoricDepartureBoard returns an object called HistoricDepartureBoard. This object contains the following members:

departureDateTime	The date and time of the train has departured.
historicDateTime	The start date and time of the required historic departure board.
trainServices	A list of the HistoricServiceItem.
busServices	A list of the HistoricServiceItem.
ferryServices	A list of the HistoricServiceItem.
generatedAt	The time at which the station board was generated.
locationName	The name of the location that the station board is for.
crs	The CRS code of the location that the station board is for.
filterLocationName	If a filter was requested, the location name of the filter location.
filtercrs	If a filter was requested, the CRS code of the filter location.
filterType	If a filter was requested, the type of filter.
stationManager	The name of the TOC that manages this station, or a generic name (e.g. "Bus Station") where there is no manager.
stationManagerCode	The code of the TOC that manages this station.
nrccMessages	An optional list of textual messages that should be displayed with the station board. The message may include embedded and xml encoded HTML-like hyperlinks and paragraphs. The messages are typically used to display important disruption information that applies to the location that the station board was for. Any embedded <p> tags are used to force a new-line in the output. Embedded <a> tags allow links to external web pages that may provide more information. Output channels that do not support HTML should strip out the <a> tags and just leave the enclosed text.
platformsAreHidden	If this flag is present with the value true, then Darwin is configured never to show platforms at this location and any platforms supplied should not be used for public display.
servicesAreUnavailable	An optional value that indicates if services are currently available for this station board. If this value is present with the value "false" then no services will be returned in the service lists. This value may be set, for example, if access to a station has been closed to the public at short notice, even though the scheduled services are still running. It would be usual in such cases for one of the nrccMessages to describe why the list of services has been suppressed.

The object HistoricDepartureBoard contains a list of an object called HistoricServiceItem.
This object contains the following members:

uid	The Train UID value for this service.
trainid	The Train ID value (headcode) for this service.
rsid	The Retail Service ID for this service, if known.
rid	A unique RTTI ID for this service.
sdd	The Scheduled Departure Date of this service.
operator	The Train Operating Company of this service.
operatorCode	The Train Operating Company code of this service.
currentOrigins	A list of origins of this service. Note that a service may have more than one origin.
currentDestinations	A list of destinations of this service. Note that a service may have more than one destination.
origin	The origin location of the associated service.
destination	The destination location of the associated service.
sta	The scheduled time of arrival of this service at this location.
ata	The actual time of arrival.
eta	The estimated time of arrival.
arrivalType	The type of arrival forecast at this location.
departureType	The type of departure forecast at this location.
std	The scheduled time of departure of this service at this location.
atd	The actual time of departure.
etd	The estimated time of departure.
platform	The platform number if known.
isCancelled	If present with the value "true" then the service is cancelled at this location.
adhocAlerts	A list of Adhoc Alers related to this location for this service.
filterLocationCancelled	A boolean to indicate that if there is any filter location exist its cancelled or not.
filterLocationOperational	A boolean to indicate that the filter location (if any) is an operational call. This will only be set if "isOperationalCall" is not present or has a "false" value.
isOperationalCall	If present with the value "true" then this is an operational call at the location and the service shall not be published to the public.
platformIsHidden	If present with the value "true" then the platform number should be treated as advisory only and is not displayed to the public.
serviceIsSupressed	If present with the value "true" then the service has been suppressed and will not be displayed at the station.

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isDeleted	If present and "true" then the service is deleted.
arrivalSource	The source code of the forecast/movement of expected time of arrival.
arrivalSourceInstance	The source description of the forecast/movement of expected time of arrival.
departureSource	The source code of the forecast/movement of expected time of departure.
departureSourceInstance	The source description of the forecast/movement of expected time of departure.
isLateReinstated	A boolean to indicate this train is late reinstated at this location.
isPassengerService	If present with the value "false" then this is not a passenger service and it shall not be published to the public. Note that non-passenger services are only supplied to clients that have been configured to receive them.
isCircularRoute	If this value is present and has the value "true" then the service is operating on a circular route through the network and will call again at this location later on its journey. The user interface should indicate this fact to the user, to help them choose the correct service from a set of similar alternatives.

6.2 GetHistoricServiceDetails

The operation GetHistoricServiceDetails has got the following parameters:

serviceUID	The UID of the train service.
scheduleStartDate	The scheduled start date of the service. Same, previous or next day. (Optional)
historicDateTime	The start date and time of the required historic departure board. (Optional)

The operation GetHistoricServiceDetails returns an object called HistoricServiceDetails. This object contains the following members:

historicDateTime	The start date and time of the required historic service details.
uid	The Train UID value for this service.
trainid	The Train ID value (headcode) for this service.
rsid	The Retail Service ID for this service, if known.
isDeleted	If present and "true" then the service is deleted.
locations	A list of the HistoricServiceLocations.
cancelReason	The cancellation reason for this service.
delayReason	The delay reason for this service.

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generatedAt	The time at which the service details were generated.
rid	A unique RTTI ID for this service.
sdd	The Scheduled Departure Date of this service.
operator	The Train Operating Company of this service.
operatorCode	The Train Operating Company code of this service.
serviceType	The type of service (train, bus, ferry) that these details represent. Note that real-time information (e.g. eta, etd, ata, atd, isCancelled, etc.) is only available and present for train services.
isPassengerService	If present with the value "false" then this is not a passenger service and it shall not be published to the public. Note that non-passenger services are only supplied to clients that have been configured to receive them.
isCharter	If present with the value "true" then this is a charter service.

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The object GetHistoricServiceDetails contains a list of an object called HistoricServiceLocations. This object contains the following members:

locationName	The display name of this location.
locationCrs	The CRS code of this location, if available.
fullTiploc	The FullTiploc code of this location.
isPass	If present and "true" then this is a passing location.
isCancelled	Indicates that the service is cancelled at this location.
isLateReinstated	Indicate this train is late reinstated at this location.
falseDest	A False Destination that should be displayed for this location.
fdTiploc	The Tiploc code of a False Destination.
isOperational	If present with the value "true" then this is an operational calling location. Any scheduled arrival and departure times supplied will be working times, rather than the usual public times. Note that operational locations are only supplied to clients that have been configured to receive them.
platform	The platform number, if known.
platformIsHidden	If present with the value "true" then the platform number should be treated as advisory only and is not displayed to the public.
serviceIsSuppressed	If present with the value "true" then the service has been suppressed at this location and will not be displayed at the station.
sta	The scheduled time of arrival of this service at this location.
ata	The actual time of arrival.
eta	The estimated time of arrival.
arrivalType	The type of arrival forecast at this location.
std	The scheduled time of departure of this service at this location.
atd	The actual time of departure.
etd	The estimated time of departure.
departureType	The type of departure forecast at this location.
lateness	A number to indicate the value of lateness if the train is overdure.
hasAdhocAlert	A boolean to inform there is any adhoc alert attached to this location.
arrivalSource	The source code of the forecast/movement of expected time of arrival.
arrivalSourceInstance	The source description of the forecast/movement of expected time of arrival.
departureSource	The source code of the forecast/movement of expected time of departure.
departureSourceInstance	The source description of the forecast/movement of expected time of departure.

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associations	A list of Assocations that occur at this location

The History Associations object has the following members:

category	The association category could be Join or Divide or Linked-From or Linked-To.
rid	A unique RTTI ID for this service that can be used to obtain full details of the service.
uid	The ITPS Train UID value for this service, or if one is not available, then an RTTI allocated replacement.
trainid	The Train ID value (headcode) for this service.
rsid	The Retail Service ID for this service, if known.
sdd	The Scheduled Departure Date of this service.
origin	The origin location of the associated service.
originCRS	The origin CRS code of the associated service.
originTiploc	The origin Tiploc code of the associated service.
destination	The destination location of the associated service.
destCRS	The destination CRS code of the associated service.
destTiploc	The destination Tiploc code of the associated service.

6.3   GetHistoricTimeLine

The operation GetHistoricTimeLine has got the following parameters:

serviceUID	The UID of the train service.
scheduleStartDate	The schedule start date of the service. Same, previous or next day.
historicDateTime	The start date and time of the required historic departure board.
fullTiploc	The FullTiploc of the location for which the timeline is required.

The operation GetHistoricTimeLine returns an object called HistoricTimeLine. This object contains the following members:

historicDateTime	The start date and time of the required historic service details.
departureDateTime	The date and time of the train has departured.
uid	The Train UID value for this service.
trainid	The Train ID value (headcode) for this service.
rsid	The Retail Service ID for this service, if known.
rid	A unique RTTI ID for this service that can be used to obtain full details of the service.
operatorName	The Train Operating Company of this service.

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originName	The display name of the origin station of this historic service timeline.
originCRS	The CRS code of the origin station of this historic service timeline.
destinationName	The display name of the destination of this historic service timeline.
destinationCRS	The CRS code of the destination of this historic service timeline.
currentLocationName	The display name of the current station of this historic timeline.
currentLocationCRS	The CRS code of the current station of this historic timeline.
currentLocationTiploc	The Tiploc code code of the current station of this historic timeline.
currentLocationOperator	The current staion operating company of this historic timeline.
prevLocationName	The display name of the previous station of this historic timeline.
prevLocationCRS	The CRS code of the previous station of this historic timeline.
prevLocationTiploc	The Tiploc code code of the previous station of this historic timeline.
prevLocationIsFirst	A boolean to indicate the previous location is the first location in the journey.
nextLocationName	The display name of the next station of this historic timeline.
nextLocationCRS	The CRS code of the next station of this historic timeline.
nextLocationTiploc	The Tiploc code code of the next station of this historic timeline.
nextLocationIsLast	A boolean to indicate the next location is the last location in the journey.
timelineEvents	A list of the TimelineEvent.

The object GetHistoricTimeLine contains a list of an object called TimelineEvent. This object contains the following members:

eventTime	The date and time of the historic timeline event.
eventSource	The source of the historic timeline event
isDeletedService	A Boolean to indicate that the service was marked as deleted at the time of this timeline entry
isDeletedLocation	A Boolean to indicate that this timeline entry marks the deletion of the location from the service. The location will not be present in service details at this historic time
isOperational	If present with the value "true" then this is an operational calling location. Any scheduled arrival and departure times supplied will be working times, rather than the usual public times. Note that operational locations are only supplied to clients that have been configured to receive them.
falseDestination	The false destination name if exist.
isPass	A boolean to indicate this location is a pass location or its a stop.
isCancelled	A boolean to indicate this train is cancelled at this location.

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isLateReinstated	A boolean to indicate this train is late reinstated at this location.
fdTiploc	The Tiploc code of a False Destination.
sta	The scheduled time of arrival of this service at this location. If no sta is present then this is the origin of this service or it does not set down passengers at this location.
eta	The estimated time of arrival. Will only be present if sta is also present and arrivalType has the value "Forecast".
ata	The actual time of arrival. Will only be present if sta is also present and arrivalType has the value "Actual".
arrivalType	The type of arrival forecast at this location.
std	The scheduled time of departure of this service at this location. If no std is present then this is the destination of this service or it does not pick up passengers at this location.
etd	The estimated time of departure. Will only be present if std is also present and departureType has the value "Forecast".
atd	The actual time of departure. Will only be present if std is also present and departureType has the value "Actual".
departureType	The type of departure forecast at this location.
platform	The platform number if known.
platformIsHidden	If present with the value "true" then the platform number should be treated as advisory only and is not displayed to the public.
serviceIsSuppressed	If present with the value "true" then the service has been suppressed at this location and will not be displayed at the station.
lateness	The number of minutes that this train is late.
activeAdhocExist	If present and "true" then this location has got an active adhoc alert at this moment.
arrivalSource	A string to indicate the source code of the forecast/movement of expected time of arrival.
arrivalSourceInstance	A string to indicate the source description of the forecast/movement of expected time of arrival.
departureSource	A string to indicate the source code of the forecast/movement of expected time of departure.
departureSourceInstance	A string to indicate the source description of the forecast/movement of expected time of departure.
disruptionReason	A disruption reason for this service at the historic time. If the service is cancelled, this will be a cancellation reason. If the service is running late at this location, this will be a late-running reason.

6.4   QueryHistoricServices

The operation QueryHistoricServices has got the following parameters:

serviceID	The ID of the service. Must be a valid UID, Headcode, or RSID.
historicDateTime	The start date and time of the required historic departure board. (Optional)
scheduleStartDate	The schedule start date of the service. Same, previous or next day. (Optional)
timeFilter	A time filter for when the the service is scheduled to be running.(Optional)
routeCRSFilter	A CRS code filter of location through which the service is scheduled to pass. (Optional)
tocFilter	A TOC code that will filter the returned services. (Optional)

The operation QueryHistoricServices returns an object called HistoricServiceList. This object contains the following members:

scheduleStartDate	The Scheduled Departure Date of the services.
serviceList	A list of ServiceListItem as detailed above

6.5   GetSourceInstanceNames

The operation GetSourceInstanceNames has got no parameters to send. This operation returns a list of object called SourceInstanceName. This object contains the following members:

id	The ID of a CIS Source Instance.
name	The Name of a CIS Source Instance.

In the objects detailed above, certain properties were specified to return time values. These values will either return absolute times, formatted as a HH:MM string, or a text string such as (but not limited to) "On time", "No report" or "Cancelled". These times should be output in the user interface exactly as supplied. In some cases, the time value may have an asterisk ("*") appended to indicate that the value is "uncertain".

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7   Glossary

Acronym or Abbreviation	Meaning & Purpose
ATOC	Association of Train Operators
RTTI	Real Time Train Information. Now known as Darwin.
TOC	Train Operating Company
LDB	Live Departure Boards
LDB-SV	Live Departure Boards Staff Version
LDB-MSV	Live Departure Boards Mobile Staff Version
LDBWS	Live Departure Boards Web Service
LDBSVWS	Live Departure Boards Staff Version Web Service
OpenLDBWS	Open data version of LDBWS
OpenLDSVWS	Open data version of LDBSVWS

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