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THE CITY OF EDINBURGH COUNCIL

MYBUSTRACKER WEB SERVICES

THIRD-PARTY DEVELOPER'S GUIDE

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Certification

RELEASE

VERSION	PAGES	CHAPTER	PURPOSE OF THE RELEASE
A	32		First issue
B	45		JSON-based Web Services Description Update of getBusStops, getServicePoints, getBusTimes functions. Update of the WSDL file. Use of the 24-hour UTC format for key generation.
C	65		Multi-operators Management. New fields available in the getBusTimes function (terminus, journey, bus id, serviceDiversion). New WebServices available : getJourneyTimes, getDiversions, getDiversionsPoints. Update of the WSDL file.
D			
E			

VALIDATION

VERSION	DATE	WRITER Nom Visa	CONTROLLER Nom Visa	QUALITY CONTROL Nom Visa	APPROVER Nom Visa
A	16/05/11	A.DEVILLECHABROLLE	P.VERDIN	C.BACHELOT	T.HUENTZ
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C	07/02/12	A.DEVILLECHABROLLE	P.VERDIN	C.BACHELOT	P.VERDIN
D					
E					

CONTENTS

(F3D02-02)G

I   PURPOSE OF THE DOCUMENT

The purpose of this document is to provide third-party developers with the technical documentation of the MyBusTracker Web Services Application.

I.1   RESPONSABILITIES ASSOCIATED WITH DOCUMENTS CREATION

The Ineo Systrans head of project is responsible for the establishment of this document and submits it for approval to the City of Edinburgh Council.

I.2   RESPONSABILITIES ASSOCIATED WITH DOCUMENTS EVOLUTION

After approval by the City of Edinburgh Council, any request for evolution coming:
- from Ineo Systrans is the subject of a request for derogation from CEC
- from CEC is the subject of a new proposal from Ineo Systrans

I.3   APPLICABLE DOCUMENTS

N°	REFERENCE	REVISION	TITLE
[AD1]	DOS10229	A	Web Services for Bustracker
[AD2]	DOS11335	A	Web Development Proposal for Bustracker

II   OVERVIEW

The Web Services are based on the 2 following protocols/formats:

- ~ **SOAP** 1.1.
    - o Invocation Style : **DOCUMENT**
    - o Encoding Style: **LITERAL**.
- ~ **JSON**
    - o Encoding Style: **OBJECT**.

An application key has to be provided by CEC allowing third-party developers to access MyBusTracker WS Application.

III ACCESS AND SECURITY PROTOCOLS

III.1 URL ACCESS

MyBusTracker WS is accessible via: http://ws.mybustracker.co.uk

If no parameter is given, the SOAP-based Web Services are loaded by default.

To access JSON-based Web Services, the parameter « **module=json** » is required: http://ws.mybustracker.co.uk/?module=json.

III.2 APPLICATION KEY

Identification is required in every MyBustracker WS request. Therefore, CEC provides third-party developers with an application key.

For security reasons, this assigned application key has to be encrypted using MD5 hash algorithm before sending it on (32 alphanumeric characters).

To do so, the MD5 hash key (http://en.wikipedia.org/wiki/MD5) is generated by the concatenation of the application key and a timestamp string (variable changing over the time) **in the 24-hour UTC format**.

The timestamp string is **YYYYMMDDHH**, where:

- ◆ YYYY is 4 digits year
- ◆ MM is 2 digit month
- ◆ DD is 2 digit day
- ◆ HH is 2 digit hour (24h format)

For instance, if the application key is ABCDEFGHIJKLMNOPQRSTUVWXY and the request is made at 18h34, April 27th, 2011, the MD5 hash of the application key that developers have to transmit is:

md5(ABCDEFGHIJKLMNOPQRSTUVWXY2011042718) = 149e15ab76beb9cf3cb195468e0c75ae

IV MYBUSTRACKER WEB SERVICES DESCRIPTION

IV.1 OVERVIEW

The MyBustracker WS functions are:

- **getTopoId**: Returns the ID of the topology version in use.
- **getServices**: Returns the list of the services in use.
- **getServicePoints**: Returns a service route description.
- **getDests**: Returns the list of the destinations.
- **getBusStops:** Returns the list of the bus stops.
- **getBusTimes:** Returns the list of the traffic timetables.
- **getDisruptions:** Returns the list of the on-going disruptions.
- **getJourneyTimes :** Returns the bus arrival times of a specific journey
- **getDiversions :** Returns the list of the on-going diversions
- **getDiversionPoints :** Returns a diversion route description

IV.2 TOPOLOGICAL WEB SERVICES

IV.2.1 GETTOPOID FUNCTION

This function gives the ID of the topology version in use. This ID is generated only once a day, at the start of the operation (04:00). Its value is updated if the topology has been changed.

IV.2.1.1 FORMAT OF THE REQUEST

TopoIdRequest Object			
Field	**Format**	**Description**	**Possible values**
key	String (32 alphanumeric characters)	MD5 hash of the application key	
operatorId	String (32 alphanumeric characters)	Operator ID	Optional Possible values: **LB** -> for Lothian Buses **0** or empty –> All operators

IV.2.1.2 FORMAT OF THE RESPONSE

TopoIdResponse Object			
Field	**Format**	**Description**	**Possible values**
topoId	String	Topology identifier	
operatorId	String (32 alphanumeric characters)	Operator ID	**LB** -> for Lothian Buses

IV.2.1.3 ESTIMATION OF THE RESPONSE DATA FLOW

The response contains a few hundreds of bytes. Therefore, the compression impact is limited.

IV.2.2 GETSERVICES FUNCTION

This function returns the list of the services in use.

IV.2.2.1 FORMAT OF THE REQUEST

ServicesRequest Object			
Field	**Format**	**Description**	**Possible values**
key	String (32 alphanumeric characters)	MD5 hash of the application key	
operatorId	String (32 alphanumeric characters)	Operator ID	Optional Possible values: **LB** -> for Lothian Buses **0** or empty –> All operators

IV.2.2.2 FORMAT OF THE RESPONSE

ServicesResponse Object			
Field	**Format**	**Description**	**Possible values**
services	List of **Service** Object	Services list	

Service Object			
Field	**Format**	**Description**	**Possible values**
Ref	String	Service reference (unique)	
operatorId	String (32 alphanumeric characters)	Operator ID	**LB** -> for Lothian Buses
Mnemo	String	Service mnemonic	
Name	String	Service name	
Dests	List of Strings	List of served destination references	

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IV.2.2.3   ESTIMATION OF THE RESPONSE DATA FLOW

The response contains a few tens of kilobytes without compression, and a few kilobytes with compression.

IV.2.3   GETSERVICEPOINTS FUNCTION

This function returns a description of a service route in order to plot it on a map.

IV.2.3.1   FORMAT OF THE REQUEST

ServicePointsRequest Object			
Field	**Format**	**Description**	**Possible values**
Key	String (32 alphanumeric characters)	MD5 hash of the application Key	
Ref	String	Service reference (unique)	
operatorId	String (32 alphanumeric characters)	Operator ID	Optional Possible values: **LB** -> for Lothian Buses **0** or empty –> All operators

IV.2.3.2   FORMAT OF THE RESPONSE

ServicePointsResponse Object			
Field	**Format**	**Description**	**Possible values**
Ref	String	Service reference (unique)	
operatorId	String (32 alphanumeric characters)	Operator ID	**LB** -> for Lothian Buses
servicePoints	List of **ServicePoint**	Coordinate list of the service points	

ServicePoint Object			
Field	**Format**	**Description**	**Possible values**
chainage	Integer	Service Chaining Id. Every chaining has a unique service pattern	
Order	Integer	Order point	- Real bus stops are multiple of 1000 (1000, 2000, …) - Intermediate service points are: 1001, 1002, …, 2001, 2002, … - 1000 is always the departure stop point
X	Float	Latitude (WGS84 coordinate)	
Y	Float	Longitude (WGS84 coordinate)	

IV.2.3.3 ESTIMATION OF THE RESPONSE DATA FLOW

The response contains a few tens of kilobytes without compression, and a few kilobytes with compression.

IV.2.4 GETDESTS FUNCTION

This function returns the list of the destinations.

IV.2.4.1 FORMAT OF THE REQUEST

DestsRequest Object			
Field	**Format**	**Description**	**Possible values**
Key	String (32 alphanumeric characters)	MD5 hash of the application key	
operatorId	String (32 alphanumeric characters)	Operator ID	Optional Possible values: **LB** -> for Lothian Buses **0** or empty –> All operators

IV.2.4.2 FORMAT OF THE RESPONSE

DestsResponse Object			
Field	**Format**	**Description**	**Possible values**
dests	List of **Dest** objects	Destination list	

Dest Object			
Field	**Format**	**Description**	**Possible values**
ref	String	Destination reference (unique)	
operatorId	String (32 alphanumeric characters)	Operator ID	**LB** -> for Lothian Buses
name	String	Destination name	
direction	String	Destination direction	**A** --> Inbound **R** --> Outbound
service	String	Service reference (unique)	

IV.2.4.3 ESTIMATION OF THE RESPONSE DATA FLOW

The response contains a few tens of kilobytes without compression, and a few kilobytes with compression.

IV.2.5 GETBUSSTOPS FUNCTION

This function returns the list of the bus stops.

IV.2.5.1 FORMAT OF THE REQUEST

BusStopsRequest Object			
Field	**Format**	**Description**	**Possible values**
key	String (32 alphanumeric characters)	MD5 hash of the application key	
operatorId	String (32 alphanumeric characters)	Operator ID	Optional Possible values: **LB** -> for Lothian Buses **0** or empty –> All operators

IV.2.5.2 FORMAT OF THE RESPONSE

BusStopsResponse Object			
Field	**Format**	**Description**	**Possible values**
busStops	List of **BusStop** objects	Bus stop List	

BusStop Object			
Field	**Format**	**Description**	**Possible values**
ref	String	Bus stop reference (unique)	
operatorId	String (32 alphanumeric characters)	Operator ID	**LB** -> for Lothian Buses
stopId	String	Bus stop code (SMS)	
name	String	Bus stop name	
x	Float	Bus stop latitude (WGS84 coordinate)	
y	Float	Bus stop longitude (WGS84 coordinate)	
cap	Integer	Stop orientation in Degrees from North (counter-clockwise)	
services	String list	List of service references serving the stop	
dests	String list	List of destination references linked to the stop	

IV.2.5.3 ESTIMATION OF THE RESPONSE DATA FLOW

The response contains more than one megabyte without compression, and more than one hundred of kilobytes with compression.

IV.3 DISRUPTIONS WEB SERVICE

IV.3.1 GETDISRUPTIONS FUNCTION

This function gives the list of the on-going disruptions of a specific type. If the type is not specified, every on-going disruption is transmitted.

IV.3.1.1 FORMAT OF THE REQUEST

DisruptionsRequest Object			
Field	**Format**	**Description**	**Possible values**
key	String (32 alphanumeric characters)	MD5 hash of the application key	
type	Integer	Disruption type	**0** -> All Disruptions (default value) **1** -> Network Disruption **2** -> Service Disruption **3** -> Bus Stop Disruption
operatorId	String (32 alphanumeric characters)	Operator ID	Optional Possible values: **LB** -> for Lothian Buses **0** or empty –> All operators

IV.3.1.2 FORMAT OF THE RESPONSE

DisruptionsResponse Object			
Field	**Format**	**Description**	**Possible values**
disruptions	List of **Disruption** objects	Disruption List	

Disruption Object			
Field	**Format**	**Description**	**Possible values**
id	String	Disruption unique id	
operatorId	String (32 alphanumeric characters)	Operator ID	**LB** -> for Lothian Buses
level	Integer	Disruption importance level	**1** -> Informative **2** -> minor **3** -> major
type	Integer	Disruption type	**1** -> Network Disruption **2** -> Service Disruption **3** -> Bus Stop Disruption
targets	String list	List of the service or bus stop references concerned by the disruption	If type = global, no reference (empty list) If type = Service, list of services reference. If type = Bus Stop, list of Bus stops reference.
validUntil	DateTime (format ISO8601)	End of the disruption (Date and Time)	Optional
message	String	Disruption message	

IV.3.1.3   ESTIMATION OF THE RESPONSE DATA FLOW

The response data flow is variable (depending on the numbers of ongoing disruptions). In most of cases, the response should not be over a few tens of kilobytes without compression, and a few kilobytes with compression.

IV.3.2 getDiversions Function

This function gives the list of the on-going diversions.

IV.3.2.1 FORMAT OF THE REQUEST

DiversionsRequest Object			
Field	**Format**	**Description**	**Possible values**
key	String (32 alphanumeric characters)	MD5 hash of the application key	
refService	String	Service reference	Optional Default value: ALL
operatorId	String (32 alphanumeric characters)	Operator ID	Optional Possible values: **LB** -> for Lothian Buses **0** or empty –> All operators
Day	Integer	Departure day	Optional From **0** (present day) to **3** (day+3) Default value: **0**

IV.3.2.2 FORMAT OF THE RESPONSE

DiversionsResponse Object			
Field	**Format**	**Description**	**Possible values**
Diversions	List of **Diversion** objects	Disruption List	

Diversion Object			
Field	**Format**	**Description**	**Possible values**
ref	String	Disruption unique ref	
diversionId	String	Disruption ID. A same diversion can be applied on more than one service. This ID is used in the GetDiversionPoint Function.	
operatorId	String (32 alphanumeric characters)	Operator ID	**LB** -> for Lothian Buses
refService	String	Service reference	
startStopId	String	SMS stop ID prior to the start of the diversion	
startStopName	String	SMS stop name prior to the start of the diversion	
startDate	DateTime (ISO8601 format)	Start Date and Time of the diversion	
endStopId	String	SMS stop ID after the end of the diversion	
endStopName	String	SMS stop name after the end of the diversion	
endDate	DateTime (ISO8601 format)	End Date and Time of the diversion	
days	String	Application days. **Not used**	
length	Integer	Diversion length in meter	
timeShift	Integer	Time shift cause by the diversion (minutes)	Positive or negative value
cancelledBusStops	**CancelledBusStop** Object list	Bus Stops list that are cancelled because of the diversion	
temporaryBusStops	Liste d'objet **TemporaryBusStop** Object list	Temporary Bus Stops that on the diversion route. **Not used**	

CancelledBusStop			
Object			
Field	**Format**	**Description**	**Possible values**
stopId	String	Canceled Bus Stop sms ID	
stopName	String	Canceled Bus Stop name	
replacedStopId	String	Bus Stop sms ID that replaces the canceled bus stop **Not used**	
replaceStopName	String	Bus Stop name that replaces the canceled bus stop **Not used**	

IV.3.2.3 ESTIMATION OF THE RESPONSE DATA FLOW

The response data flow is variable (depending on the numbers of on-going diversions). In most of cases, the response should not be over a few tens of kilobytes without compression, and a few kilobytes with compression.

IV.3.3   GETDIVERSIONPOINTS FUNCTION

This function returns a description of a diversion in order to plot it on a map.

IV.3.3.1   FORMAT OF THE REQUEST

DiversionPointsRequest Object			
Field	**Format**	**Description**	**Possible values**
Key	String (32 alphanumeric characters)	MD5 hash of the application Key	
DiversionId	String	Disruption ID. A same diversion can be applied on more than one service. This ID is used in the GetDiversion Function.	
operatorId	String (32 alphanumeric characters)	Operator ID	Optional Possible values: **LB** -> for Lothian Buses **0** or empty –> All operators

IV.3.3.2   FORMAT OF THE RESPONSE

DiversionPointsResponse Object			
Field	**Format**	**Description**	**Possible values**
DiversionId	String	Disruption ID. A same diversion can be applied on more than one service. This ID is used in the GetDiversion Function.	
operatorId	String (32 alphanumeric characters)	Operator ID	**LB** for Lothian Buses
DiversionPoints	List of **ServicePoint**	Coordinate list of the diversion points	

ServicePoint Object			
Field	**Format**	**Description**	**Possible values**
Order	Integer	Order point	**0** -> First point N -1 -> Nth point
X	Float	Latitude (WGS84 coordinate)	
Y	Float	Longitude (WGS84 coordinate)	

IV.3.3.3 ESTIMATION OF THE RESPONSE DATA FLOW

The response contains a few tens of kilobytes without compression, and a few kilobytes with compression.

IV.4 BUSTIMES WEB SERVICE

IV.4.1 GETBUSTIMES FUNCTION

This function returns the list of the timetables requested.

IV.4.1.1 FORMAT OF THE REQUEST

BusTimesRequest Object			
Field	**Format**	**Description**	**Possible values**
key	String (32 alphanumeric characters)	MD5 hash of the application key	
timeRequests	List of **TimeRequest** objects	List of timetable requests	From **1** to **5** requests
nb	Integer	Number of Departures	Optional From **1** to **10**. Default value: **2**
Day	Integer	Departure day	Optional From **0** (present day) to **3** (day+3) Default value: **0**
Time	String HH:MM (24hours format)	Departure time	Default value: now

TimeRequest Object			
Field	**Format**	**Description**	**Possible values**
stopId	String	Bus stop SMS identifier	
refService	String	Service reference	Default value: ALL
refDest	String	Destination reference	Default value: ALL
operatorId	String (32 alphanumeric characters)	Operator ID	Optional Possible values: **LB** -> for Lothian Buses **0** or empty −> All operators

IV.4.1.2 FORMAT OF THE RESPONSE

BusTimesResponse Object			
Field	**Format**	**Description**	**Possible values**
busTimes	Lists of **BusTime** objects	List of BusTimes	

BusTime Object			
Field	**Format**	**Description**	**Possible values**
operatorId	String (32 alphanumeric characters)	Operator ID	**LB** for Lothian Buses
stopId	String	Bus stop code (SMS)	
stopName	String	Bus stop name	
refService	String	Service reference	
mnemoService	String	Service mnemonic	
refDest	String	Destination reference when the bus is not going to be turned short (timedata.type != "P")	
nameDest	String	Destination name when the bus is not going to be turned short (timedata.type != "P")	
timeDatas	Lisf of **TimeData** objects	List of bus timetables	
globalDisruption	Boolean	On-going Network disruption flag	**true** -> on-going disruption **false** -> no on-going disruption
serviceDisruption	Boolean	On-going Service disruption flag	**true** -> on-going disruption **false** -> no on-going disruption
busStopDisruption	Boolean	On-going Bus stop disruption flag	**true** -> on-going disruption **false** -> no on-going disruption
serviceDiversion	Boolean	Ongoing service diversion flag	**true** -> ongoing diversion **false** -> no ongoing diversion

TimeData Object			
Field	**Format**	**Description**	**Possible values**
Day	Integer	Day of Departure	From 0 (current day) to 3 (current day+3)
Time	String HH:MM (24hours format)	Time of passage	
Minutes	Integer	Waiting time before departure	
Reliability	String	Bus Time description	**B** -> Bus is delayed **D** -> Bus is delocated **F** -> Real time bus (not low floor equipped) **H** -> Real time bus (low floor equipped) **I** -> Bus is immobilized **N** -> Bus is neutralized **R** -> Bus with a radio fault **T** -> Estimated time **V** -> Service diverted
Type	String	Bus stop description	**D** -> Terminus Start/Stop **N** -> Normal Stop **P** -> Part Route **R** -> Reference Stop
terminus	String	SMS number of the terminal stop	To display instead of the destination when the bus is going to be turned short the timedata.type = "P"
journeyId	String	Journey ID	
busId	String	Bus Id	Fleet number. Up to 5 digits. Only filled when the Timedata.reliability !=T and when a bus is allocated to this journey

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IV.4.1.3 ESTIMATION OF THE RESPONSE DATA FLOW

The response data flow is variable (depending on the amount of bus times requested). In every case, the response should not exceed a few tens of kilobytes without compression, and a few kilobytes with compression.

IV.4.2 GETJOURNEYTIMES FUNCTION

This function returns the bus arrival times of a specific journey.

IV.4.2.1 FORMAT OF THE REQUEST

JourneyTimesRequest Object			
Field	**Format**	**Description**	**Possible values**
key	String (32 alphanumeric characters)	MD5 hash of the application key	
stopId	String	Bus stop code (SMS)	
journeyId	String (32 alphanumeric characters)	Journey ID	This ID is used to call the GetJourneyTimes function
operatorId	String (32 alphanumeric characters)	Operator ID	Optional Possible values: **LB** -> for Lothian Buses **0** or empty –> All operators
Day	Integer	Departure day	Optional From **0** (present day) to **3** (day+3) Default value: **0**

IV.4.2.2   FORMAT OF THE RESPONSE

JourneyTimesResponse Object			
Field	**Format**	**Description**	**Possible values**
journeyTimes	Lists of **journeyTime** objects	List of BusTimes	

journeyTime Object			
Field	**Format**	**Description**	**Possible values**
journeyId	String (32 alphanumeric characters)	Journey ID	This ID is used to call the getJourneyTimes function
busId	String	Bus Id	Fleet number. Up to 5 digits. Only filled when the Timedata.reliability !=T or when there is no bus yet allocated to this journey.
operatorId	String (32 alphanumeric characters)	Operator ID	**LB ->** Lothian Buses
refService	String	Service reference	
mnemoService	String	Service mnemonic	
NameService	String	Service name	
refDest	String	Destination reference	
nameDest	String	Destination name	
journeyTimesDatas	Lists of **journeyTime Data** objects	List of JourneyTimes	
globalDisruption	Boolean	Ongoing Network disruption flag	**true** -> ongoing disruption **false** -> no ongoing disruption
serviceDisruption	Boolean	Ongoing Service disruption flag	**true** -> ongoing disruption **false** -> no ongoing disruption
serviceDiversion	Boolean	Flag indiquant qu'une déviation est en cours sur la ligne	**true** -> ongoing diversion **false** -> no ongoing diversion

journeyTimeData Object			
Field	**Format**	**Description**	**Possible values**
order	Integer	Chronological order of the journey times	**0** -> For the departure stop sent in the request
stopId	String	Bus stop code (SMS)	
stopName	String	Bus stop name	
Day	Integer	Day of Departure	From **0** (current day) to **3** (current day+3)
Time	String HH:MM (24hours format)	**Arrival** Time when Order!=0. **Departure** time when Order=0	
Minutes	Integer	Waiting time before **arrival** when Order!=0. Waiting time before **departure** when Order=0	**-1** -> The bus has already left this bus stop.
Reliability	String	Bus Time description	**B** -> Bus is delayed **D** -> Bus is delocated **F** -> Real time bus (not low floor equipped) **H** -> Real time bus (low floor equipped) **I** -> Bus is immobilized **N** -> Bus is neutralized **R** -> Bus with a radio fault **T** -> Estimated time **V** -> Service diverted
Type	String	Bus stop description	**D** -> Terminus Start/Stop **N** -> Normal Stop **P** -> Part Route **R** -> Reference Stop
busStopDisruption	Boolean	Ongoing Bus stop disruption flag	**true** -> ongoing disruption **false** -> no ongoing disruption

IV.4.2.3   ESTIMATION OF THE RESPONSE DATA FLOW

The response data flow is variable (depending on the amount of journey times). In every case, the response should not exceed a few tens of kilobytes without compression, and a few kilobytes with compression.

V   SOAP-BASED WEB SERVICES

V.1   OVERVIEW

The full description of MyBusTracker Web Services is accessible through a WSDL file via:
http://ws.mybustracker.co.uk/?wsdl
The WSDL file content is also available in appendix A.

V.2   IMPLEMENTATION EXAMPLES

V.2.1   getTopoId Function

V.2.1.1   EXAMPLE OF REQUEST

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body><ns1:TopoIdRequest>
    <key>df7c98fe2f2db88debb08b70231b236c</key>
  </ns1:TopoIdRequest>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.1.2   EXAMPLE OF RESPONSE

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body><ns1:TopoIdResponse>
    <topoId>xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx</topoId>
    <operatorId>LB</operatorId>
  </ns1:TopoIdResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.2 GETSERVICES FUNCTION

V.2.2.1 EXAMPLE OF REQUEST

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body>
    <ns1:ServicesRequest>
      <key>09ec75e530e7cee9e4349373aa9f4c0b</key>
    </ns1:ServicesRequest>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.2.2 EXAMPLE OF RESPONSE

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body>
    <ns1:ServicesResponse>
      <services>
        <list>
          <ref>2305843009213693955</ref>
          <operatorId>LB</operatorId>
          <mnemo>1</mnemo><name>Easter Road - Clermiston</name>
          <dests>
            <list>2305843009213890561</list>
            <list>2305843009213923329</list>
            <list>2305843009213890560</list>
            <list>2305843009213923328</list>
          </dests>
        </list>
        <list>
          <ref>2305843009213694063</ref>
          <mnemo>2</mnemo>
          <operatorId>LB</operatorId>
          <name>The Jewel - The Gyle</name>
          <dests>
            <list>2305843009220968448</list>
            <list>2305843009221001216</list>
            <list>2305843009221001217</list>
            <list>2305843009220968449</list>
          </dests>
        </list>
        [...]
      </services>
    </ns1:ServicesResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.3 GETSERVICEPOINTS FUNCTION

V.2.3.1 EXAMPLE OF REQUEST

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-
ENV="http://schemas.xmlsoap.org/soap/envelope/" xmlns:ns1="btws">
  <SOAP-ENV:Body>
    <ns1:ServicePointsRequest>
      <key>a71d3bbb5ee10e7563b7984368a91ddb</key>
      <ref>2305843009213693955</ref>
    </ns1:ServicePointsRequest>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.3.2 EXAMPLE OF RESPONSE

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body>
    <ns1:ServicePointsResponse>
      <ref>2</ref>
      <operatorId>LB</operatorId>
      <servicePoints>
        <list>
           <chainage>5</chainage>
          <order>1000</order>
          <x>55.968</x>
          <y>-3.16836</y>
        </list>
        <list>
           <chainage>5</chainage>
          <order>1001</order>
          <x>55.9672</x>
          <y>-3.16931</y></list>
        <list>
           <chainage>5</chainage>
          <order>2000</order>
          <x>55.9663</x>
          <y>-3.16976</y>
        </list>
        <list>
           <chainage>5</chainage>
          <order>3000</order>
          <x>55.9641</x>
          <y>-3.1705</y>
        </list>
        [...]
      </servicePoints>
    </ns1:ServicePointsResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.4 getDests Function

V.2.4.1 EXAMPLE OF REQUEST

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body>
    <ns1:DestsRequest>
      <key>ecc3a75e54ca30134083ebeb1e9491e5</key>
    </ns1:DestsRequest>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.4.2 EXAMPLE OF RESPONSE

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body>
    <ns1:DestsResponse>
      <dests>
        <list>
          <ref>2305843009220018176</ref>
          <operatorId>LB</operatorId>
          <name>AIRPORT</name>
          <direction>R</direction>
          <service>2305843009213694048</service>
        </list>
        <list>
          <ref>2305843009225326592</ref>
          <operatorId>LB</operatorId>
          <name>AIRPORT</name>
          <direction>R</direction>
          <service>2305843009213694129</service>
        </list>
        <list>
          <ref>2305843009219624960</ref>
          <operatorId>LB</operatorId>
          <name>BABERTON</name>
          <direction>R</direction>
          <service>2305843009213694042</service>
        </list>
        [...]
      </dests>
    </ns1:DestsResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.5 GETBUSSTOPS FUNCTION

V.2.5.1 EXAMPLE OF REQUEST

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body>
    <ns1:BusStopsRequest>
      <key>31f1d46f28d6416649075a969d5bafec</key>
    </ns1:BusStopsRequest>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.5.2 EXAMPLE OF RESPONSE

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body><ns1:BusStopsResponse>
    <busStops>
      <list>
        <ref>11542143</ref>
        <operatorId>LB</operatorId>
        <stopId>64323574</stopId>
        <name>A702 Damhead</name>
        <x>55,8872</x>
        <y>-3,19779</y>
        <cap>33,18</cap>
        <services>
          <list>2305843009213694078</list>
          <list>2305843009213694075</list>
        </services>
        <dests>
          <list>2305843009221951489</list>
          <list>2305843009221754882</list>
        </dests>
      </list>
      <list>
        <ref>11540187</ref>
        <operatorId>LB</operatorId>
        <stopId>36232429</stopId>
        <name>A8 at RBS Gogar</name>
        <x>55,9383</x>
        <y>-3,32988</y>
        <cap>47,89</cap>
        <services>
          <list>2305843009213694048</list>
          <list>2305843009213694105</list>
        </services>
        <dests>
          <list>2305843009219985409</list>
          <list>2305843009223720961</list>
        </dests>
      </list>
      [...]
    </busStops>
  </ns1:BusStopsResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.6   **GETDISRUPTIONS FUNCTION**

V.2.6.1   **EXAMPLE OF REQUEST**

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body>
    <ns1:DisruptionsRequest>
      <key>1fb0dd2cde123b622d4d7e21972aa21e</key>
      <type>0</type>
    </ns1:DisruptionsRequest>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.6.2   **EXAMPLE OF RESPONSE**

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body>
    <ns1:DisruptionsResponse>
      <disruptions>
        <list>
          <id>5</id>
          <operatorId>LB</operatorId>
          <level>1</level>
          <type>1</type>
          <validUntil>2011-05-31T08:00:00+01:00</validUntil>
          <message>Global information example</message>
          <targets/>
        </list>
        <list>
          <id>6</id>
          <operatorId>LB</operatorId>
          <level>2</level>
          <type>2</type>
          <validUntil>2011-05-11T18:00:00+01:00</validUntil>
          <message>Service minimal disruption example</message>
          <targets>
            <list>2305843009213694078</list>
            <list>2305843009213694075</list>
          </targets>
        </list>
        <list>
          <id>7</id>
          <operatorId>LB</operatorId>
          <level>3</level>
          <type>3</type>
          <validUntil>2011-05-09T12:00:00+01:00</validUntil>
          <message>BusStop major disruption example</message>
          <targets>
            <list>11542143</list>
            <list>11540187</list>
          </targets>
        </list>
      [...]
      </disruptions>
    </ns1:DisruptionsResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.7 GETDIVERSIONS FUNCTION

V.2.7.1 EXAMPLE OF REQUEST

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope        xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body>
    <ns1:DiversionsRequest>
      <key>08eca170678085fc1403d11b989e5e73</key>
      <refService>0</refService>
      <day>0</day>
    </ns1:DiversionsRequest>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.7.2 EXAMPLE OF RESPONSE

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope        xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body>
    <ns1:DiversionsResponse>
      <diversions>
        <list>
          <ref>2147483646</ref>
          <diversionId>26</diversionId>
          <operatorId>LB</operatorId>
          <refService>214</refService>
          <startStopId>36242528</startStopId>
          <startStopName>Parliament St</startStopName>
          <startDate>2012-03-26T03:15:00+02:00</startDate>
          <endStopId>36232974</endStopId>
          <endStopName>Victoria Quay</endStopName>
          <endDate>2012-12-25T03:05:00+01:00</endDate>
          <days>1111111</days>
          <length>441</length>
          <timeShift>0</timeShift>
          <cancelledBusStops>
            <list>36232972</list>
            <list>36238752</list>
          </cancelledBusStops><temporaryBusStops/>
        </list>
        <list>
          <ref>2147483644</ref>
          <diversionId>42</diversionId>
          <operatorId>LB</operatorId>
          <refService>15</refService>
          <startStopId>36236376</startStopId>
          <startStopName>Strathearn Road</startStopName>
          <startDate>2012-05-29T16:00:00+02:00</startDate>
          <endStopId>36234856</endStopId>
          <endStopName>Montague Street</endStopName>
          <endDate>2012-12-25T03:05:00+01:00</endDate>
          <days>1111111</days>
          <length>1870</length>
```

```
        <timeShift>0</timeShift>
        <cancelledBusStops/>
        <temporaryBusStops/>
      </list>
      [...]
    </diversions>
  </ns1:DiversionsResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.8 GETDIVERSIONSPOINTS FUNCTION

V.2.8.1 EXAMPLE OF REQUEST

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope          xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body>
    <ns1:DiversionPointsRequest>
      <key>08eca170678085fc1403d11b989e5e73</key>
      <diversionId>42</diversionId>
    </ns1:DiversionPointsRequest>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.8.2 EXAMPLE OF RESPONSE

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope          xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body>
    <ns1:DiversionPointsResponse>
      <diversionId>42</diversionId>
      <operatorId>LB</operatorId>
      <diversionPoints>
        <list>
          <order>0</order>
          <x>55.93425</x>
          <y>-3.197675</y>
        </list>
        <list>
          <order>1</order>
          <x>55.93485</x>
          <y>-3.194156</y>
        </list>
        <list>
          <order>2</order>
          <x>55.937366</x>
          <y>-3.194778</y>
        </list>
        [...]
      </diversionPoints>
    </ns1:DiversionPointsResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:ENVELOPE>
```

V.2.9 GETBUSTIMES FUNCTION

V.2.9.1 EXAMPLE OF REQUEST

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body>
    <ns1:BusTimesRequest>
      <key>bbea0f0a18bb2fbe2420f564227f9a56</key>
      <timeRequests>
        <list>
          <stopId>36232323</stopId>
          <refService>2305843009213693961</refService>
          <refDest>0</refDest>
        </list>
      </timeRequests>
      <nb>2</nb>
      <day>0</day>
      <time></time>
    </ns1:BusTimesRequest>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.9.2 EXAMPLE OF RESPONSE

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body>
    <ns1:BusTimesResponse>
      <busTimes>
        <list>
          <operatorId>LB</operatorId>
          <stopId>36232323</stopId>
          <stopName>Mill Lane</stopName>
          <refService>2305843009213693961</refService>
          <mnemoService>10</mnemoService>
          <nameService>Western Harbour - Torphin</nameService>
          <refDest>2305843009214283777</refDest>
          <nameDest>WESTERN HARBOU</nameDest>
          <timeDatas>
            <list>
              <day>0</day>
              <time>16:09</time>
              <minutes>7</minutes>
              <reliability>T</reliability>
              <type>N</type>
              <terminus>36295979</terminus>
              <journeyId>2529</journeyId>
              <busId>17</busId>
            </list>
            <list>
              <day>0</day>
              <time>16:19</time>
              <minutes>17</minutes>
              <reliability>T</reliability>
              <type>N</type>
            </list>
          </timeDatas>
```

```
        <globalDisruption>false</globalDisruption>
        <serviceDisruption>false</serviceDisruption>
        <busStopDisruption>false</busStopDisruption>
        <serviceDiversion>false</serviceDiversion>
      </list>
      [...]
    </busTimes>
  </ns1:BusTimesResponse>
 </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.10 GETJOURNEYTIMES FUNCTION

V.2.10.1 EXAMPLE OF REQUEST

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/" xmlns:ns1="btws">
  <SOAP-ENV:Body>
    <ns1:JourneyTimesRequest>
      <key>08eca170678085fc1403d11b989e5e73</key>
      <stopId>36232323</stopId>
      <journeyId>1203</journeyId>
      <day>0</day>
    </ns1:JourneyTimesRequest>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

V.2.10.2 EXAMPLE OF RESPONSE

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope        xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="btws">
  <SOAP-ENV:Body>
    <ns1:JourneyTimesResponse>
      <journeyTimes>
        <list>
          <journeyId>1203</journeyId>
          <busId>25</busId>
          <operatorId>LB</operatorId>
          <refService>18</refService>
          <mnemoService>7</mnemoService>
          <nameService>Newhaven -- Royal Infirmary</nameService>
          <refDest>1179649</refDest>
          <nameDest>Newhaven</nameDest>
          <terminus>36237297</terminus>
          <journeyTimeDatas>
            <list>
              <order>0</order>
              <stopId>36232323</stopId>
              <stopName>Mill Lane</stopName>
              <day>0</day>
              <time>17:51</time>
              <minutes>14</minutes>
              <reliability>T</reliability>
              <type>P</type>
              <busStopDisruption>false</busStopDisruption>
            </list>
```

```
<list>
  <order>1</order>
  <stopId>36237329</stopId>
  <stopName>Leith Theatre</stopName>
  <day>0</day>
  <time>17:52</time>
  <minutes>1</minutes>
  <reliability>T</reliability>
  <type>N</type>
  <busStopDisruption>false</busStopDisruption>
</list>
<list>
  <order>2</order>
  <stopId>36237327</stopId>
  <stopName>South Fort Stree</stopName>
  <day>0</day>
  <time>17:52</time>
  <minutes>1</minutes>
  <reliability>T</reliability>
  <type>N</type>
  <busStopDisruption>false</busStopDisruption>
</list>
  [...]
        </journeyTimeDatas>
        <globalDisruption>true</globalDisruption>
        <serviceDisruption>false</serviceDisruption>
        <serviceDiversion>false</serviceDiversion>
      </list>
    </journeyTimes>
  </ns1:JourneyTimesResponse>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

VI JSON-BASED WEB SERVICES

VI.1 OVERVIEW

The parameters for JSON-Based Web Services requests are exclusively embedded in the URL. As specified earlier, the JSON is not the default format. So the parameter « **module=json** » is required in every request.

For example, Functions are called using the parameter « **function** », so to call the function « **getTopoId** », you need to use the following URL:

http://ws.mybustracker.co.uk/?module=json&function=getTopoId.

All the other function parameters need to be transmitted in the URL.

Also, the global parameter « **noContentType** » is available and allows developers to remove the HTTP header « Content-type : application/json » from the response.

VI.2 IMPLEMENTATION EXAMPLES

VI.2.1 FONCTION getTopoId

VI.2.1.1 EXAMPLE OF REQUEST

http://ws.mybustracker.co.uk/?module=json&key=b2bc78d58f40a6239ccfac773494ac2b&function=getTopoId

VI.2.1.2 EXAMPLE OF RESPONSE

```
{
    "topoId":"0ad934b2f387c9d882349b813893044d"
    "operatorId": "LB"
}
```

VI.2.2 GETSERVICES FUNCTION

VI.2.2.1 EXAMPLE OF REQUEST

http://ws.mybustracker.co.uk/?module=json&key=b2bc78d58f40a6239ccfac773494ac2b&function=getServices

VI.2.2.2 EXAMPLE OF RESPONSE

```json
{
    "services": [
        {
            "ref": "2",
            "operatorId": "LB",
            "mnemo": "1",
            "name": "Easter Road - Clermiston",
            "dests": [
                "163840",
                "131072",
                "131073",
                "163841",
                "163842"
            ]
        },
        {
            "ref": "4",
            "operatorId": "LB",
            "mnemo": "2",
            "name": "The Jewel -- The Gyle",
            "dests": [
                "294912",
                "294913",
                "262144",
                "262145"
            ]
        },
        [...]
    ]
}
```

VI.2.3   GETSERVICEPOINTS FUNCTION

VI.2.3.1   EXAMPLE OF REQUEST

http://ws.mybustracker.co.uk/?module=json&key=b2bc78d58f40a6239ccfac773494ac2b&function=getServicePoints&ref=1

VI.2.3.2   EXAMPLE OF RESPONSE

```json
{
    "ref": "2",
    "operatorId": "LB",
    "servicePoints": [
        {
            "chainage": 14,
            "order": 1000,
            "x": 55.968,
            "y": -3.16836
        },
        {
            "chainage": 14,
            "order": 1001,
            "x": 55.9671,
            "y": -3.16939
        },
        {
            "chainage": 14,
            "order": 2000,
            "x": 55.9663,
            "y": -3.16976
        },
        {
            "chainage": 14,
            "order": 2001,
            "x": 55.9655,
            "y": -3.17016
        },
        [...]
    ]
}
```

VI.2.4 GETDESTS FUNCTION

VI.2.4.1 EXAMPLE OF REQUEST

http://ws.mybustracker.co.uk/?module=json&key=b2bc78d58f40a6239ccfac773494ac2b&function=getDests

VI.2.4.2 EXAMPLE OF RESPONSE

```
{
    "dests": [
        {
            "ref": "9994240",
            "operatorId": "LB",
            "name": "Airport",
            "direction": "R",
            "service": "152"
        },
        {
            "ref": "6979584",
            "operatorId": "LB",
            "name": "Airport",
            "direction": "R",
            "service": "106"
        },
        [...]
    ]
}
```

VI.2.5 GETBUSSTOPS FUNCTION

VI.2.5.1 EXAMPLE OF REQUEST

http://ws.mybustracker.co.uk/?module=json&key=b2bc78d58f40a6239ccfac773494ac2b&function=getBusStops

VI.2.5.2 EXAMPLE OF RESPONSE

```
{
    "busStops": [
        {
            "ref": "2199",
            "operatorId": "LB",
            "stopId": "64323574",
            "name": "A702 Damhead",
            "x": 55.8872,
            "y": -3.19779,
            "cap": 0,
            "services": [
                "28",
                "30"
            ],
            "dests": [
                "1966080",
                "1835008",
                "1966081",
                "1835010"
            ]
        },
        {
            "ref": "250",
            "operatorId": "LB",
            "stopId": "36232429",
            "name": "A8 at RBS Gogar",
            "x": 55.9383,
            "y": -3.32988,
            "cap": 0,
            "services": [
                "106",
                "134",
                "186",
                "136"
            ],
            "dests": [
                "8912896",
                "8781824",
                "12189696",
                "6946816",
                "12189697",
                "6946817",
                "8912897",
                "8781825",
                "8912898",
                "8781827"
            ]
        },
        [...]
    ]
}
```

VI.2.6 GETDISRUPTIONS FUNCTION

VI.2.6.1 EXAMPLE OF REQUEST

http://ws.mybustracker.co.uk/?module=json&key=b2bc78d58f40a6239ccfac773494ac2b&function=getDisruptions&type=0

VI.2.6.2 EXAMPLE OF RESPONSE

```
{
    "disruptions": [
        {
            "id": "1",
            "operatorId": "LB",
            "type": 1,
            "level": 1,
            "validUntil": "2011-10-28T17:21:00+02:00",
            "message": "Global information example",
            "targets": []
        },
        {
            "id": "2",
            "operatorId": "LB",
            "type": 2,
            "level": 1,
            "validUntil": "2011-10-28T17:21:00+02:00",
            "message": "Service minimal disruption example",
            "targets": [
                "1",
                "4"
            ]
        },
        {
            "id": "3",
            "operatorId": "LB",
            "type": 3,
            "level": 1,
            "validUntil": "2011-10-28T17:21:00+02:00",
            "message": "BusStop major disruption example",
            "targets": [
                "250",
                "2229"
            ]
        }
    ]
}
```

VI.2.7 GETDIVERSIONS FUNCTION

VI.2.7.1 EXAMPLE OF REQUEST

http://ws.mybustracker.co.uk/?module=json&key=b2bc78d58f40a6239ccfac773494ac2b&function=getDiversions&refService=0

VI.2.7.2   EXAMPLE OF RESPONSE

```json
{
    "diversions": [
        {
            "ref": "2147483646",
            "diversionId": "26",
            "operatorId": "LB",
            "refService": "214",
            "startStopId": "36242528",
            "startStopName": "Parliament St",
            "startDate": "2012-03-26T03:15:00+02:00",
            "endStopId": "36232974",
            "endStopName": "Victoria Quay",
            "endDate": "2012-12-25T03:05:00+01:00",
            "days": "1111111",
            "length": 441,
            "timeShift": 0,
            "cancelledBusStops": [],
            "temporaryBusStops": []
        },
        {
            "ref": "2147483644",
            "diversionId": "42",
            "operatorId": "LB",
            "refService": "15",
            "startStopId": "36236376",
            "startStopName": "Strathearn Road",
            "startDate": "2012-05-29T16:00:00+02:00",
            "endStopId": "36234856",
            "endStopName": "Montague Street",
            "endDate": "2012-12-25T03:05:00+01:00",
            "days": "1111111",
            "length": 1870,
            "timeShift": 0,
            "cancelledBusStops": [],
            "temporaryBusStops": []
        },
        [...]
    ]
}
```

VI.2.8   GETDIVERSIONSPOINTS FUNCTION

VI.2.8.1   EXAMPLE OF REQUEST

http://ws.mybustracker.co.uk/?module=json&key=b2bc78d58f40a6239ccfac773494ac2b&function=getDiversionPoints&diversionId=42

VI.2.8.2   EXAMPLE OF RESPONSE

```
{
    "diversionId": "42",
    "operatorId": "LB",
    "diversionPoints": [
        {
            "order": 0,
            "x": 55.93425,
            "y": -3.197675
        },
        {
            "order": 1,
            "x": 55.93485,
            "y": -3.194156
        },
        {
            "order": 2,
            "x": 55.937366,
            "y": -3.194778
        },
    [...]
    ]
}
```

VI.2.9 GETBUSTIMES FUNCTION

The GetBusTimes function has a special feature: The TimeRequest parameters are sent by adding the request number to their field names to allow multiple requests.

So the TimeRequest Parameters can be:

~ Request X (from 1 to 5)
- stopIdX (stopId can be used instead of stopId1)
- refServiceX (refService can be used instead of refService1)
- refDestX (refDest can be used instead of refDest1)

VI.2.9.1 EXAMPLE OF REQUEST

http://ws.mybustracker.co.uk/?module=json&key=b2bc78d58f40a6239ccfac773494ac2b&function=getBusTimes&stopId1=36232323&stopId2=36235979

or

http://ws.mybustracker.co.uk/?module=json&key=b2bc78d58f40a6239ccfac773494ac2b&function=getBusTimes&stopId=36232323&stopId2=36235979

VI.2.9.2 EXAMPLE OF RESPONSE

```
{
    "busTimes": [
        {
            "operatorId": "LB",
            "stopId": "36232323",
            "stopName": "Mill Lane",
            "refService": "16",
            "mnemoService": "7",
            "nameService": "Newhaven - Ferniehill",
            "timeDatas": [
                {
                    "refDest": "1048576",
                    "nameDest": "Newhaven",
                    "day": 0,
                    "time": "17:37",
                    "minutes": 12,
                    "reliability": "T",
                    "type": "N",
                    "terminus": "3623632",
                    "journeyId":"4562",
                    "busId":"34"


                },
                {
                    "refDest": "1048576",
                    "nameDest": "Newhaven",
```

```
                    "day": 0,
                    "time": "17:52",
                    "minutes": 27,
                    "reliability": "T",
                    "type": "N",
                    "terminus": "3623632",
                    "journeyId":"4562",
                    "busId":"34"


                }
            ],
            "globalDisruption": true,
            "serviceDisruption": false,
            "busStopDisruption": false,
            "serviceDiversion": false
        },
        {
            "stopId": "36232323",
            "stopName": "Mill Lane",
            "refService": "20",
            "mnemoService": "10",
            "nameService": "Western Harbour - Torphin",
            "timeDatas": [
                {
                    "refDest": "1310721",
                    "nameDest": "Western Harbou",
                    "day": 0,
                    "time": "17:29",
                    "minutes": 4,
                    "reliability": "T",
                    "type": "N",
                    "terminus": "3623632",
                    "journeyId": "2465",
                    "busId": "87"

                },
                {
                    "refDest": "1310721",
                    "nameDest": "Western Harbou",
                    "day": 0,
                    "time": "17:39",
                    "minutes": 14,
                    "reliability": "T",
                    "type": "N",
                    "terminus": "3623632",
                    "journeyId": "1768",
                    "busId": "6"

                }
            ],
            "globalDisruption": true,
            "serviceDisruption": false,
            "busStopDisruption": false,
            "serviceDiversion": false
        },
        [...]
    ]
}
```

VI.2.10 GETJOURNEYTIMES FUNCTION

VI.2.10.1 EXAMPLE OF REQUEST

http://ws.mybustracker.co.uk/?module=json&key=b2bc78d58f40a6239ccfac773494ac2b&function=getJourneyTimes&stopId=36232323&journeyId=6357

VI.2.10.2 EXAMPLE OF RESPONSE

```
{
    "journeyTimes": [
        {
            "journeyId": "6357",
            "operatorId": "LB",
            "refService": "18",
            "mnemoService": "7",
            "nameService": "Newhaven -- Royal Infirmary",
            "refDest": "1179649",
            "nameDest": "Newhaven",
            "terminus": "36237297",
            "journeyTimeDatas": [
                {
                    "order": 0,
                    "stopId": "36232323",
                    "stopName": "Mill Lane",
                    "day": 0,
                    "time": "18:06",
                    "minutes": 12,
                    "reliability": "T",
                    "type": "N",
                    "busStopDisruption": false
                },
                {
                    "order": 1,
                    "stopId": "36237329",
                    "stopName": "Leith Theatre",
                    "day": 0,
                    "time": "18:07",
                    "minutes": 1,
                    "reliability": "T",
                    "type": "N",
                    "busStopDisruption": false
                },
                {
                    "order": 2,
                    "stopId": "36237327",
                    "stopName": "South Fort Stree",
                    "day": 0,
                    "time": "18:07",
                    "minutes": 1,
```

```
                    "reliability": "T",
                    "type": "N",
                    "busStopDisruption": false
                },
              [...]
            ],
            "globalDisruption": true,
            "serviceDisruption": false,
            "serviceDiversion": false
        }
    ]
}
```

VII FAULT MANAGEMENT

Fault messages are sent in the following format:

Object Error		
Field	**Format**	**Description**
faultstring	String	Fault Description
faultcode	String	Fault codes

The fault codes are described below:

CODE	DESCRIPTION
INVALID_APP_KEY	The application key has not been authenticated
INVALID_PARAMETER	Invalid parameter
PROCESSING_ERROR	An error occurred while processing the request
SYSTEM_MAINTENANCE	The system is under maintenance
SYSTEM_OVERLOADED	The system is overloaded

VII.1 SOAP FAULT EXAMPLE

Fault messages are transmitted trough a SOAPfault notification.

Below is an example of a fault message caused by an invalid application key.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-
ENV="http://schemas.xmlsoap.org/soap/envelope/">
  <SOAP-ENV:Body>
    <SOAP-ENV:Fault>
      <faultcode>INVALID_APP_KEY</faultcode>
      <faultstring>Invalid application Key</faultstring>
    </SOAP-ENV:Fault>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

VII.2 JSON FAULT EXAMPLE

Below is an example of a fault message caused by an invalid application key.

```json
{
    "faultstring":"Invalid application Key",
    "faultcode":"INVALID_APP_KEY"
}
```

VIII GUIDELINES

Here is a short list of rules and guidance for a better use of the Web Services.

VIII.1 HOW TO USE THE TOPOLOGICAL WEB SERVICES

The topology services generate a substantial data flow. Consequently, it is strongly recommended to use a local cache in your application to avoid irrelevant access to the web server. Moreover, a topology version id is available to allow developers to monitor any topology change. The topology version can only be updated by the system at every start of the operation (03:10).

To conclude, developers should respect the following process:

- Request the topology id function once a day after the start of the operation.
- If necessary, update your local cache using the topology web services.

VIII.2 HOW TO USE THE COMPRESSION

In order to optimize the data flow transfers, and so to offer the final users the most responsive application, it is recommended to use the **HTTP/GZIP** compression. This is possible by adding in every request the following HTTP header: 'Accept-Encoding : gzip'.

The use of compression increases the CPU load. Therefore, it is developer's responsibility to use or not the compression.

VIII.3 HOW TO USE THE WSDL FILE (SOAP-BASED WS ONLY)

The WSDL file is not expected to change unless in case of Web Services variations.

The file can be hardcoded in the application or downloaded from the Web Server.

Note that the WSDL file must not be downloaded on every request or at every start of the application.

IX   APPENDIX A : WSDL FILE

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!-- version 1.2.0 01/06/2012 -->
<!-- Definitions -->
<definitions name="btws"
        targetNamespace="btws"
        xmlns:typens="btws"
        xmlns:xsd="http://www.w3.org/2001/XMLSchema"
        xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
        xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
        xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
        xmlns="http://schemas.xmlsoap.org/wsdl/">

        <!-- Generic Types-->
        <types>
            <!--  Datas -->
            <xsd:schema targetNamespace="btws"
                    xmlns="http://www.w3.org/2001/XMLSchema">
                <!-- Custom Types-->
                <!-- API Key -->
                <xsd:simpleType name="APIKey">
                    <restriction base='string'>
                      <length value='32' fixed='true'/>
                    </restriction>
                </xsd:simpleType>

                <!-- Destination Objects -->
                <xsd:complexType name="Dest">
                     <xsd:sequence>
                          <xsd:element name="ref" type="xsd:string"/>
                          <xsd:element name="operatorId" type="xsd:string"/>
                          <xsd:element name="name" type="xsd:string"/>
                          <xsd:element name="direction" type="xsd:string"/>
                          <xsd:element name="service" type="xsd:string"/>
                     </xsd:sequence>
                </xsd:complexType>

                <xsd:complexType name="DestList">
                     <xsd:sequence>
                          <xsd:element minOccurs="0" maxOccurs="unbounded"
                          name="list" type="typens:Dest"/>
                     </xsd:sequence>
                </xsd:complexType>

                <xsd:complexType name="DestRefList">
                     <xsd:sequence>
                          <xsd:element minOccurs="0" maxOccurs="unbounded"
                          name="list" type="xsd:string"/>
                     </xsd:sequence>
                </xsd:complexType>

                <!-- Service Objects -->
                <xsd:complexType name="Service">
                     <xsd:sequence>
                          <xsd:element name="ref" type="xsd:string"/>
                          <xsd:element name="operatorId" type="xsd:string"/>
                          <xsd:element name="mnemo" type="xsd:string"/>
                          <xsd:element name="name" type="xsd:string"/>
```

```xml
                                        <xsd:element                                          name="dests"
type="typens:DestRefList"/>
                                </xsd:sequence>
                        </xsd:complexType>

                        <xsd:complexType name="ServiceList">
                                <xsd:sequence>
                                        <xsd:element minOccurs="0" maxOccurs="unbounded"
                                        name="list" type="typens:Service"/>
                                </xsd:sequence>
                        </xsd:complexType>

                        <xsd:complexType name="ServiceRefList">
                                <xsd:sequence>
                                        <xsd:element minOccurs="0" maxOccurs="unbounded"
                                        name="list" type="xsd:string"/>
                                </xsd:sequence>
                        </xsd:complexType>

                        <!-- Service Point Objects -->
                        <xsd:complexType name="ServicePoint">
                                <xsd:sequence>
                                        <xsd:element name="chainage" type="xsd:integer"/>
                                        <xsd:element name="order" type="xsd:integer"/>
                                        <xsd:element name="x" type="xsd:float"/>
                                        <xsd:element name="y" type="xsd:float"/>
                                </xsd:sequence>
                        </xsd:complexType>

                        <xsd:complexType name="ServicePointList">
                                <xsd:sequence>
                                        <xsd:element minOccurs="0" maxOccurs="unbounded"
                                        name="list" type="typens:ServicePoint"/>
                                </xsd:sequence>
                        </xsd:complexType>

                        <!-- BusStop Objects -->
                        <xsd:complexType name="BusStop">
                                <xsd:sequence>
                                        <xsd:element name="ref" type="xsd:string"/>
                                        <xsd:element name="operatorId" type="xsd:string"/>
                                        <xsd:element name="stopId" type="xsd:string"/>
                                        <xsd:element name="name" type="xsd:string"/>
                                        <xsd:element name="x" type="xsd:float"/>
                                        <xsd:element name="y" type="xsd:float"/>
                                        <xsd:element name="cap" type="xsd:integer"/>
                                        <xsd:element                                name="services"
type="typens:ServiceRefList"/>
                                        <xsd:element                                          name="dests"
type="typens:DestRefList"/>
                                </xsd:sequence>
                        </xsd:complexType>

                        <xsd:complexType name="BusStopList">
                                <xsd:sequence>
                                        <xsd:element minOccurs="0" maxOccurs="unbounded"
                                        name="list" type="typens:BusStop"/>
                                </xsd:sequence>
                        </xsd:complexType>

                        <xsd:complexType name="BusStopIdList">
                                <xsd:sequence>
                                        <xsd:element minOccurs="0" maxOccurs="unbounded"
```

```xml
                            name="list" type="xsd:string"/>
                    </xsd:sequence>
            </xsd:complexType>

            <!-- BusTime Objects -->
            <xsd:complexType name="TimeRequest">
                    <xsd:sequence>
                            <xsd:element name="stopId" type="xsd:string"/>
                            <xsd:element    name="operatorId"    type="xsd:string"
minOccurs="0"/>
                            <xsd:element    name="refService"    type="xsd:string"
minOccurs="0"/>
                            <xsd:element      name="refDest"      type="xsd:string"
minOccurs="0"/>
                    </xsd:sequence>
            </xsd:complexType>

            <xsd:complexType name="TimeRequestList">
                    <xsd:sequence>
                            <xsd:element minOccurs="1" maxOccurs="5"
                            name="list" type="typens:TimeRequest"/>
                    </xsd:sequence>
            </xsd:complexType>

            <xsd:complexType name="TimeData">
                    <xsd:sequence>
                            <xsd:element name="refDest" type="xsd:string"/>
                            <xsd:element name="nameDest" type="xsd:string"/>
                            <xsd:element name="day" type="xsd:integer"/>
                            <xsd:element name="time" type="xsd:string"/>
                            <xsd:element name="minutes" type="xsd:integer"/>
                            <xsd:element name="reliability" type="xsd:string"/>
                            <xsd:element name="type" type="xsd:string"/>
                            <xsd:element name="terminus" type="xsd:string"/>
                            <xsd:element name="journeyId" type="xsd:string"/>
                            <xsd:element name="busId" type="xsd:string"/>
                    </xsd:sequence>
            </xsd:complexType>

            <xsd:complexType name="TimeDataList">
                    <xsd:sequence>
                            <xsd:element minOccurs="0" maxOccurs="unbounded"
                            name="list" type="typens:TimeData"/>
                    </xsd:sequence>
            </xsd:complexType>

            <xsd:complexType name="BusTime">
                    <xsd:sequence>
                            <xsd:element name="operatorId" type="xsd:string"/>
                            <xsd:element name="stopId" type="xsd:string"/>
                            <xsd:element name="stopName" type="xsd:string"/>
                            <xsd:element name="refService" type="xsd:string"/>
                            <xsd:element name="mnemoService" type="xsd:string"/>
                            <xsd:element name="nameService" type="xsd:string"/>
                            <xsd:element                      name="timeDatas"
type="typens:TimeDataList"/>
                            <xsd:element                    name="globalDisruption"
type="xsd:boolean"/>
                            <xsd:element                   name="serviceDisruption"
type="xsd:boolean"/>
                            <xsd:element                  name="busStopDisruption"
type="xsd:boolean"/>
```

```xml
                                        <xsd:element                        name="serviceDiversion"
type="xsd:boolean"/>
                        </xsd:sequence>
                </xsd:complexType>

                <xsd:complexType name="BusTimeList">
                        <xsd:sequence>
                                <xsd:element minOccurs="0" maxOccurs="unbounded"
                                name="list" type="typens:BusTime"/>
                        </xsd:sequence>
                </xsd:complexType>

                <!-- JourneyTime Objects -->
                <xsd:complexType name="JourneyTimeData">
                        <xsd:sequence>
                                <xsd:element name="order" type="xsd:integer"/>
                                <xsd:element name="stopId" type="xsd:string"/>
                                <xsd:element name="stopName" type="xsd:string"/>
                                <xsd:element name="day" type="xsd:integer"/>
                                <xsd:element name="time" type="xsd:string"/>
                                <xsd:element name="minutes" type="xsd:integer"/>
                                <xsd:element name="reliability" type="xsd:string"/>
                                <xsd:element name="type" type="xsd:string"/>
                                <xsd:element                        name="busStopDisruption"
type="xsd:boolean"/>
                        </xsd:sequence>
                </xsd:complexType>

                <xsd:complexType name="JourneyTimeDataList">
                        <xsd:sequence>
                                <xsd:element minOccurs="0" maxOccurs="unbounded"
                                name="list" type="typens:JourneyTimeData"/>
                        </xsd:sequence>
                </xsd:complexType>

                <xsd:complexType name="JourneyTime">
                        <xsd:sequence>
                                <xsd:element name="journeyId" type="xsd:string"/>
                                <xsd:element name="busId" type="xsd:string"/>
                                <xsd:element name="operatorId" type="xsd:string"/>
                                <xsd:element name="refService" type="xsd:string"/>
                                <xsd:element name="mnemoService" type="xsd:string"/>
                                <xsd:element name="nameService" type="xsd:string"/>
                                <xsd:element name="refDest" type="xsd:string"/>
                                <xsd:element name="nameDest" type="xsd:string"/>
                                <xsd:element name="terminus" type="xsd:string"/>
                                <xsd:element                        name="journeyTimeDatas"
type="typens:JourneyTimeDataList"/>
                                <xsd:element                        name="globalDisruption"
type="xsd:boolean"/>
                                <xsd:element                        name="serviceDisruption"
type="xsd:boolean"/>
                                <xsd:element                        name="serviceDiversion"
type="xsd:boolean"/>
                        </xsd:sequence>
                </xsd:complexType>

                <xsd:complexType name="JourneyTimeList">
                        <xsd:sequence>
                                <xsd:element minOccurs="0" maxOccurs="unbounded"
                                name="list" type="typens:JourneyTime"/>
                        </xsd:sequence>
                </xsd:complexType>
```

```xml
<!-- Disruption Objects -->
<xsd:complexType name="TargetList">
	<xsd:sequence>
		<xsd:element minOccurs="0" maxOccurs="unbounded"
		name="list" type="xsd:string"/>
	</xsd:sequence>
</xsd:complexType>

<xsd:complexType name="Disruption">
	<xsd:sequence>
		<xsd:element name="id" type="xsd:string"/>
		<xsd:element name="operatorId" type="xsd:string"/>
		<xsd:element name="level" type="xsd:integer"/>
		<xsd:element name="type" type="xsd:integer"/>
		<xsd:element name="validUntil" type="xsd:dateTime"/>
		<xsd:element name="message" type="xsd:string"/>
		<xsd:element                          name="targets"
type="typens:TargetList"/>
	</xsd:sequence>
</xsd:complexType>

<xsd:complexType name="DisruptionList">
	<xsd:sequence>
		<xsd:element minOccurs="0" maxOccurs="unbounded"
		name="list" type="typens:Disruption"/>
	</xsd:sequence>
</xsd:complexType>

<!-- Diversion Objects -->
<xsd:complexType name="TemporaryBusStop">
	<xsd:sequence>
		<xsd:element name="num" type="xsd:integer"/>
		<xsd:element name="stopId" type="xsd:string"/>
		<xsd:element name="stopName" type="xsd:string"/>
		<xsd:element name="type" type="xsd:string"/>
	</xsd:sequence>
</xsd:complexType>

<xsd:complexType name="TemporaryBusStopList">
	<xsd:sequence>
		<xsd:element minOccurs="0" maxOccurs="unbounded"
		name="list" type="typens:TemporaryBusStop"/>
	</xsd:sequence>
</xsd:complexType>

<xsd:complexType name="Diversion">
	<xsd:sequence>
		<xsd:element name="ref" type="xsd:string"/>
		<xsd:element name="diversionId" type="xsd:string"/>
		<xsd:element name="operatorId" type="xsd:string"/>
		<xsd:element name="refService" type="xsd:string"/>
		<xsd:element name="startStopId" type="xsd:string"/>
		<xsd:element                          name="startStopName"
type="xsd:string"/>
		<xsd:element name="startDate" type="xsd:dateTime"/>
		<xsd:element name="endStopId" type="xsd:string"/>
		<xsd:element name="endStopName" type="xsd:string"/>
		<xsd:element name="endDate" type="xsd:dateTime"/>
		<xsd:element name="days" type="xsd:string"/>
		<xsd:element name="length" type="xsd:integer"/>
		<xsd:element name="timeShift" type="xsd:integer"/>
```

```xml
                                                <xsd:element                         name="cancelledBusStops"
type="typens:BusStopIdList"/>
                                                <xsd:element                         name="temporaryBusStops"
type="typens:TemporaryBusStopList"/>
                                        </xsd:sequence>
                                </xsd:complexType>

                                <xsd:complexType name="DiversionList">
                                        <xsd:sequence>
                                                <xsd:element minOccurs="0" maxOccurs="unbounded"
                                                name="list" type="typens:Diversion"/>
                                        </xsd:sequence>
                                </xsd:complexType>

                                <xsd:complexType name="DiversionPoint">
                                        <xsd:sequence>
                                                <xsd:element name="order" type="xsd:integer"/>
                                                <xsd:element name="x" type="xsd:float"/>
                                                <xsd:element name="y" type="xsd:float"/>
                                        </xsd:sequence>
                                </xsd:complexType>

                                <xsd:complexType name="DiversionPointList">
                                        <xsd:sequence>
                                                <xsd:element minOccurs="0" maxOccurs="unbounded"
                                                name="list" type="typens:DiversionPoint"/>
                                        </xsd:sequence>
                                </xsd:complexType>

                                <!--  Requests / Responses -->
                                <xsd:element name="TopoIdRequest" type="typens:TopoIdRequest"/>
                                <xsd:complexType name="TopoIdRequest">
                                        <xsd:sequence>
                                                <xsd:element name="key" type="typens:APIKey"/>
                                                <xsd:element   name="operatorId"   type="xsd:string"
minOccurs="0"/>
                                        </xsd:sequence>
                                </xsd:complexType>
                                <xsd:element name="TopoIdResponse" type="typens:TopoIdResponse"/>
                                <xsd:complexType name="TopoIdResponse">
                                        <xsd:sequence>
                                                <xsd:element name="topoId" type="xsd:string"/>
                                                <xsd:element name="operatorId" type="xsd:string"/>
                                        </xsd:sequence>
                                </xsd:complexType>

                                <xsd:element                                 name="ServicesRequest"
type="typens:ServicesRequest"/>
                                <xsd:complexType name="ServicesRequest">
                                        <xsd:sequence>
                                                <xsd:element name="key" type="typens:APIKey"/>
                                                <xsd:element   name="operatorId"   type="xsd:string"
minOccurs="0"/>
                                        </xsd:sequence>
                                </xsd:complexType>
                                <xsd:element                                 name="ServicesResponse"
type="typens:ServicesResponse"/>
                                <xsd:complexType name="ServicesResponse">
                                        <xsd:sequence>
                                                <xsd:element                             name="services"
type="typens:ServiceList"/>
                                        </xsd:sequence>
                                </xsd:complexType>
```

```xml
                              <xsd:element                              name="ServicePointsRequest"
type="typens:ServicePointsRequest"/>
                         <xsd:complexType name="ServicePointsRequest">
                              <xsd:sequence>
                                   <xsd:element name="key" type="typens:APIKey"/>
                                   <xsd:element name="ref" type="xsd:string"/>
                                   <xsd:element   name="operatorId"   type="xsd:string"
minOccurs="0"/>
                              </xsd:sequence>
                         </xsd:complexType>
                         <xsd:element                              name="ServicePointsResponse"
type="typens:ServicePointsResponse"/>
                         <xsd:complexType name="ServicePointsResponse">
                              <xsd:sequence>
                                   <xsd:element name="ref" type="xsd:string"/>
                                   <xsd:element name="operatorId" type="xsd:string"/>
                                   <xsd:element                         name="servicePoints"
type="typens:ServicePointList"/>
                              </xsd:sequence>
                         </xsd:complexType>

                         <xsd:element name="DestsRequest" type="typens:DestsRequest"/>
                         <xsd:complexType name="DestsRequest">
                              <xsd:sequence>
                                   <xsd:element name="key" type="typens:APIKey"/>
                                   <xsd:element   name="operatorId"   type="xsd:string"
minOccurs="0"/>
                              </xsd:sequence>
                         </xsd:complexType>
                         <xsd:element name="DestsResponse" type="typens:DestsResponse"/>
                         <xsd:complexType name="DestsResponse">
                              <xsd:sequence>
                                   <xsd:element name="dests" type="typens:DestList"/>
                              </xsd:sequence>
                         </xsd:complexType>
                         <xsd:element                              name="BusStopsRequest"
type="typens:BusStopsRequest"/>
                         <xsd:complexType name="BusStopsRequest">
                              <xsd:sequence>
                                   <xsd:element name="key" type="typens:APIKey"/>
                                   <xsd:element   name="operatorId"   type="xsd:string"
minOccurs="0"/>
                              </xsd:sequence>
                         </xsd:complexType>
                         <xsd:element                              name="BusStopsResponse"
type="typens:BusStopsResponse"/>
                         <xsd:complexType name="BusStopsResponse">
                              <xsd:sequence>
                                   <xsd:element                              name="busStops"
type="typens:BusStopList"/>
                              </xsd:sequence>
                         </xsd:complexType>

                         <xsd:element                              name="BusTimesRequest"
type="typens:BusTimesRequest"/>
                         <xsd:complexType name="BusTimesRequest">
                              <xsd:sequence>
                                   <xsd:element name="key" type="typens:APIKey"/>
                                   <xsd:element                              name="timeRequests"
type="typens:TimeRequestList"/>
```

```xml
                                            <xsd:element          name="nb"          type="xsd:integer"
minOccurs="0"/>
                                            <xsd:element          name="day"          type="xsd:integer"
minOccurs="0"/>
                                            <xsd:element          name="time"          type="xsd:string"
minOccurs="0"/>
                        </xsd:sequence>
                    </xsd:complexType>
                    <xsd:element                                  name="BusTimesResponse"
type="typens:BusTimesResponse"/>
                    <xsd:complexType name="BusTimesResponse">
                        <xsd:sequence>
                            <xsd:element                                  name="busTimes"
type="typens:BusTimeList"/>
                        </xsd:sequence>
                    </xsd:complexType>

                    <xsd:element                                  name="JourneyTimesRequest"
type="typens:JourneyTimesRequest"/>
                    <xsd:complexType name="JourneyTimesRequest">
                        <xsd:sequence>
                            <xsd:element name="key" type="typens:APIKey"/>
                            <xsd:element name="stopId" type="xsd:string"/>
                            <xsd:element name="journeyId" type="xsd:string"/>
                            <xsd:element    name="operatorId"    type="xsd:string"
minOccurs="0"/>
                            <xsd:element          name="day"          type="xsd:integer"
minOccurs="0"/>
                        </xsd:sequence>
                    </xsd:complexType>
                    <xsd:element                                  name="JourneyTimesResponse"
type="typens:JourneyTimesResponse"/>
                    <xsd:complexType name="JourneyTimesResponse">
                        <xsd:sequence>
                            <xsd:element                                  name="journeyTimes"
type="typens:JourneyTimeList"/>
                        </xsd:sequence>
                    </xsd:complexType>

                    <xsd:element                                  name="DisruptionsRequest"
type="typens:DisruptionsRequest"/>
                    <xsd:complexType name="DisruptionsRequest">
                        <xsd:sequence>
                            <xsd:element name="key" type="typens:APIKey"/>
                            <xsd:element name="type" type="xsd:integer"/>
                            <xsd:element    name="operatorId"    type="xsd:string"
minOccurs="0"/>
                        </xsd:sequence>
                    </xsd:complexType>
                    <xsd:element                                  name="DisruptionsResponse"
type="typens:DisruptionsResponse"/>
                    <xsd:complexType name="DisruptionsResponse">
                        <xsd:sequence>
                            <xsd:element                                  name="disruptions"
type="typens:DisruptionList"/>
                        </xsd:sequence>
                    </xsd:complexType>

                    <xsd:element                                  name="DiversionsRequest"
type="typens:DiversionsRequest"/>
                    <xsd:complexType name="DiversionsRequest">
                        <xsd:sequence>
                            <xsd:element name="key" type="typens:APIKey"/>
```

```xml
                                                <xsd:element     name="operatorId"     type="xsd:string"
minOccurs="0"/>
                                                <xsd:element     name="refService"     type="xsd:string"
minOccurs="0"/>
                                                <xsd:element      name="day"        type="xsd:integer"
minOccurs="0"/>
                            </xsd:sequence>
                        </xsd:complexType>
                        <xsd:element                             name="DiversionsResponse"
type="typens:DiversionsResponse"/>
                        <xsd:complexType name="DiversionsResponse">
                            <xsd:sequence>
                                <xsd:element                             name="diversions"
type="typens:DiversionList"/>
                            </xsd:sequence>
                        </xsd:complexType>

                        <xsd:element                             name="DiversionPointsRequest"
type="typens:DiversionPointsRequest"/>
                        <xsd:complexType name="DiversionPointsRequest">
                            <xsd:sequence>
                                <xsd:element name="key" type="typens:APIKey"/>
                                <xsd:element name="diversionId" type="xsd:string"/>
                                <xsd:element    name="operatorId"    type="xsd:string"
minOccurs="0"/>
                            </xsd:sequence>
                        </xsd:complexType>
                        <xsd:element                             name="DiversionPointsResponse"
type="typens:DiversionPointsResponse"/>
                        <xsd:complexType name="DiversionPointsResponse">
                            <xsd:sequence>
                                <xsd:element name="diversionId" type="xsd:string"/>
                                <xsd:element name="operatorId" type="xsd:string"/>
                                <xsd:element                             name="diversionPoints"
type="typens:DiversionPointList"/>
                            </xsd:sequence>
                        </xsd:complexType>
                </xsd:schema>
        </types>

        <!-- Message -->
        <message name="TopoIdRequest">
                <part name="request" element="typens:TopoIdRequest"/>
        </message>
        <message name="TopoIdResponse">
                <part name="response" element="typens:TopoIdResponse"/>
        </message>
        <message name="ServicesRequest">
                <part name="request" element="typens:ServicesRequest"/>
        </message>
        <message name="ServicesResponse">
                <part name="response" element="typens:ServicesResponse"/>
        </message>
        <message name="ServicePointsRequest">
                <part name="request" element="typens:ServicePointsRequest"/>
        </message>
        <message name="ServicePointsResponse">
                <part name="response" element="typens:ServicePointsResponse"/>
        </message>
        <message name="DestsRequest">
                <part name="request" element="typens:DestsRequest"/>
        </message>
        <message name="DestsResponse">
```

```xml
            <part name="response" element="typens:DestsResponse"/>
    </message>
    <message name="BusStopsRequest">
            <part name="request" element="typens:BusStopsRequest"/>
    </message>
    <message name="BusStopsResponse">
            <part name="response" element="typens:BusStopsResponse"/>
    </message>
    <message name="BusTimesRequest">
            <part name="request" element="typens:BusTimesRequest"/>
    </message>
    <message name="BusTimesResponse">
            <part name="response" element="typens:BusTimesResponse"/>
    </message>
    <message name="JourneyTimesRequest">
            <part name="request" element="typens:JourneyTimesRequest"/>
    </message>
    <message name="JourneyTimesResponse">
            <part name="response" element="typens:JourneyTimesResponse"/>
    </message>
    <message name="DisruptionsRequest">
            <part name="request" element="typens:DisruptionsRequest"/>
    </message>
    <message name="DisruptionsResponse">
            <part name="response" element="typens:DisruptionsResponse"/>
    </message>
    <message name="DiversionsRequest">
            <part name="request" element="typens:DiversionsRequest"/>
    </message>
    <message name="DiversionsResponse">
            <part name="response" element="typens:DiversionsResponse"/>
    </message>
    <message name="DiversionPointsRequest">
            <part name="request" element="typens:DiversionPointsRequest"/>
    </message>
    <message name="DiversionPointsResponse">
            <part name="response" element="typens:DiversionPointsResponse"/>
    </message>

    <!-- Port Type -->
    <portType name="btwsPort">
            <!-- Operations -->
            <operation name="getTopoId">
                    <input message="typens:TopoIdRequest"/>
                    <output message="typens:TopoIdResponse"/>
            </operation>
            <operation name="getServices">
                    <input message="typens:ServicesRequest"/>
                    <output message="typens:ServicesResponse"/>
            </operation>
            <operation name="getServicePoints">
                    <input message="typens:ServicePointsRequest"/>
                    <output message="typens:ServicePointsResponse"/>
            </operation>
            <operation name="getDests">
                    <input message="typens:DestsRequest"/>
                    <output message="typens:DestsResponse"/>
            </operation>
            <operation name="getBusStops">
                    <input message="typens:BusStopsRequest"/>
                    <output message="typens:BusStopsResponse"/>
            </operation>
```

```xml
<operation name="getBusTimes">
        <input message="typens:BusTimesRequest"/>
        <output message="typens:BusTimesResponse"/>
</operation>
<operation name="getJourneyTimes">
        <input message="typens:JourneyTimesRequest"/>
        <output message="typens:JourneyTimesResponse"/>
</operation>
<operation name="getDisruptions">
        <input message="typens:DisruptionsRequest"/>
        <output message="typens:DisruptionsResponse"/>
</operation>
<operation name="getDiversions">
        <input message="typens:DiversionsRequest"/>
        <output message="typens:DiversionsResponse"/>
</operation>
<operation name="getDiversionPoints">
        <input message="typens:DiversionPointsRequest"/>
        <output message="typens:DiversionPointsResponse"/>
</operation>
</portType>

<!-- Binding -->
<binding name="btwsBinding" type="typens:btwsPort">
<soap:binding                                          style="document"
transport="http://schemas.xmlsoap.org/soap/http"/>
        <operation name="getTopoId">
                <soap:operation soapAction="getTopoId"/>
                <input>
                        <soap:body use="literal" />
                </input>
                <output>
                        <soap:body use="literal" />
                </output>
        </operation>
        <operation name="getServices">
                <soap:operation soapAction="getServices"/>
                <input>
                        <soap:body use="literal" />
                </input>
                <output>
                        <soap:body use="literal" />
                </output>
        </operation>
        <operation name="getServicePoints">
                <soap:operation soapAction="getServicePoints"/>
                <input>
                        <soap:body use="literal" />
                </input>
                <output>
                        <soap:body use="literal" />
                </output>
        </operation>
        <operation name="getDests">
                <soap:operation soapAction="getDests"/>
                <input>
                        <soap:body use="literal" />
                </input>
                <output>
                        <soap:body use="literal" />
                </output>
        </operation>
```

```xml
<operation name="getBusStops">
        <soap:operation soapAction="getBusStops"/>
        <input>
                <soap:body use="literal" />
        </input>
        <output>
                <soap:body use="literal" />
        </output>
</operation>
<operation name="getBusTimes">
        <soap:operation soapAction="getBusTimes"/>
        <input>
                <soap:body use="literal" />
        </input>
        <output>
                <soap:body use="literal" />
        </output>
</operation>
<operation name="getJourneyTimes">
        <soap:operation soapAction="getJourneyTimes"/>
        <input>
                <soap:body use="literal" />
        </input>
        <output>
                <soap:body use="literal" />
        </output>
</operation>
<operation name="getDisruptions">
        <soap:operation soapAction="getDisruptions"/>
        <input>
                <soap:body use="literal" />
        </input>
        <output>
                <soap:body use="literal" />
        </output>
</operation>
<operation name="getDiversions">
        <soap:operation soapAction="getDiversions"/>
        <input>
                <soap:body use="literal" />
        </input>
        <output>
                <soap:body use="literal" />
        </output>
</operation>
<operation name="getDiversionPoints">
        <soap:operation soapAction="getDiversionPoints"/>
        <input>
                <soap:body use="literal" />
        </input>
        <output>
                <soap:body use="literal" />
        </output>
</operation>
</binding>

<!-- Service -->
<service name="MyBustrackerWSPublic">
        <documentation>Public MyBustracker WS</documentation>
        <!-- Port -->
        <port name="btwsPort" binding="typens:btwsBinding">
                <soap:address location="http://ws.mybustracker.co.uk"/>
```

```
        </port>
    </service>
</definitions>
```