TransXChange

Examples 2.1

The following development examples demonstrate the use of TransXChange to encode simple and complex bus schedules. For each example, both the XML document in TransXChange format, and the PDF file output from the TransXChange Publisher are provided.

See also the TransXChange Samples which provide further examples of using TransXChange from live systems.

Group	Name	Description & Features	XML	Output
Basic	**Linear** (See section below)	A single straight route run by a single operator. All vehicle journeys have the same timings. • Linear route • Registration detail • Route Track Map (Enhanced Publisher only • Local Track data, including instructions and Mapping System Reference • Frequent Service, with Frequency based journey times, specified as an interval • Inbound and outbound service • Registration Schema	XML	PDF
	Express (See section below)	A linear route with express journey patterns running over it that omit stops. • Express servic • Reuse of Vehicle journey timing link in multiple journeys • Overriding of Journey Pattern Timing Link Run Times with different values on the Vehicle Journey Timing links for some journey • Use of Wait Time • Holiday Day Type Exclusion • Local stop point definitions for an off-street Bus Station: BCQ, BCE and	XML	PDF

		BCS stop type • Journey Footnote • Local stop area definition • Variable Bay Allocation • Supporting documen • General Schem		
Complex	**Interchange** (See section below)	Two routes run by two different operators. All vehicle journeys have the same timings. • Inbound and Outbound timetable • An Interchang • Linear route, with different stop visiting pattern at one end • Express stop • Frequent Service journey times, specified as an interval, but not a Frequent Service • Combining operating days from service, journey pattern and vehicle journey level • Serviced Organisation & School date • More than one operaton • Timetable Note • Registration Schema	XML	PDF
	Circular (See section below)	A circular route. • Circular rout • Reuse of route section • Dead runs (positioning links • Late night servcies that cross midnight till next da • Different weekday and Weekend variant • Partial traversal of Journey patter • Operator Garag • AVL data - Vehicle Type Ticket Machine, duty cre • Weekend servic • WGS8 • Running Boar • General Schem	XML	PDF
	Cloverleaf	A cloverleaf route shape with three petals.	XML	PDF

	(See section below)	• Multiple routes composed of common route section • Multiple journey patterns composed of common. journey pattern section • Dynamic destination displa • General Schem		
	Lollipop (See section below)	Lollipop shaped route, with two parallel branches. • Circular and parallel section • Reuse of journey pattern section • Reuse of VehicleJourney Links • Stop Sequence Number • Timing status on stop usage other than 'Principle Timing Point' (*PTP*) • Complex day types for regular and bank holiday operation • Use of TXC publisher option • Layover Poin • Two services run by two different operato • Connecting service • General Schem • Express stopping pattern for some journeys • Use of Stop Sequence Number • Use of Dynamic Destination headings	XML	PDF
	Eye (See section below)	An eye shaped route, with two alternative branches. • Multiple routes composed of common route section • Multiple journey patterns composed of common. journey pattern section • Stop Sequence Number • Local stop point definition • Bilingual stop names & schedule (Cymraeg) • Registration Schema • Running Boar	XML en XML cy	PDF en PDF cy
	Flexible	Use of flexible zones	XML	PDF

	(See section below)	• Flexible zone • Flexible time band • Registration Schema		
	Hail & Ride (See section below)	Use of hail and ride stops. • Hail and ride section • Local stop point definition • Full lollipop topology • Frequency based journey times, specified as minutes past the hour, but not a frequent service • Short notice registration detail • Registration Schema	XML	PDF
	Large Route (See section below)	Very large timetable. • More stops than fit down a page • More journeys than fit across a page • Basing of vehicle journeys on other vehicle journey • Timing links with zero duration • Multiple Frequency based services, specified as intervals, but not a frequent service	XML	PDF
	Merge Frequent Journeys (See section below)	Individually coded frequent services that are to be merged as a single column. • Frequent service with, Frequent journeys coded individually. Merging by publishe • Page overflo • Non PTP point	XML	PDF
	Footnotes (See section below)	Service with complex conditions requiring footnotes frequent services that are to be merged as a single column. • Large number of services (144) • Frequent journeys • Footnote • Page overflow • Garage detail	XML	PDF

		• Short Notice Registratio • Operational data: Block, Vehicle type, layover point etc		
Other Data Exchange	**Operators**	Exchange of just operators. • General Schema	XML	
	Routes	Exchange of just routes. • General Schema	XML	
	Service Changes	Exchange of just changes to a vehicle journey. • General Schema	XML	

Page last updated: 2013/03/30

Examples 2.1 - Circular route

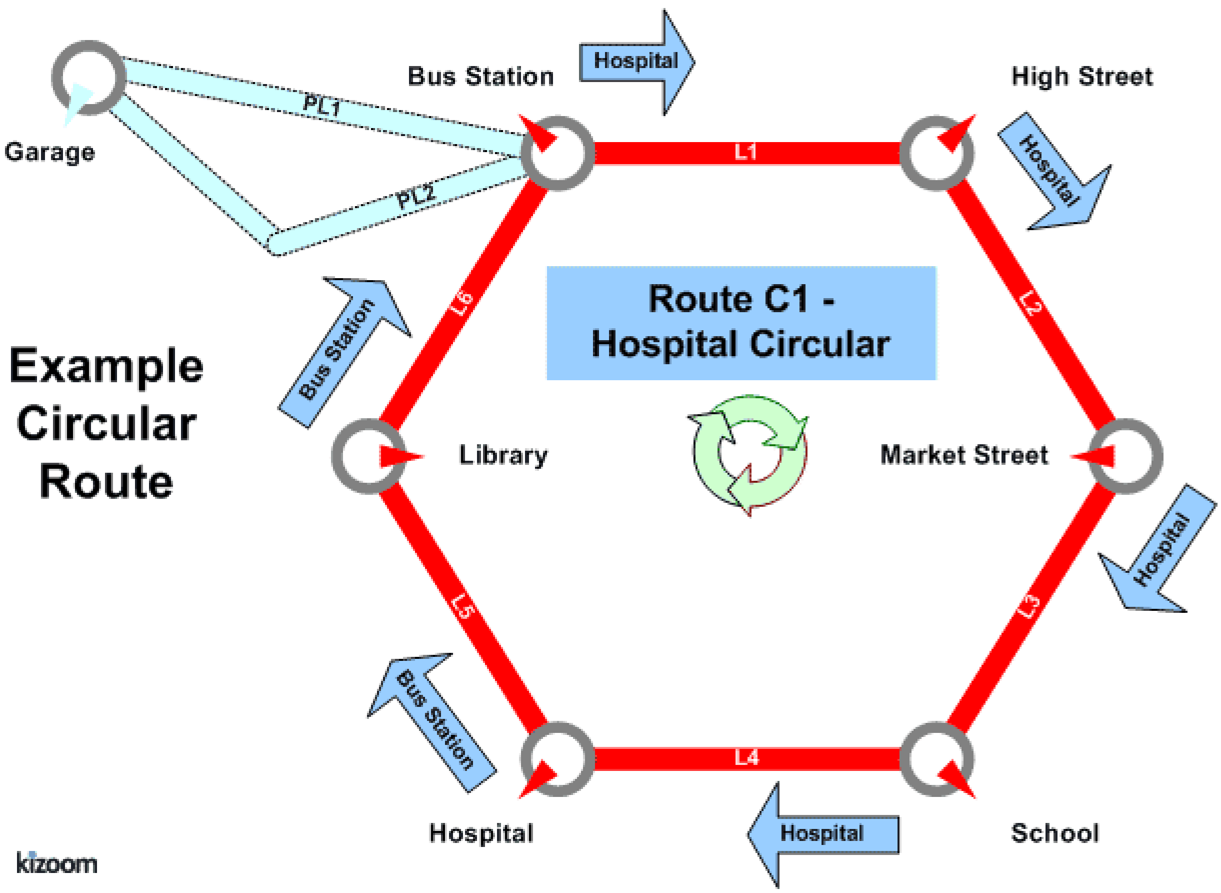
Summary

A circular route served in a clockwise direction by a single operator. All vehicle journeys have the same timings.

- Circular route
- Reuse of sections
- Multiple Line
- Operational Profile (see section below) for different Weekend service, with fewer journeys and different evening journey times. Overriding of a default profile
- Journeys that run past end of day/midnight boundary
- Partial Traversal of Route / Journey Pattern
- Dead runs (positioning links)
- Operator Garage
- Dynamic Destination Displays
- Fare Stages (see below below)
- Vehicle Type, Ticket Machine, Duty crew (see section below)

Published as: PDF PDF Timetable only

Route Map



Timetable - Clockwise, Monday to Friday

Bus Station - High Street - Hospital - Bus Station.									
		Based on Ref to	**JP1**	**JP1**	**VJ2**	**VJ2**	**JP1**	**JP1**	**JP1**
		Links based on	JP1 + start dead run	->JP1	->VJ2	->VJ2	P1 + end dead run	->JP1	->JP1
		Operational Profile	->JP1	->JP1	->VJ2	Override	->JP1	Override	Override
		VJ	#1	#2	#3	#4	#5	#6	#7
		Line	1	1	1	1 ++	1	1 Night	1 Night
xL1		***Bus Station***	-	11:00	12:00	13:00	14:00	22:30	23:30
	xL2	***High St***	-	11:03	12:03	13:03	14:03	22:33	23:33
xL3		***Market St***	-	<11:07	<12:07	<13:07	<14:07	<22:37	<23:37
	xL4	***School***	-	<11:20	<12:20	<13:20	<14:20	<22:50	<23:50

xL5		***Hospital***	10:29	11:29	12:29	13:29	14:29	22:59	23:59
	xL6	***Library***	10:48	11:48	12:48	13:48	-	23:18	00:18
		Bus Station	11:00	12:00	13:00	14:00	-	23:30	00:30

++ Not Thursday

Bus Station - High Street - Hospital - Bus Station

Clockwise, Saturday & Sunday

		Based on Ref to	JP1	VJ2	JP1	JP1	VJ8
		Links based on	JP1 + start dead run	->VJ2	JP1 + end dead run	->JP1	->VJ2
		Operational Profile	->JP1	Override	->JP1	Override	Override
		VJ	#1	#4	#5	#8	#9
		Line	1	1	1	1 Night	1 Night
xL1		***Bus Station***	-	13:00	14:00	22:45	23:45
	xL2	***High St***	-	13:03	14:03	22:48	23:48
xL3		***Market St***	-	13:07	14:07	22:53	23:52
	xL4	***School***	-	13:20	14:20	23:05	00:05
xL5		***Hospital***	10:29	13:29	14:29	23:14	00:14
	xL6	***Library***	10:48	13:48	-	23:33	00:33
		Bus Station	11:00	14:00	-	23:45	00:45

The XML Representation

XML Document

Service Registration

- The service is not registered
- There is a single **Operator**.

Service Structure

- There is a single `Service`instance *SV1*, with two `Lines` - '*1*'. and '1 Night'
- There is a single `RouteSection`, *RS1*, connecting the six stops. It has six RouteLinks between the six stops;
  - *(RL1) Bus Station* to *High Street*,

    - *(RL2) High Street* to *School,*
    - *(RL3) School* to *Market Street,*
    - *(RL4) Market Street* to *Hospital,*
    - *(RL5) Hospital* to *Library,*and
    - *(RL6) Library* to *Bus Station.*
- There is a single `Route` *R1,* with the one `RouteSection`, *RS1.*
- There is a single `JourneyPattern,` *JP1*, with a single `JourneyPatternSection` instance *JS1*; corresponding to the route section *RS1*, and containing six `JourneyPatternTimingLink`instances, *JPTL1 - JPTL6,* which project onto the respective `RouteLink` instances *RL1-RL6.*
    - *JPTL1* has a **DynamicDestination** heading of *Hospital.* This will be in effect until the next heading is encountered.
    - The *JPTL4-To* usage has a **DynamicDestination** heading of *BusStation:* from this point a different destination will be shown.,
- There are eight `VehicleJourney` instances, with different day profile conditions, so different journeys get selected for Monday to Friday and for Saturday and Sunday:
    1. *VJ1* has an initial `StartDeadRun` run to position the bus at the *Hospital* stop from the Operator's *Garage*. It has just two vehicle journey timing links, *VJTL5* & *VJTL6*, corresponding to the last two sequential links of the journey pattern, *JPTL5* & *JPTL6*, to visit the last three stops of the route.
        - It **inherits an OperationalProfile from JP1 that says it** runs **MondayToFriday**
    2. *VJ2* has six vehicle journey timing links, corresponding to all six journey pattern links, starting at *Bus Station* at 1*1:00.*
        - It **has an override OperationalProfile that says it** runs **MondayToFriday**
    3. *VJ3*, *VJ4* reference VJ2 for all their timing links, specifying only a different start time. (*12:00* and 1*3:00*).
        - VJ3 **inherits an OperationalProfile from VJ2 that says it** runs **MondayToFriday**
        - VJ4 **has an override OperationalProfile that says it does not run on Thursday, but otherwise runs Monday to Sunday.**
    4. VJ5 has just three vehicle journey timing links to complete the journey, corresponding to the first three journey pattern timing links, and a final `EndDeadRun` to return the bus to the *Garage*. It has an override **RunningBoard** showing the short running
    5. *VJ6* follows all six links of JP1 starting at *Bus Station* at *22:30.*
        - It **has an OperationalProfile that says it** runs **MondayToFriday**
    6. *VJ7* follows all six links of JP1, starting at *Bus Station* at *23:30,* so its later stages will take place in the next calendar day.
        - It **has an OperationalProfile that says it** runs **MondayToFriday**
    7. *VJ8* follows all six links of JP1 starting at *Bus Station* at *22:30.*
        - It **has an OperationalProfile that says it** runs **Saturday and Sunday**

8. *VJ9* references VJ8 for all its timing links starting at *Bus Station* at *23:45,* so its later stages will take place in the next calendar day.
    - It **also inherits its OperationalProfile that says it** runs **Saturday and Sunday**

Operational Profile

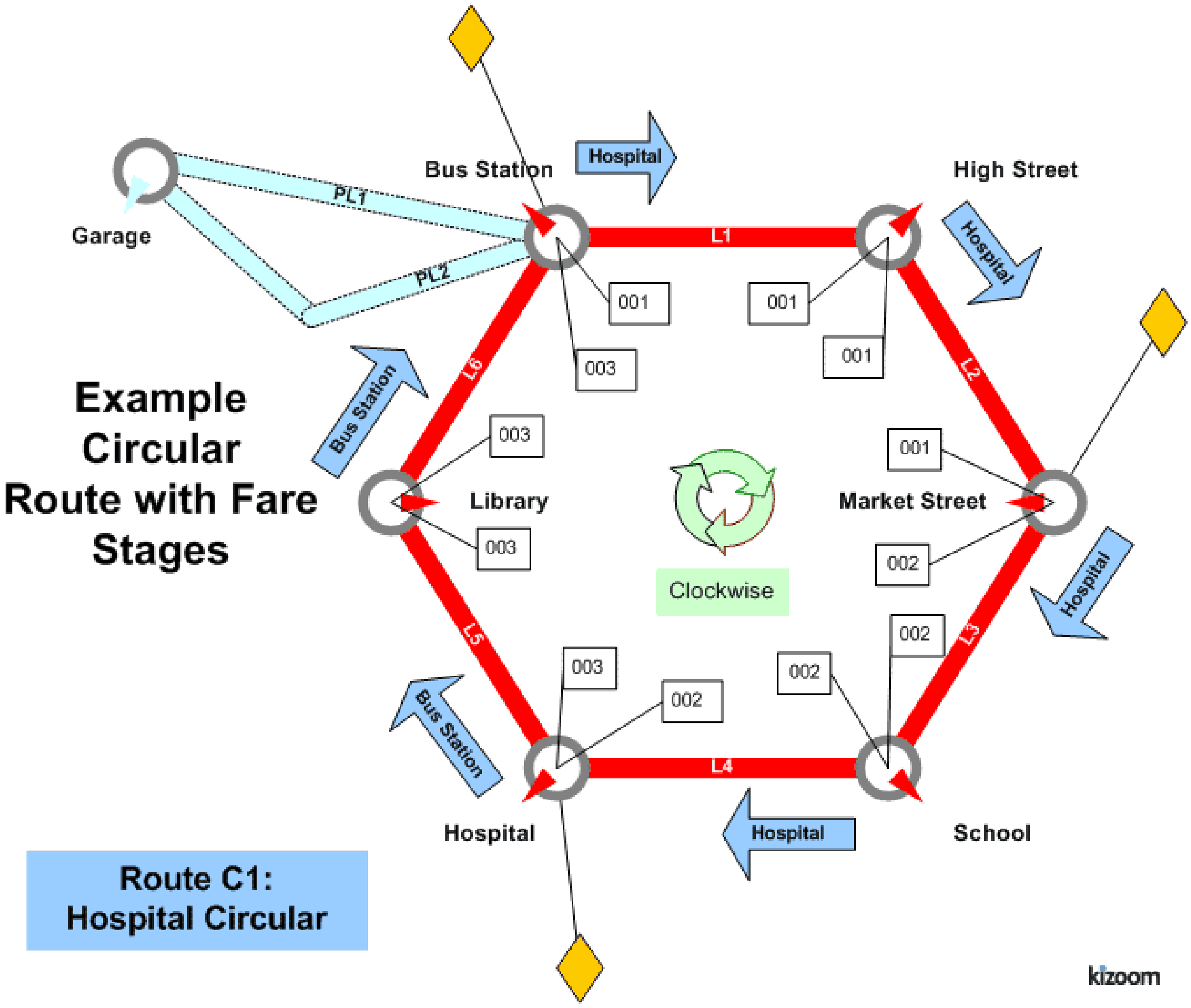
- On the **JourneyPattern, OperationalProfile / RegularDayType/ DaysOfWeek / MondayToSunday** states that by default that the service runs everyday of the week.
- Some eight `VehicleJourney`instances, override this
    - *VJ2, VJ6 & VJ7* run only Monday to Frida
    - *VJ3* inherits its profile from VJ2 Monday to Friday
    - *VJ4* overides the V2 profile does not run on Thursday
    - *VJ7, VJ8* run only Saturday & Sunday

Operational Details

- The **Operator** has a **Garage**defined
- A default Service / **TicketMachineServiceCode** is specified
- On the **JourneyPattern, Operational** details are specified:
    - A default **TicketMachine /JourneyCode** is specified. The **TicketMachine** / **Direction** is different from that of the service
    - A **VehicleType** is specifie
    - A default **RunningBoard** is specifie
- **DutyCrew** *CRW1* runs the first four journeys. A second **DutyCrew** *CRW2* takes over at *'Bus Station'* to run the final journey #5

Fare Stages

- There are **FareStage** instances at '*Bus Station', 'Market Street'*, and '*Hospital'*.



Example Circular Route with Fare Stages

Route C1: Hospital Circular

Page last updated: 2013/04/13

Examples 2.1 - Cloverleaf route

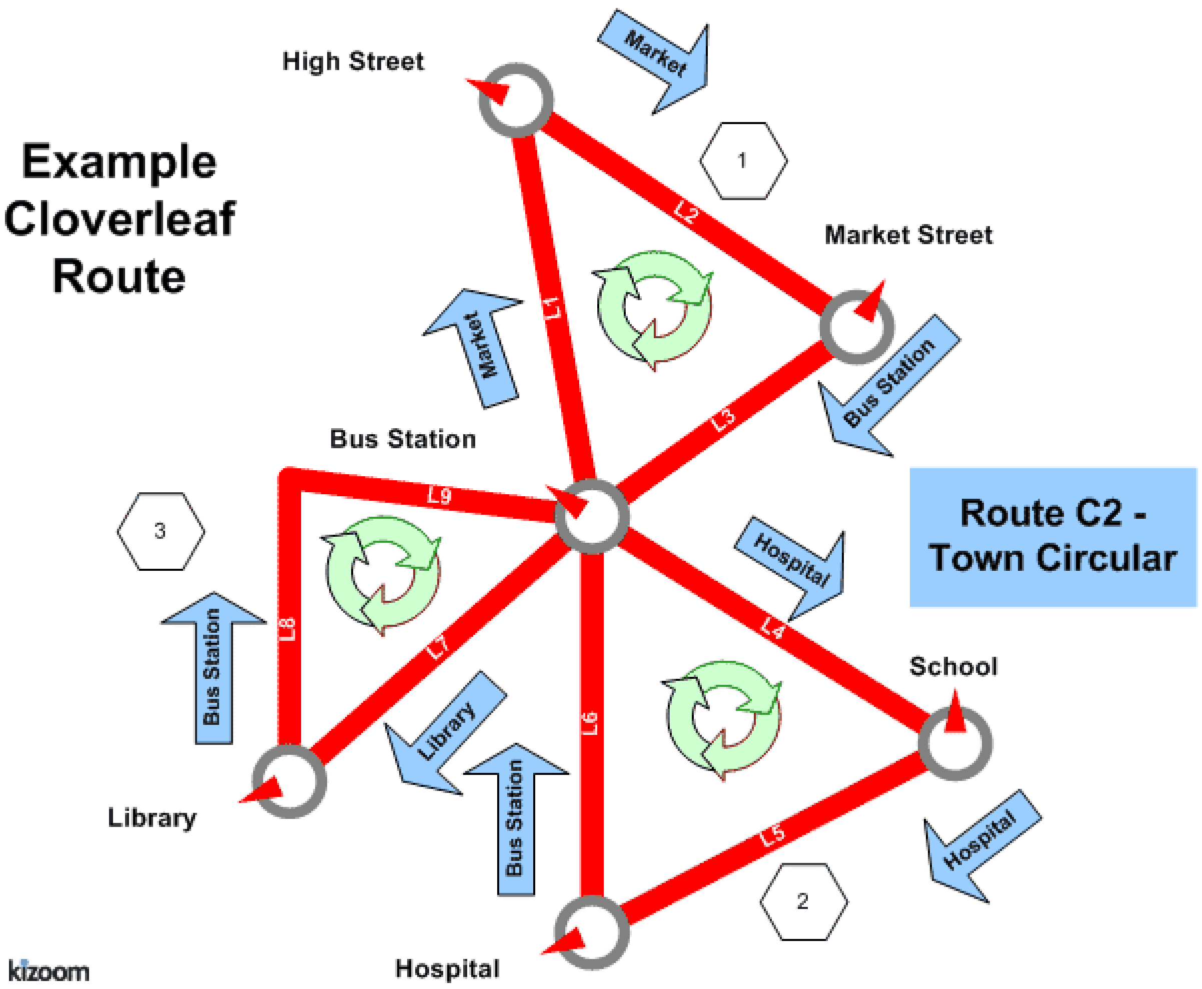
Summary

The bus traces out the outline of a cloverleaf shape with three petals. All vehicle journeys have the same timings.

- Multiple routes composed of shared route sections
- Multiple journey patterns composed of shared journey pattern sections
- Visiting the same stop more than once within the same route
- Frequent services with different Frequency Phrases (see section below)
- Stop Sequence Numbers (see section below) to control the timetable presentation matrix
- Dynamic destination displays (see section below)
- Short Working.

Published as: PDF

Route Map



Timetable

Bus Station to Bus Station												
			#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
			2	2		2		2		2		2
Petal 1		***Bus Station***	-	11:00	*then about every 5 minutes until*	12:00	*then at 3-7 minutes intervals until*	13:00	*then at intervals of no more than 7 mins until*	14:00	*then at 3-8 minutes intervals until*	15:00
		High St	-	11:03		12:03		13:03		14:03		15:03
		Market St	-	11:07		12:07		13:07		14:07		15:07
	Petal 2	***Bus Station***	-	11:20		12:20		13:20		14:20		15:20
		School	-	11:29		12:29		-		-		-

		Hospital	-	11:48		12:48		-		-		-
Petal 3		***Bus Station***	11:00	12:00		13:00		13:20		14:20		-
		Library	11:19	12:19		13:19		13:39		14:39		-
		Bus Station	11:31	12:31		13:31		13:51		14:51		-

The XML Representation

XML Document

Service Registration

- The service is not registered
- There is a single **Operator**.

Service Structure

- There is a single`Service`instance *SV1*, whose routes are all labelled as one `Line` - '*2*'.
- There are three `RouteSection` instances, one for each leaf of the clover:
  - *RS1*, has three links between *(L1) Bus Station* to *High Street*, *(L2) High Street* to *Market Street*, *(L4) Market Street* to *Bus Station*.
  - *RS2*, has three links between *(L1) Bus Station* to *School*, *(L3) School* to *Hospital*, *(L5) Hospital* to *Bus Station*.
  - *RS3*, has two links between *(L1) Bus Station* to *Library*, and *(L6) Library* to *Bus Station*.
- There are five routes `Route`instances defined:
  - *R1*, *R2*, *R3*, each with a single section *(RS1*,*RS2*, *RS3* respectively*)* describing a single petal. *(R2* is not actually used)
  - *R4* visits the first and third petals only *(RS1 & RS3)*.
  - *R5* describes a route round all three petals, reusing the three sections *(RS1*,*RS2*, *RS3)* in succession.
- There are three `JourneyPatternSection` instances *JS1*, *JS2*, and *JS3*, corresponding to the three `RouteSection` instances, with corresponding journey pattern timing links.
- There are five `JourneyPatterns`, JP1 - JP5, composed from the `JourneyPatternSection` instances in the same way the routes are composed from the route sections.
- There are six `VehicleJourney`instances, one for each column:
  - *VJ1* starting at *11:00* (column #1), references *JP3* for its links, to run round the third petal.

  - *VJ2*, starting at *11:00* (column #2), references *JP5* for its links and so has eight vehicle journey timing links, corresponding to all eight journey pattern links.
    - The **Frequency** element specifies that is a Frequent with a statutory **ScheduledFrequency** of every 5 minutes, and an **EndTime** of 12:00, **FrequentService** *is true*. The publisher generates both column #1 and column #2.
  - *VJ3*, starting at *12:00* (column #3), references *JP5* for its links, specifying only a different start time.
  - *VJ4* starting at *13:00* (column #4), references *JP4* for its links, to run over the first and third petals
  - *VJ5* starting at *13:00* (column #4), references *Vj4* for its links, to also run over the first and third petals
  - *VJ6* starting at *11:00* (column #5), references *JP1* for its links, running over just the first petal

Operational Data

- The `DynamicDestinationDisplay` is specified to change on certain links of the Journey pattern so that the heading changes between the outward and inward link, for instance for petal 1 at *Bus Station* and *High Street* it shows '*Market Street,* but at *Market Street,* it shows *'Bus Station'*

Use of Stop Sequence Numbers

Stop sequence numbers are used to coerce a specific ordering of the stops within a matrix timetable when published.

Frequency Phrases

The phrase used in frequency group column in the published output will be derived from the Frequency Parameters as follows.

	Frequency					
Case	**Frequent Service**	**Scheduled-Frequency Interval** (mins)	**Minimum Frequency Interval** (mins)	(mins)	Result Phrase to show in matrix column for NON-REGISTRATION details	Result Phrase to show in matrix column for REGISTRATIONS
VJ2	true	5	-	-	*then about every 5 minutes until*	*Frequent service at least every 10 mins until*
VJ3	true	7	4	-	*then at **3-7** minutes intervals until*	*Frequent service at least every 10 mins until*

*VJ*4	true	8	-	7	*then at intervals of no more than **7** mins until*	*Frequent service at least every **10** mins until*
VJ5	true	6	3	8	*then at **3-8** minutes intervals until*	*Frequent service at least every 10 mins until*

Alternative XML Representation

Vehicle Journeys #1 & #5 could also be coded to use the same Route & Journey pattern as Vehicle Journey #2 , using start and end Dead Runs to indicate short workings for the route. *R1, R5, JP1, JP5* would then not be needed.

Notes

N.B. The variable phrasing for the Frequent Services is only available with the 2007*2.1* Enhanced publisher

Page last updated: 2013/04/13

Examples 2.1 - Express route

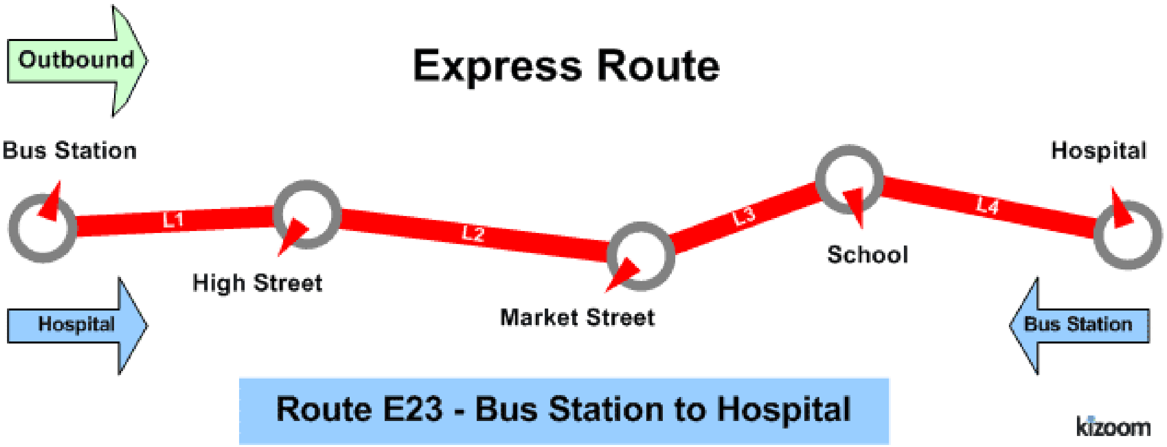
Summary

A linear route with express journey patterns running over it that omit stops.

- Express service.
- Short working
- Vehicle journey timing link reuse
- Overriding of Journey Pattern Timing Link Run Times with different values on the Vehicle Journey Timing links for some journeys
- Additional Wait times at stop; on arrival, on departure, on first or intermediate sto
- Monday to Sunday Service
- Holiday Day Type Exclusions (see section below).
- Local Stop Point definitions for an Off Street Bus Station: BCQ, BCE and BCS Stop Types
- Local Stop Area definition for bus station
- Vehicle Journey Footnote
- Variable Bay Allocation (see section below)
- General Schema

TransXChange XML Document	Particulars and Matrix output PDF	Route Map Output
express.xml (One direction only)	Particulars and Matrix PDF	Route Map PDF Route Map PDF (no background)

Route Map



Timetable

Bus Station to Hospital							
		#1	**#2**	**#3**	**#4**	**#5**	**Stop Types**
		E23	E23	E23	E23	E23	
Bus Station, Bay Area	dep	10:00	11:00	12:00	-	14:10	BCE + BCQ + BCS(x3)
Tweeham, High St	arr	10:03	11:03	-	-	14:18	BCT
	dep	10:03	11:03	-	-	14:28	
Tweeham,Market St	dep	10:07	-	12:07	13:07	14:37	BCT
Tweeham,School	arr	10:20	11:20	-	13:20	-	
	dep	10:20	11:20	-	13:30	-	BCT
Tweeham,Hospital	dep	10:29	11:29	12:29	13:39	-	BCT

- Service operates from 01/01/2004 until 13/06/2004
- Service operates Monday to Sunday
- Service does not run Christmas Day, Boxing Day, Good Friday, New Years Day, Late Summer Bank Holiday (Not Scotland), May Day,
  Easter Monday, Christmas Day Holiday, New Years Day Holiday, ChristmasEve, NewYearsEve
- Service does not run 02/06/2004
- Service runs 01/06/2004
- Services #1-#4 normally run from Bus Station Bay 1.
- Service #1 runs from Bus Station Bay2 2004-08-01 to 2004-10-
- Service #5 always runs from Bus Station Bay 3,

In this example the last journey overrides the default run times. In addition wait times are specified for some stops. The following table shows the timetable additionally annotated with the vehicle journey run times (default values inherited from the journey pattern shown in brackets) and the wait times (additional wait times prefixed by a +).

	JP Run Time (Mins)		VJ run & Wait	#1	VJ run & Wait	#2	VJ run & Wait	#3	VJ run & Wait	#4	VJ run & Wait	#5
				E23		E23		E23		E23		E23
		start		10:00		11:00		12:00				14:00
Bus Station		dep		10:00		11:00		12:00			+w10	14:10
	r3		**(r3)**		**(r3)**		**(r3)**		sr		+r8	
High St		arr		10:03		11:03	pass				+w10	14:08

		dep		10:03		11:03	pass		sr			14:28
	r4		**(r4)**		**(r4)**		**(r4)**				+r9	
Market St		dep		10:07	pass			12:07		13:07		14:37
	r13		**(r13)**				**(r13)**		**(r13)**		sr	
School		arr		10:20		11:20	pass			13:20		-
		dep		10:20		11:20	pass		+w10	13:30		-
	r9		**(r9)**		**(r9)**		**(r9)**		**(r9)**		sr	
Hospital		dep		10:29		11:29		12:29		13:39		

The XML Representation

One way encoding this example would be to have a separate route and journey pattern for each column, thus there would be five routes and five journey patterns, each with a single section. Since however the vehicle travels over the same route in the same order, but just passes by certain stops it is possible also to encode it in a less verbose manner by having a single journey pattern with a stop activity of pass at certain stops.

XML Document

Service Registration

- The service is not registered
- There is a single **Operator**.

Service Structure

- There is a single**Service**instance *SV1*, with one **Line** - '*1*'.
- There are nine **StopPoint** instances
  - Five stops make up a locally defined bus station, comprising an **Entrance** (bus stop type BCE), an off-street general **AccessArea** (bus stop type BCQ), and three Bay instances (bus stop type BCS)
  - There are four on-street stops, all references to existing NaPTAN stops.
- There is a single **RouteSection** *rs_1* with four **RouteLink** instances *rl_1-rl_4* connecting the stops
- There is a single **JourneyPatternSection** JPS1 made up of four **JourneyPatternTimingLink** instances, JPTL1-4, with **RunTime** values of *3, 4, 13,* and*9* minutes respectively
- There is a single **JourneyPattern**instances;
  - *JP_1*, section: *JS_1*
- There are five **VehicleJourney**instances, all for *Ln_1 - 'E23'*, and using JP1. The instances all use the same set of **JourneyPatternTimingLink** instances, but

define different stop activities (e.g. pass) to specify the different express stopping patterns:

  - *VJ_1*, with a departure time of*10:00,* stopping at all stops. *VJ_1* appears in column #1.
    - There is a variable stop allocation the bay in the bus station, pecified on the **From** part of the first **VehicleJourneyTimingLink** - see below
  - *VJ_2*, with a departure time of*11:00* (column #2), which has a timing links annotated with a **VehicleJourneyStopUsage / Activity** of 'pass' for the *Market Street* stop to indicate that the bus does not stop there.
  - *VJ_3*, with a departure time of*12:00* (column #3), which has a **VehicleJourneyStopUsage / Activity** of 'pass' for *High Street.* and for *School*
  - *VJ_4*, with a departure time of*13:07* (column #4), which has a short working: a dummy **StartDeadRun** is used to indicate that the service starts at *Market Street.*
    - There is an extra **WaitTime** of 10 Minutes on departure from the *School* stop, specified on the **From** usage of VehicleJourneyTimingLink VJ4_TL4
  - *VJ_5*, with a departure time of*14:00* (column #5), which has a short working: a dummy **EndDeadRun** is used to indicate that the service ends at *Market Street.*
    - A **DynamicDestinationDisplay** of *Market Street.* is used to override the default destination of *Hospital.*
    - Both links of this journey takes longer so has a explicit override values of *8.00* and *9.00* minutes for the ***RunTime*** on the **VehicleJourneyTimingLink** instances of the Journey
    - There is an extra **WaitTime** of 10 Minutes on arrival at the *High Street* stop, specified on the **To** usage of VehicleJourneyTimingLink VJ5_TL1

The Operating Days

- The **Service operating period** for *SV_1* starts on*02/01/2002* for all vehicle journeys and continues indefinitely
- The OperatingProfile for the **Service** *SV_1* states values that apply to all journeys unless overridden on a journey pattern or individual vehicle journey.
  - The **RegularDayType** specifies journeys of the service run Monday to Sunday every week of the year
  - The **BankHolidayOperation / DaysOfNonOperation** states journeys of the service do not run **LateSummerBankHolidayNotScotland**, **MayDay**, **EasterMonday**, **ChristmasDayHoliday**, **NewYearsDayHoliday**, **ChristmasEve**, **NewYearsEve**
  - The **SpecialDaysOperation / DaysOfOperation** states that journeys of the service are will run on *01/06/2004* regardless.

  - The **SpecialDaysOperation / DaysOfNonOperation** states that all services will not run on *02/06/2004*.

Variable Stop Allocation

The use of bays in the bus station for the stop varies for different vehicle journeys within the day, and on different days

- The **Route** and **JourneyPattern** specify that the **Service** goes to a **StopPoint** of type BCQ in the *Bus Station.*
- The *Bus Station* is also defined as a ***StopArea*** of type *GBCS*, and the *BCQ* **StopPoint** and the three bay **StopPoint** instances of type *BCS* are assigned to it. (This is good practice but is not strictly required in order for the variable allocation to work)
- On the **JourneyPattern***jp_1*, a **DefaultStopAllocation** assigns the *'Bus Station'* BCQ stop to depart from BCS stop *'Bay 1'* unless otherwise specified
- The **VehicleJourney**instances override this as follows:
  - *VJ_1*, with a departure time of*10:00*, A **VariableStopAllocation** assigns the *'Bus Station'* BCQ stop to depart from stop *'Bay 2'* between 2004-08-01 to 2004-10-01. Otherwise it will depart from the default, *Bay 1*.
  - *VJ_2*, *VJ_3*, *VJ_4*, use the journey pattern default.
  - *VJ_5*, A **DefaultStopAllocation** assigns the *'Bus Station'* BCQ stop to always depart from stop *'Bay 3'* .

Alternate XML Representation

It would also be possible instead of using dead runs to indicate the short working, to simply use a 'pass' activity for the two successive end stops not visited on each of the two journeys that are short workings.

Page last updated: 2013/04/13

Examples 2.1 - Eye route

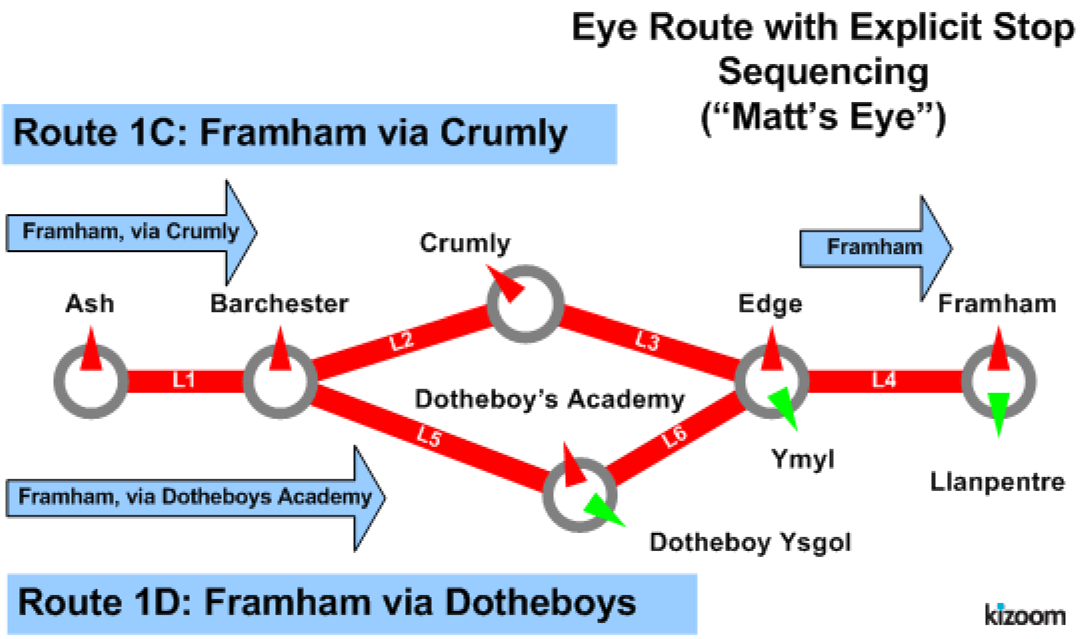
Summary

A line running over an eye physical shaped route, with two alternative branch variants.

- Multiple routes composed of some shared route sections
- Multiple journey patterns composed of some shared journey pattern sections
- Stop Sequence Numbers (see section below) to control the timetable presentation matrix
- Bilingual support (see section below)
- Dynamic Destination Displays (see section below)
- Different Running Boards (see section below)
- Registration Schema

Published as: PDF (English) Published as: PDF (Cymraeg)

Route Map


Eye Route with Explicit Stop Sequencing ("Matt's Eye")
Route 1C: Framham via Crumly
Framham, via Crumly
Crumly
Framham
Ash
Barchester
Edge
Framham
L1
L2
L3
L4
L5
L6
Dotheboy's Academy
Ymyl
Llanpentre
Framham, via Dotheboys Academy
Dotheboy Ysgol
Route 1D: Framham via Dotheboys
kizoom

Timetable

Ash to Framham, via Crumly or Dotheboy's

		#1	*#2*	*SequenceNumber*
English	Welsh	*1C*	*1D*	*#*
Ash		10:00	11:00	*1*
Barchester		10:10	11:10	*2*

Crumley		10:12	-------	*3*
Dotheboy's	***Dotheboy*** ysgol	-------	11:15	*4*
Edge	**Ymyl**	10:15	11:21	*5*
Framham	**Llanpentre**	10:20	11:26	*6*

The XML Representation

- XML Document (English)
- XML Document (Cymraeg)

Service Registration

- There is a single **Operator**. O1 - 'Dai Larid
- The service is registered, classified as a rural service with normalstopping

Service Structure

- There is a single **Service** instance *SV1*, with two **Line** instances: '*1C'* and *'1D'*
- There are five **StopPoint** instances. Three of the stops have bilingual names.
- There are four **RouteSection** instances, *RS1-RS4*, with **RouteLink** instances to connect the six stops. See diagram below.
  - *RS1* has *RL1* only, connecting *A-B*
  - *RS2* has *RL2 & RL3*, connecting *B-C-E.*
  - *RS3* has *RL5 & RL6*, connecting *B-D-E.*
  - *RS4* has *RL4* only, connecting *D-F*
- There are two **Route** instances;
  - *R1*, comprising **RouteSection**instances *RS1-RS2-RS4*, such that the route links run *A-B-C-E-F*.
  - *R2* ,comprising **RouteSection**instances*RS1-RS3-RS4, s*uch that the route links run *A-B-D-E-F*.
- There are four **JourneyPatternSection** instances *JS1-JS4*; corresponding to the route sections, and containing **JourneyPatternTimingLink**instances. *JPTL1 - JPTL6*, which project onto the respective **RouteLink** instances *RL1-RL6.*
- There are two **JourneyPattern** instances,
  - *JP1* running *A-B-C-E-F* over *R1*, and comprising **JourneyPatternSection** instances *JS1-JS2-JS4* , with timings on each of the timing links. A preferred stop sequence is specified:
    - JS1 [JPTL1 [10 mn, from:1, to: 2]]
    - JS2 [JPTL2 [2 mn, from:2, to: 3], JPTL3 [3 mn, from:3, to: 5]]
    - JS4 [JPTL4 [4 mn, from:5, to: 6]]
  - *JP2* running *A-B-D-E-F* over *R2*, and comprising **JourneyPatternSection** instances*JS1-JS3-JS4* A with timings on each of the timing links. A preferred stop sequence
    - JS1[JPTL1[10 mn, from:1, to: 2]]
    - JS3[JPTL5[5 mn, from:2, to: 4], JPTL6 [6 mn, from:4, to: 5]]

        - JS4[JPTL4[4 mn, from:5, to: 6]]
- There are two **VehicleJourney**instances:
    - *VJ1* following JP1 over *A-B-C-E-F* , starting at *10:00.*
        - The **Dynamic Destination**at the beginning shows :*'Framham, Via Crumly'*
        - The journey pattern specifies that the **Dynamic Destination changes at Edge to just***'Framham'*
    - *VJ2* following JP2 over *A-B-D-E-F* , starting at *11:00,* with a longer time for JPTL4
        - JS4[JPTL4[6 mn, from:5, to: 6]]
        - The **Dynamic Destination** at the beginning shows :*'Framham, Via Dotheboys's'.*
        - The journey pattern specifies that the **Dynamic Destination changes at Edge to just***'Framham'*

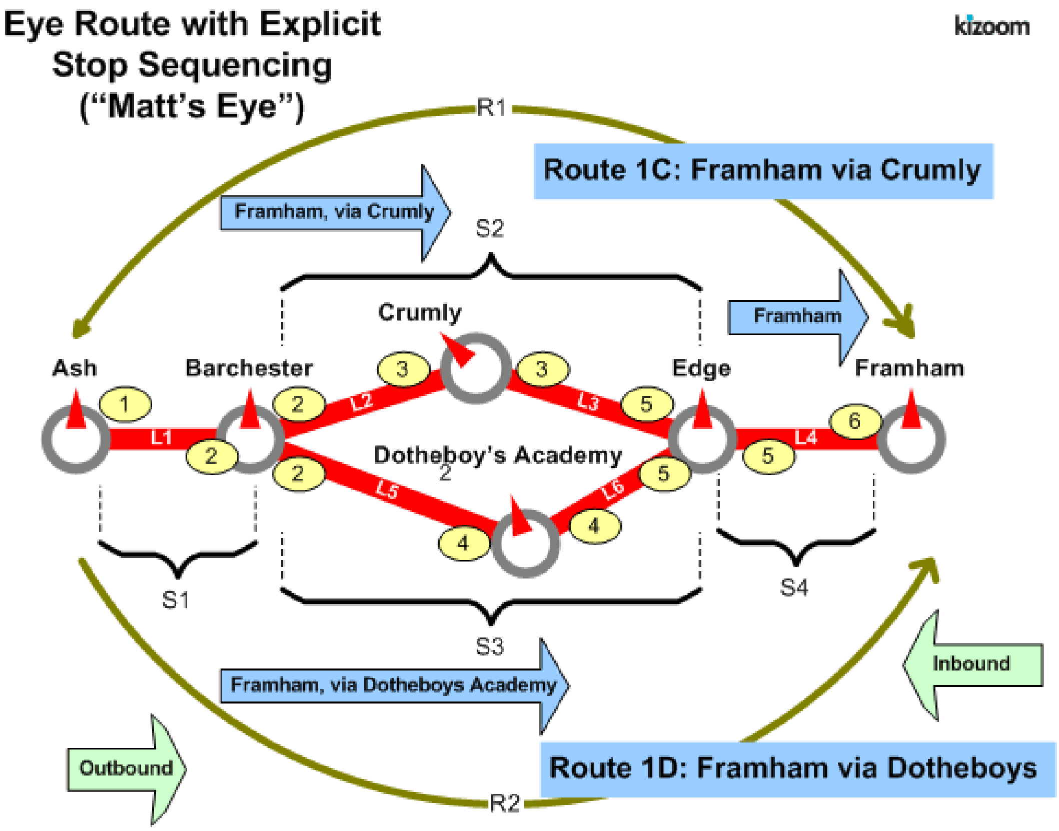
Operational Data

- Different **DynamicDestinationDisplays** are used for the service via *Crumley* and via *Dotheboy's.*

Use of Sections & Stop Sequence Numbers

Sections are used to reuse links between journeys.

Stop sequence numbers are used to coerce a specific ordering of the stops within a matrix timetable when published. The following diagram shows the journey pattern sections, with individual timing links annotated with stop section numbers.


Eye Route with Explicit Stop Sequencing ("Matt's Eye")
kizoom
R1
Route 1C: Framham via Crumly
Framham, via Crumly
S2
Crumly
Framham
Ash
Barchester
Edge
Framham
1
2
3
3
5
6
2
5
L1
L2
L3
L4
Dotheboy's Academy
2
2
L5
4
L6
4
5
S1
S3
S4
Framham, via Dotheboys Academy
Inbound
Outbound
Route 1D: Framham via Dotheboys
R2

Bilingual Support

The last three stops of the route lie within a Welsh speaking area and have bilingual stop names. Most text elements in TransXChange have

- The NaPTAN **StopPoint** definitions include alternative common names and other descriptor elements in Welsh
- The primary language for the TransXChange document is specified on the root **TransXChange** element - for Welsh this is '*cy*'.
  - When published in **Welsh**, the Welsh versions of the stop names are used, along with any Welsh alternatives for Destinations, Notes and other text that is available from the originating system.

Cymraeg XML | published as PDF

Alternative Representation

The following shows the same example published without explicit stop sequence numbers

Unsequenced XML | published as PDF

Page last updated: 2013/04/13

Examples 2.1 - Flexible route

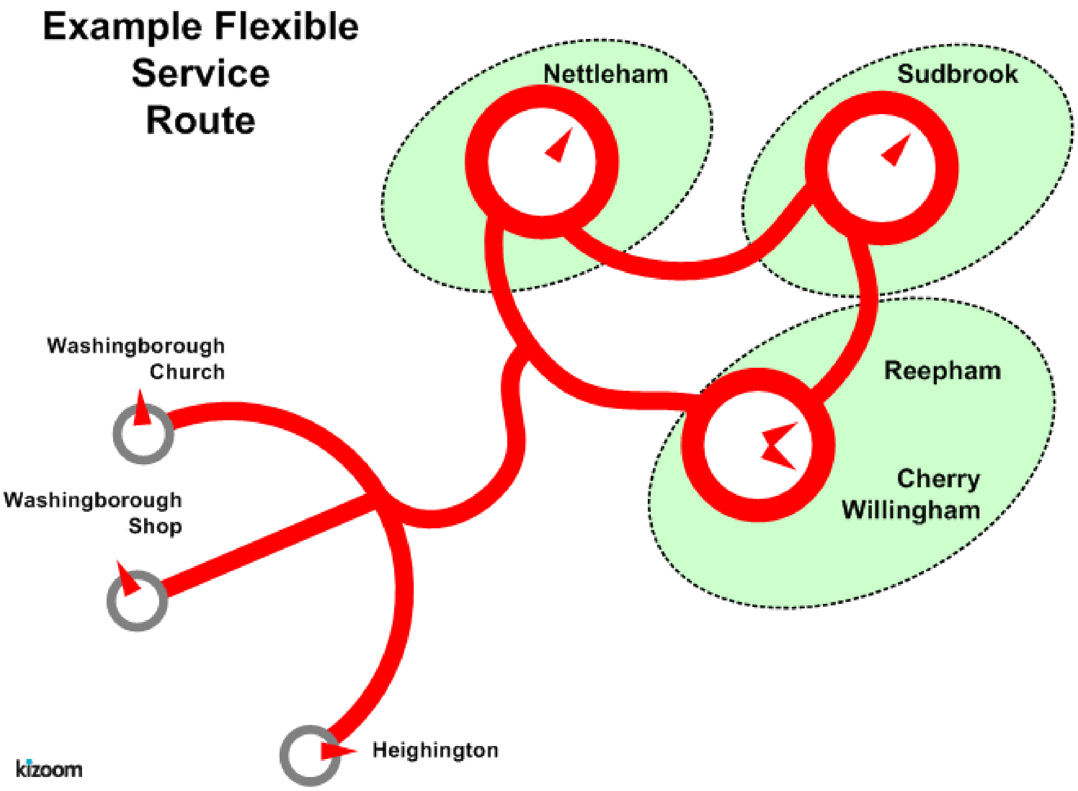
Summary

A flexible service route.

- Flexible zones for pick up and set down
- Fixed stops for pick up and set down
- Flexible timebands (see section below)
- Registration Schema

Published as: PDF

Route Map



Timetable		
	#1	**#2**
	Monday to Friday, excluding public holdays	**Bank Holiday Mondays**
Band 1	09:00 - 18:00	10:00-12:00
Band 2		16:00:1400

The XML Representation

XML Document

Service Structure

- Here is a single**Service**instance *SV1*, with one **Line** - '*L1*' , with **LineName** *'H145'.*
- The **Registration** is for a single **Operator.**
- There is a single **FlexibleJourneyPattern,** *jp_1*, which references six **StopPoint** instances:
    - Three **Fixed** stops: *Washingborough Church, Washingborough Shop, South Heighton.*
    - Three **FlexibleZone** stops: *Nettleham, Sudbrook* and *Cherry Willingham.* The *Cherry Willingham* stop is also associated with the *Reepham* locality
- There are two single **FlexibleVehicleJourney**instances, both based on **JourneyPattern** *jp_1*:
    - The first, *VJ1*, follows *jp_1* on the default operational days of the service. It has a single **TimeBand** from 09:00 to 18:00 any changes to the timings on the **JourneyPatternTimingLink** instances.
    - The second VJ2 runs only on Bank Holiday Mondays has a start time of 10.00. It has a frequent service of every 10 minutes, and an end time of 16:30

The Operating Days

- The **Service operating period** for *SV_1* starts on*02/01/2005* for all vehicle journeys and continues indefinitely
- The service **OperatingProfile** says it runs Monday to Friday except on any bank holidays.
    - The **RegularDayType** specifies journeys of the service run Monday to Friday every week
    - The **BankHolidayOperation / DaysOfNonOperation** states journeys of the service do not run on public holidays or early run off days. A special public holiday is also defined for 2005-13-0
- **VehicleJourney** *Vj2* has an override **OperatingProfile** which specifies it runs only on Bank Holiday Mondays.
    - The **RegularDayType** specifies journeys of the service run Holidays only
    - The **BankHolidayOperation / DaysOfOperation** states journeys of the service run on Holiday Monday

Page last updated: 2013/04/13

Examples 2.1 - Footnotes

Summary

Registration for a large route with many footnotes.

- Many stops (101
- Many vehicle journeys (144
- Some operating date rule
- Layover points and Operational dat
- Complex footnote conditions and optimisation (2007 Enhanced publisher only)
- Page overflow in both horizontal and vertical directions

Published as: PDF Matrix only: PDF

Route Map

Timetable

The XML Representation

XML Document

- The service has multiple individual services and more journeys than will fit on a single page

Service Registration

- The service is Registered.
- There is a single **Operator**.

Service Structure

- There is a single **Service** instance *SV1*, with two **Lines** - *'215' and '215A'*.
- There are 101 **StopPoint** instances, more than will fit vertically on a single page
- There are 10 ***Route*** instances and 33 **RouteSection** instances with **RouteLink** instances connecting the stops.
- There are are 33 **JourneyPatternSection** corresponding to the **RouteSections**
- There are 10 **JourneyPattern** instances, five outbound and five return.
- There are 144 **VehicleJourney** instances, all for *Ln_1*, all based on JP_1

Notes

N.B. The *footnote optimisation is only available with the 2007 2.1* Enhanced publisher. Prior to that the individual journeys would all be published as separate Frequency Group columns.

Page last updated: 2013/04/13

Examples 2.1 - Hail & Ride route

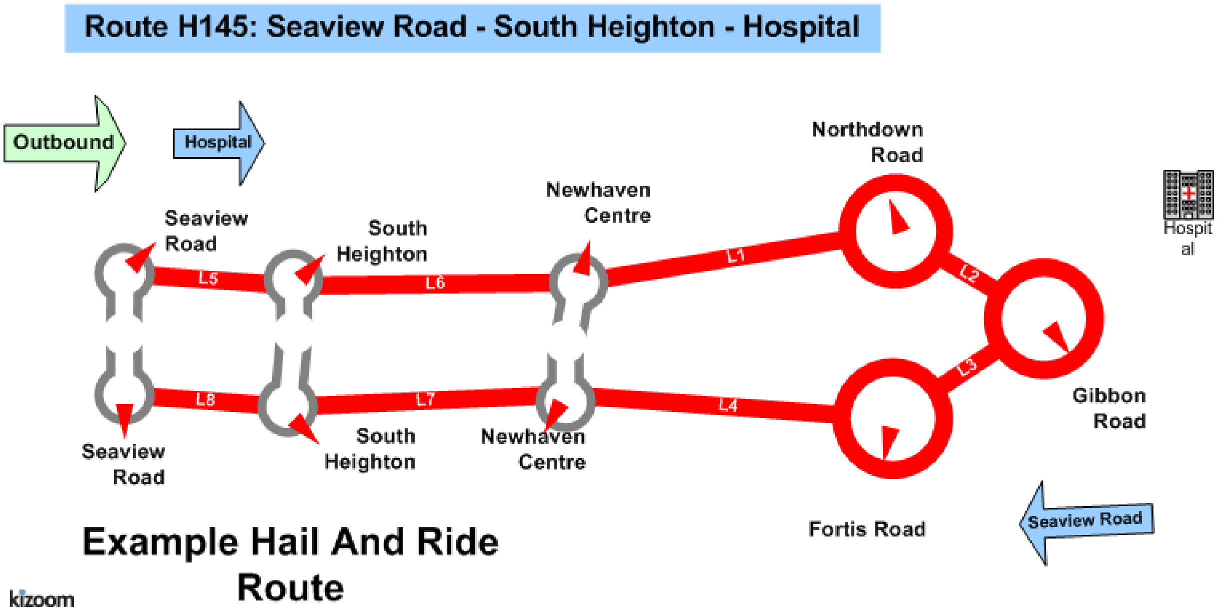
Summary

A hail and ride route:

- Use of Hail and Ride sections
- Route with Hail and Ride only sections, Non-Hail and Ride stops and mixed stop
- Full lollipop.
- Short Notice Registration (see section below)
- Some locally defined stops
- FrequentService, specified as minutes past the hour, but not a Frequent Service

Published as: PDF

Route Map



Timetable				
Stops		**Journeys**		
		#1	#2	#3
Seaview Road		10:10	And then at 10 and 42 minutes past the hour until 1642	19:00
South Heighton		10:30		9:30
Newhaven Centre		10:40		20:10
Northdown Road	*Hail & Ride section*	10:50		19:40

Gibbon Road	*Hail & Ride section*	11:00		19:50
Fortis Road	*Hail & Ride section*	11:10		20:00
Newhaven Centre		11:20		20:10
South Heighton		11:30		20:20
Seaview Road		11:50		20:40

The XML Representation

XML Document

Service Registration

- The **Registration** is for a single **Operator.**
- The **Registration** is circulated to three authorities**.**
- It has **ShortNoticeRegistration** details specified as well

Service Structure

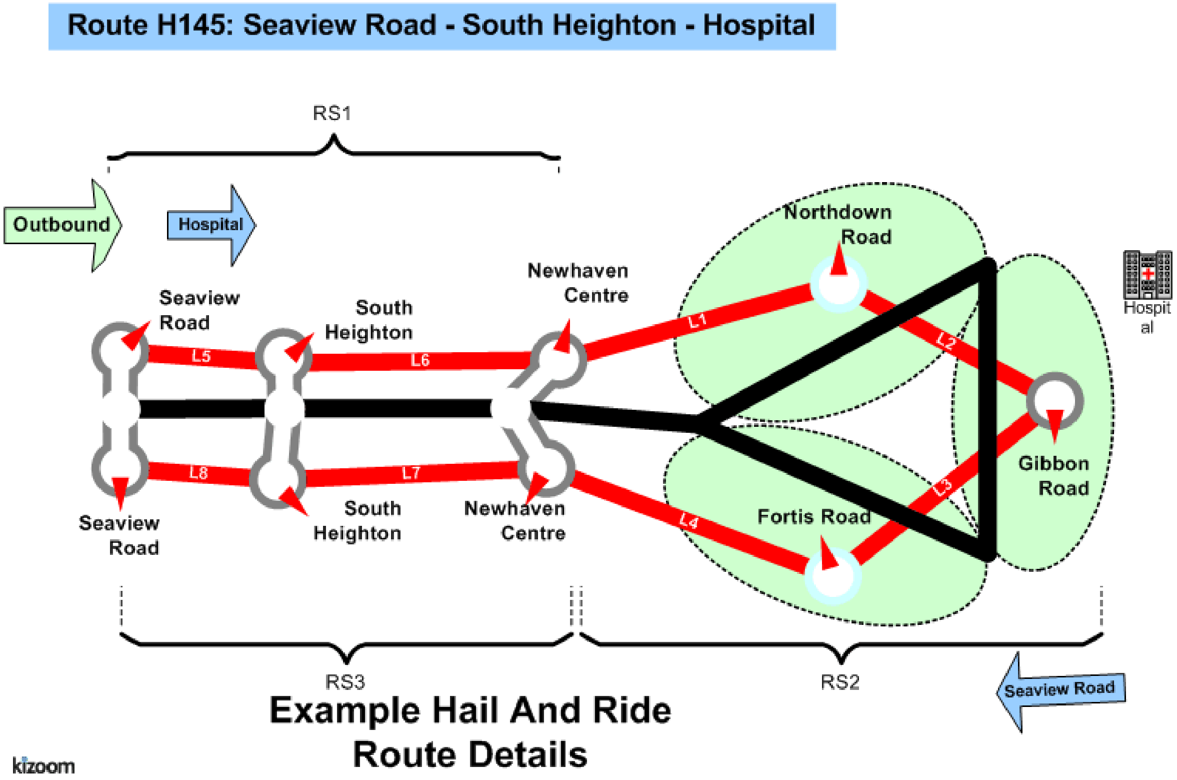
- Here is a single**Service**instance *SV1*, with one **Line** - '*L1'* , with **LineName** *'H145'.*
- There are six **StopPoint** instances:
  - Three fixed stops: *Seaview Road, South Heighton, Newhaven Centre*
  - Three HailAndRide section stops: *Northdown Road, Gibbon Road Fortis Road. Gibbon Road* also has a fixed stop
- There are three **RouteSection** *instances:*
  - *rs_b1* connecting the outward handle of the lollipop.
    - There are two **RouteLink** instances *rl_b5, rl_b6,* running *Seaview Road - South Heighton - NewHaven Centre*
  - *rs_b2* connecting the hail and ride stops in the lollipop ring.
    - There are four **RouteLink** instances *rl_b1 - rl_b4* , running *NewHaven Centre - South Heighton - Seaview Road*
  - *rs_b3* connecting the return handle of the lollipop.
    - There are two **RouteLink** instances *rl_b7 rl_b8,* running *NewHaven Centre - South Heighton - Seaview Road*
- There is a single **Route** *r_b1* containing the route sections rs_b1, *rs_b2, rs_b3.*
- There are three **JourneyPatternSections**:
  - *js_b1* covering the outbound traversal of rs_2.
    - There are two **JourneyPatternTimingLink** instances, *jptl_b5 , jptl_b6,* each referencing the corresponding route link.
  - *js_b2* connecting the hail and ride stops in the lollipop ring.

        - There are four **JourneyPatternTimingLink** instances, *jptl_b1 -j ptl_b4,* each referencing the corresponding route link. The links are marked as Hail And Ride links
    - *js_b3* covering the return traversal of rs_2.
        - There are two **JourneyPatternTimingLink** instances, *jptl_b7* , *jptl_b8*, each referencing the corresponding route link.
- There is a single **JourneyPattern,** *jp_b1*, that follows route *r_b1*.
- There are two **VehicleJourney**instances based on **JourneyPattern** *jp_b1*:
    - *VJ_1*, follows *JP1* without any changes to the timings on the **JourneyPatternTimingLink** instances. It has a start time of 10.00.
        - The **Frequency** element specifies that is a Frequency Based service with a **MinutesPastTheHour** values of 10 and 42 minutes past the hour, and an end time of 16:42. For which the publisher generates both column #1 and column #2. The service is not a statutory Frequent Service, so **FrequentService** is *false*
    - *VJ_2*, follows *JP1* without any changes to the timings on the **JourneyPatternTimingLink** instances. It has a start time of 19.40.

The Operating Days

- The service **OperatingProfile** says it runs Monday to Friday every day of the year.

Hail And Ride



Notes

This example was refined for in the 2.1 Enhanced publisher to *not* be a Frequent Service.

Page last updated: 2013/04/13

Examples 2.1 - Interchange route

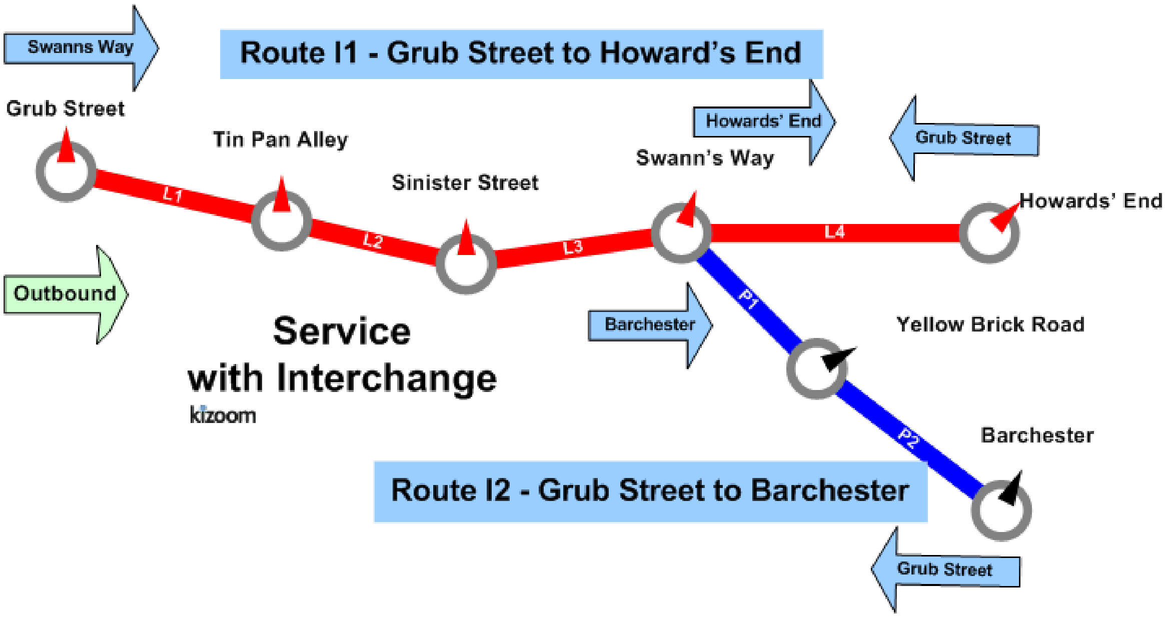
Summary

Two linear routes, connected with an interchange to make a single service.

- Linear route, with different stop visiting pattern at one end
- An Interchange (see section below)
- Express stops, i.e. "Pass" activity where the bus does not sto
- Frequency Based journey times, specified as an interval, but not a frequent service
- Combining operating days (see section below) from service, journey pattern and vehicle journey level.
- Timetable Notes
- More than one operator
- Return Journeys: Outbound and Inbound (see section below) Timetable
- Serviced Organisation & School dates (see section below)
- Registration Schema

Published as PDF

Route Map



Timetable

Line I (Outbound) - Grub Street to Howard's End or Barchester					
	#1	**#2**	**#3**	**#4**	**#5**
Name\Line	**I1**	**I1**		**I1**	**I2**
	(++1)	**(++2)**		**(++3)**	**(++4)**

	School	Mon-Sat		Mon-Fri	Wed-W1-W3
Grub Street	8:02	9:02	? every 15 minutes until 11: 47	12:02	--
Tin Pan Alley	8:12	9:12		12:12	--
Sinister Street	8:32	9:32		12:32	--
Swann's Way	8:40	9:40		12:40	12:45 **(++4A)**
Yellow Brick Road	--	--	--	--	12:48
Barchester	--	--	--	--	12:58
Howard's End	8:50	9:50	--	12:50	--

Timetable Notes		
Lines A1 & B1	**Service operates from 02/01/2004 until further notice**	
Service operates Monday to Friday		
Service does not run Christmas Day, New Years Day, Good Friday, Boxing Day		
Service runs Bank Holiday Mondays		SV1
Service runs 02/06/2004		SV1
Service does not run 01/06/2004		SV1
Service does not run 9/12/2004 -15/12/2004		SV1
(++1)	Journey runs during term days of Dotheboy?s Academy	VJ1
Journey does not run during holidays of Dotheboy's Academy		VJ1
Journey does not run May Day		VJ1
Journey available 12/12/2004		JP1
Journey not available 11/1/2004 until 11/11/2004.		JP1
(++2)	Journey runs Monday to Saturday	VJ2
	Journey runs New Year?s Day, Boxing Day	VJ2
	Journey available 12/12/2004	JP1
	Journey not available 11/1/2004 until 11/11/2004.	JP1
(++3)	Journey available 12/12/2004	JP1
	Journey not available 11/1/2004 until 11/11/2004.	JP1
(++4)	Journey runs Wednesdays on 1st and 3rd weeks in month	VJ4
	Service does run on New Years day and Boxing day	VJ4
	Journey available 02/05/2004	VJ4
	Journey not available 04/08/2004-09/08/2004, 05/08/2005-	VJ4

	10/08/2005	
(++4A)	Connection only available 02/01/2004-17/10/2004.	

Line I (Inbound) - Barchester or Howard's End to Grub Street					
	#1	**#2**	**#3**	**#4**	**#5**
Name\Line	**I1**	**I1**		**I1**	**I2**
	(++1)	**(++2)**		**(++3)**	**(++4)**
	School	**Mon-Sat**		**Mon-Fri**	**Wed-W1-W3**
Howard's End	9:00	10:00	?	13:00	--
Barchester	--	--	--	--	<13:15
Yellow Brick Road	--	--	--	--	12:48
Swann's Way	8:40	9:40	every 15 minutes until 12:45	12:40	12:45 **(++4A)**
Sinister Street	8:32	9:32		12:32	
Tin Pan Alley	8:12	9:12		12:12	
Grub Street	8:02	9:02		12:02	

The XML Representation

XML Document

Service Registration

- The service is not registered
- There are two **Operator** instances;
  - *O1 - 'Smooth Buses'*, who register and provide the main service,
  - *O2 - 'Smart Buses'* who provide just the journey in column #5 on behalf of *'Smooth Buses'*.

Service Structure

- There is a single**Service**instance *SV1*, with two **Line** instances *Ln_1 ? ?I1?*. and*Ln_2 - ?I2?*.
- There are seven **StopPoint** instances, all references to existing NaPTAN stops
- There are two **Route** instances s (*R_1*, *R_2*), each with a single **RouteSection** (*RS_1*, *RS_2*)

- *RS_1* has four **RouteLink** instances (*RL_1, RL_2, RL_3, RL_4*), running *'Grub Street - Tin Pan Alley - Sinister Street - Swann's Way - Howard's End'*. Each link has two stop references (*RL_1a, RL1b*, etc)
- *RS_2* has two **RouteLink** instances *(RL_5, RL_6*) links respectively. running '*Swann's Way - Yellow Brick Road - Howard's End'*.

Outbound Journeys

- There are two outbound **JourneyPatternSection** instances *JS_1* and *JS_2*; corresponding to the two **RouteSection**instances, with corresponding journey pattern timing links.
- The outbound service is made up of two **JourneyPattern**instances;
    - *JP_1*, section: *JS_1*, **JourneyPatternTimingLink** instances (*JL_1{Rl_1}, JL_2{RL_2}, JL_3{RL_3}, JL_4{RL_4}*), Each journey pattern timing link has two stop usages (*JL_1a, JL1b*, etc)
    - *JP_2*, section: *JS_2,* **JourneyPatternTimingLink** instances *JL_5{RL_5},* and*JL_6{RL_6}*
- There are four outbound **VehicleJourney**instances:
    - *VJ_1*, for line: *Ln_1* over *JP_1,* with a departure time of*8:02*. This appears in column #1
    - *VJ_2*, also for line: *Ln_1* with a departure time of*9:02*, which references*VJ_1* for its links, and so also follows J*P_1.*
        - The **Frequency**element specifies that is a Frequency Based service with a **ScheduledFrequency** of every 15 minutes which generates both column #2 and column #3. However The service is not a statutory Frequent Service (and the interval is greater than 10 minutes), so **FrequentService** is *false*
    - *VJ_3*, also for line: *Ln_1* , with a departure time of*12:02*, which references*VJ_1* for its links, and so also follows J*P_1.* This appears in column #4
    - *VJ_4*, for line: *Ln_2 -?I1?*, over *JP_2*. with a departure time of*12:45*. This appears in column #5. It has a different operator of O2

Inbound Journeys

- There are two inbound **JourneyPatternSection** instances *JS_X1* and *JS_X2*; corresponding to the two **RouteSection**instances, with corresponding journey pattern timing links, specified in reverse order
- The outbound service is made up of two **JourneyPattern**instances;
    - *JP_Z1*, section: *JS_X1*, **JourneyPatternTimingLink** instances (*JL_X1 {RL_4}, JL_X2 {Rl_3}, JL_X3 {Rl_2}, JL_X4 {RL_1}*), Each journey pattern timing link has two stop usages (*JL_1a, JL1b*, etc)
    - *JP_2*, section: *JS_2,* **JourneyPatternTimingLink** instances *JL_5{RL_6},* and*JL_6{RL_5}*
- There are four outbound **VehicleJourney**instances:

- *VJ_X1*, for line: *Ln_1* ('ln1') over *JP_X1*, with a departure time of*9:00.* This appears in column #1
- *VJ_X2*, also for line: *Ln_1* ('ln1') with a departure time of*10:00*, which references*VJ_X1* for its links, and so also follows J*P_X1*.
  - The **Frequency** element specifies that is a Frequency Based service with a **ScheduledFrequency** of every 15 minutes - for which teh publisher generates both column #2 and column #3. The service is not a statutory Frequent Service, so **FrequentService** is *false*
- *VJ_X3*, also for line: *Ln_1*, ('ln1') with a departure time of*13:00*, which references*also VJ_X1* for its links, and so also follows J*P_X1*. This appears in column #4
- *VJ_X4*, for line: *Ln_2* ('ln2'), over *JP_X2*. with a departure time of*12:45.* This appears in column #5. It has a different operator of O2

Interchanges

Outbound Journey Interchange

- The service has an outbound **JourneyPatternInterchange** (*JI_1*) that connects the two journey patterns (*JP_1*, *JP_2*) at specific journey pattern timing link stop usages
  - inbound: *JP_1 : JL_3b*,
  - outbound: *JP_2: JL_5a*.
- The connection of the two journeys is modelled by two an outbound **VehicleJourneyInterchange** instances, one for each of the two vehicle journeys that connect; both reference the journey pattern interchange *JI_1*
  - interchange: *VJI_3*: for journey *VJ_3* has inbound: *VJ_3*,: outbound: *VJ_4*,
  - interchange *VJI_4*: for journey *VJ_4* has inbound: *VJ_3*,: outbound: *VJ_4*).

Inbound Journey Interchange

- The service has an inbound **JourneyPatternInterchange** (*JI_X1*) that connects the two journey patterns (*JP_X2, JP_X1*) at specific journey pattern timing link stop usages
  - inbound: *JP_X2 : JL_X6b*,
  - outbound: *JP_X1 : JL_X2a*.
- The connection of the two journeys is modelled by two inbound **VehicleJourneyInterchange** instances, one for each of the two vehicle journeys that connect; both reference the journey pattern interchange *JI_X1*
  - interchange: *VJI_X3*: for journey *VJ_X3* has inbound: *VJ_X3*,: outbound: *VJ_X4*,
  - interchange *VJI_X4*: for journey *VJ_X4* has inbound: *VJ_X3*,: outbound: *VJ_X4*).

The Operating Days

- The **Service operating period** for *SV_1* starts on*02/01 2002* for all vehicle journeys and continues indefinitely
- The **OperatingProfile** for the Service *SV_1* states values that apply to all journeys unless overridden on a journey pattern or individual vehicle journey.
  - The **RegularDayType** of *SV_1* specifies journeys of the service run Monday to Friday every week of the year
  - The **BankHolidayOperation / DaysOfNonOperation** of *SV_1* states journeys of the service do not run Christmas (i.e. Christmas Day & Boxing Day) New Year's Day, and Good Friday, but that they do run on all Bank Holiday Mondays
  - The **SpecialDaysOperation / DaysOfOperation** of *SV_1* states that journeys of the service are will run on *02/06/2004* regardless.
  - The **SpecialDaysOperation / DaysOfNonOperation**states that all services will not run between *09/12/2004* and *15/12/2004* regardless, and also will not run on *01/06/2004*.
- There is an override instance of the OperatingProfile for journey pattern *JP_1*, which applies to all its **VehicleJourney** instances:- *VJ1_2*, *VJ_2*, *& VJ_3*,
  - The **SpecialDaysOperation / DaysOfOperation** of *JP_1* states that journeys of the service are will run on *12/16/2004* regardless.
  - The **SpecialDaysOperation / DaysOfNonOperation**states that all services will not run between *01/11/2004* and *1111/2004* regardless.
- There are override instances of the OperatingProfile for the vehicle journeys *VJ_1*, *VJ_2*, *& VJ_4*, but not for *VJ_3*, which has the same values as the general service defaults for *SV_1*.
  - VJ1: OperatingProfile
    - The **RegularDayType** states that *VJ_1* runs Monday to Friday in the term time of serviced organisation *SO_2* (*Dotheboy's*)
    - The **BankHolidayOperation / DaysOfNonOperation** states that *VJ_1* does not run on Mayday, differing from the general defaults. *VJ_1* still does not run on Christmas (i.e. Christmas Day & Boxing Day) New Year's Day, and Good Friday and Good Friday
  - VJ2: OperatingProfile
    - The RegularDayType of states that *VJ_2* runs Monday to Saturday
    - The BankHolidayOperation / DaysOfOperation states that *VJ_2* does run on Boxing Day and New Year's Day
  - VJ3: OperatingProfile
    - As for Service
  - VJ4: OperatingProfile
    - The **RegularDayType** states that *VJ_4* runs on Wednesdays
    - The **PeriodicDayType** states that *VJ_4* furthermore only runs on the first and third weeks of the month
    - The **SpecialDaysOperation / DaysOfOperation** *VJ_4* states that *VJ_4* does run on *5/08/2004*

        - The **SpecialDaysOperation / DaysOfNonOperation** states that *VJ_4* is does not run on *05/02/2004*, and between *4/08/2004 and 0908/2004* and also not between*508/2005 to 10/08/2005*
- The **VehicleJourneyInterchange** instances *VI_3 & VI_4* which connect *VJ_3* and *VJ_4* have a validity period from *02/01/2004 to 17/10/2004.*

The Service Organisation Days

- **VehicleJourney***VJ1* states on its OperatingProfile that the
    - The service only runs in the term time of serviced organisation *SO2_1* (*Dotheboy's*)
- There are two **ServicedOrganisation** Definitions.
    - A local authority '*Bleakshire LEA*' , *SO_1*
    - Dotheboys, SO_2 which has *Bleakshire LEA* as its parent
- The **ServicedOrganisation** definition for '*Bleakshire LEA*', *SO_1* defines the terms of the school year using working days.
    - *Michaelmas Term* **StartDate** *2004-09-01*, **EndDate** *2004-12-23* , exception*2004-11-11*
    - *Easter Term* **StartDate** *2005-01-01*, **EndDate** *2005-04-30*
    - *Summer Term* **StartDate** *2005-04-02*, **EndDate** *2005-07-2*
- The **ServicedOrganisation** definition for *Dotheboy's* overrides the summer term working days.
    - *Summer Term* **StartDate** *2005-04-01* **EndDate** *2005-07-30*

Notes

This example was refined for in the 2.1 Enhanced publisher to not be a Frequent Service

Page last updated: 2013/04/13

Examples 2.1 - Large route

Summary

Registration for a set of long routes

- Many stops, requiring page breaking vertically to publish
- Many vehicle journeys, requiring page breaking horizontally to publish
- Some operational date rules
- Sharing of Sections & Journeys
- Timing links with zero values
- Multiple Frequency based services,breaking horizontally to publish

Published as: PDF

Route Map

Timetable

The XML Representation

XML Document

- There is a single**Service**instance *SV1*, with one **Line** - '*A1*'.
- The service has more stops than will fit on a single page and more journeys than will fit on a single page

Service Registration

- The service is Registered.
- There is a single **Operator**.

Service Structure

- There is a single**Service**instance *SV1*, with one **Line** - '*A1*'.
- There are 31 **StopPoint** instances, more than will fit vertically on a single page
- There are two **RouteSection** *rs_1* and rs_2 with **RouteLink** instances connecting the stops.
- There are two **JourneyPatternSection** jp_s1 and jp_s2 made up of five and 25 **JourneyPatternTimingLink** instances respectively.
- There is a single **JourneyPattern**instance *JP_1*, with two sections: *JS_1 and js_2*.
- There are 27 **VehicleJourney**instances, all for *Ln_1*, more than will fit horizontally on a single page. The first journey vj_1 is based on JP1, all the others are based on VJ_1, with different times. The journeys fall into two groups.

- Vj_1-20 which are single services and demonstrate page overflow for simple columns
- Vj_2127 which are marked as frequent service and demonstrate page overflow for frequency based service column groups

Page last updated: 2013/04/13

Examples 2.1 - Linear route

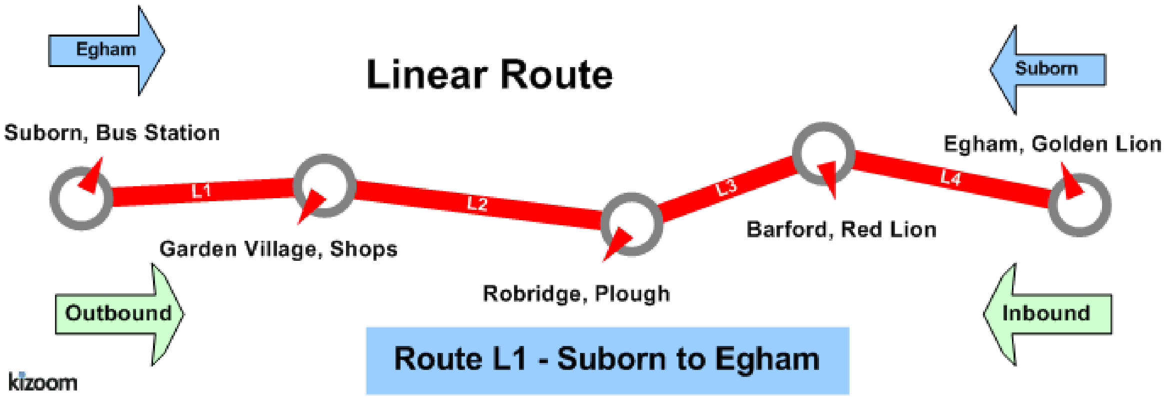
Summary

Registration for a single route run by a single operator. There are two vehicle journeys with the same timings.

- Linear route
- Local bus stop definition.
- Route Track Map with Tracks. (Enhanced Publisher Only)
- Tracks (see section below), including instructions and Mapping System References
- Inbound and outbound journeys and journey patterns on the same route
- *Frequent Service.* Frequency based service, generating a frequency column specified with an interval and a minimum and maximum frequency.

TransXChange XML Document	Particulars and Matrix output PDF	Route Map Output
linear.xml (One direction only)	Particulars and Matrix PDF	Route Map PDF Route Map PDF (no background)

Route Map



Timetable

Outbound

Line L1	Journeys		
	#1		#2
Suborn, Bus Station	07:00	And then every 7 minutes until 18:30	19:00
Garden Village, Shops	07:20		19:20

Robridge, Plough	07:40		19:40
Barford, Red Lion	07:50		19:50
Egham, Golden Lion	08:00		20:00

Inbound

Line L1	**Journeys**		
	#3		**#4**
Egham, Golden Lion	07:30	And then every 7 minutes until 19:30	20:00
Barford, Red Lion	07:40		20:10
Robridge, Plough	07:50		20:20
Garden Village, Shops	08:10		20:30
Suborn, Bus Station	08:30		21:00

The XML Representation

Service Registration

- The **Registration** is for a single **Operator**

Service Structure

- There is a single**Service**instance *SV1*, with one **Line** - '*L1*'.
- There are five **StopPoint** instances.
    - One stop is defined locally (*Suborn, Bus Station)*., the others are all references to existing NaPTAN stops
- There is a single **RouteSection** *rs_1* with four **RouteLink** instances *rl_1-rl_4* connecting the stops
- There is a single **Route** *r_1* containing the route section *rs_1*.

Outbound

- There is a single **JourneyPatternSection** *js_1*, made up of four **JourneyPatternTimingLink** instances, *jptl_1-jptl_4,* each referencing the corresponding route link.
    - jptl_1 references rl_1.
    - jptl_2 references rl_2.
    - jptl_3 references rl_3.
    - jptl_4 references rl_4.
- There is a single outbound **JourneyPattern,** *jp_1*, that follows route *r_1*.
- There are two outbound **VehicleJourney**instances, both based on **JourneyPattern** *jp_1*:

  - The first, *vj_1* , follows *jp_1* without any changes to the timings on the **JourneyPatternTimingLink** instances.
    - It has a **DepartureTime** of 7.00.
    - The **Frequency** element specified it is a frequency based journey with a **ScheduledFrequency** of every 8 minutes, and an **EndTime** of 18:30. The Frequency entry causes the publisher to create an additional column. In additional an optional minimum and maxim frequency interval are specifie
  - The second, *vj_2* , references *vj_1* for all its links, with a **DepartureTime** of 19:00.

Inbound

- There is a single inbound **JourneyPatternSection** *js_r1*, made up of four **JourneyPatternTimingLink** instances, referencing a corresponding route link.
  - jptl_r1 references rl_4.
  - jptl_r2 references rl_3.
  - jptl_r3 references rl_2.
  - jptl_r4 references rl_1.
- There is a single inbound **JourneyPattern,** *jp_r1*, that follows route *r_1*.
- There are two inbound **VehicleJourney**instances, both based on **JourneyPattern** *jp_r1*:
  - The first, *vj_r1*, follows *jp_r1*without any changes to the timings on the **JourneyPatternTimingLink** instances. It has a **DepartureTime** of 7.30.
    - It has a frequency of every 20 minutes, and an **EndTime** of 19:30
  - The second, *vj_r2* references *vj_r1*f or all its links, with a **DepartureTime** of 20:00.

The Operating Days

- The service **OperatingProfile** says it runs Monday to Friday, every day of the year.

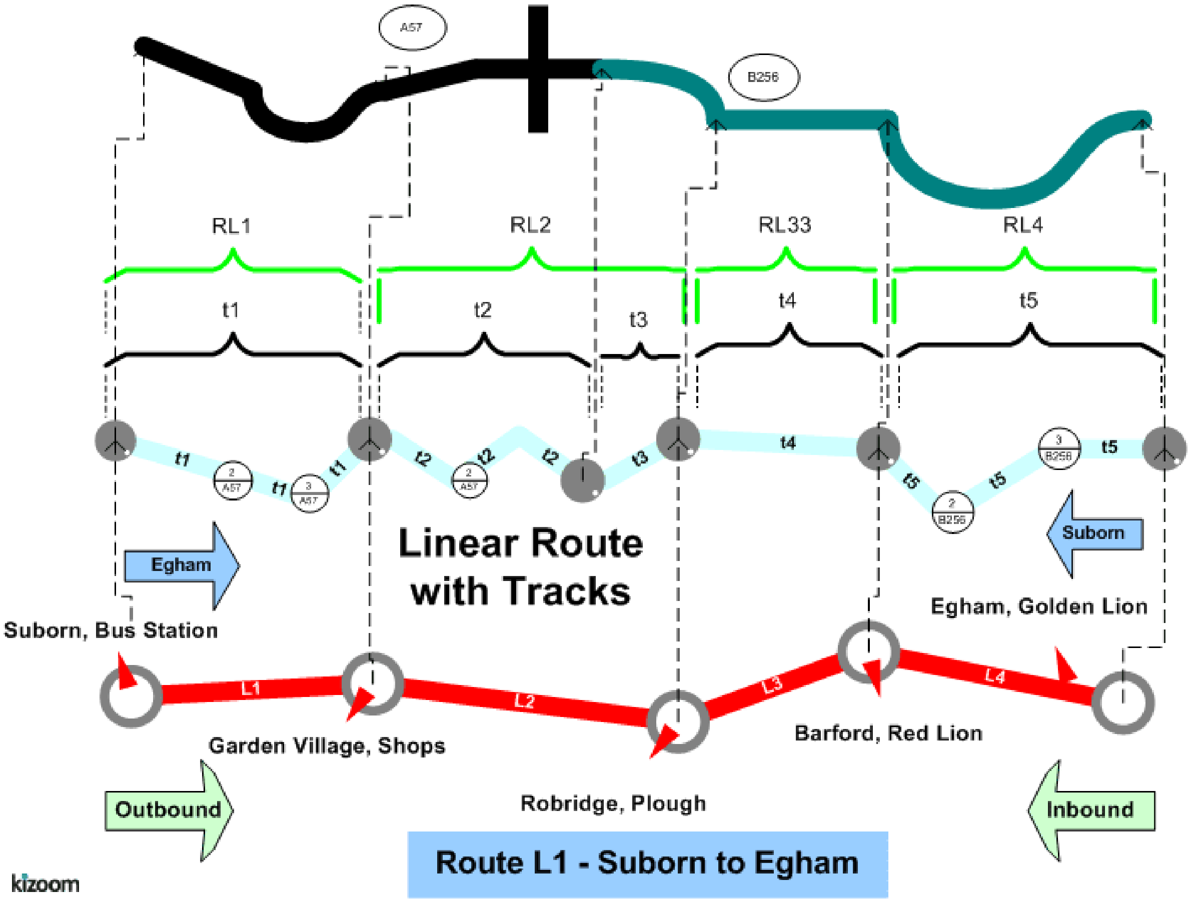
Use of Tracks

The example includes a description of the physical route as an ordered sequence of tracks, each containing a polyline of geospatial points.

- Each **RouteLink** has a single **Track**, except for the link between '*Garden Village'* and *'Robridge, Plough'*, which has two Track instances (t2 & T3), because its road goes over two different roads; the *A57* and the *B256*. See Use of Tracks
- Some of the **Tracks** include MappingSystem references to TOID instances

The following diagram shows the how the route projects onto the map representation of the road system, using the NaPTAN stop points as projection points between levels of discourse.

- A schematic map of the road network appears at the top.
- The stylised route map appears at the bottom.
- In between are shown the route links and track link, with the points onto which the align shown as vertical dotted lines.



Notes

This example was refined for in the 2.1 Enhanced publisher to be a Frequent Service i.e. <10 minutes and to have a minimum and maximum.

In the enhanced publisher will group the journeys in a single bed Monday to Sunday, rather than as separate beds Monday to Friday, Saturday and Sunday.

Page last updated: 2013/04/13

Examples 2.1 - Lollipop route

Summary

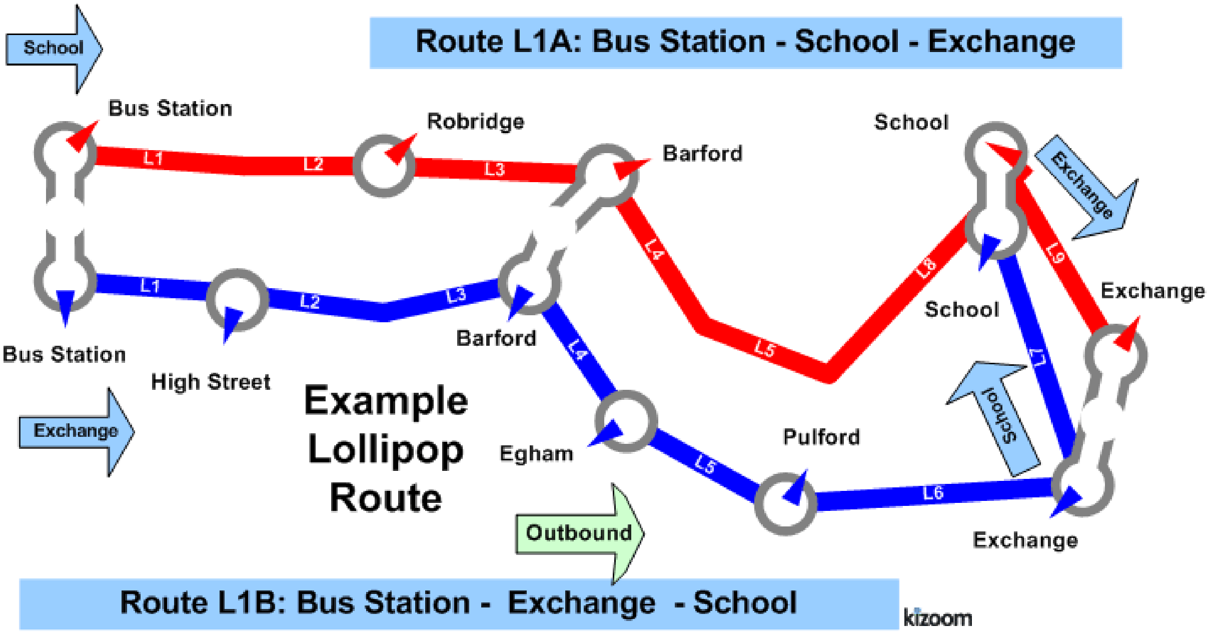
Same stops covered by two different routes in different directions in a partial lollipop. See also Hail and Ride section for a full lollipop topology.

- Lollipop route, with two journeys proceeding round the loop in opposite directions (In this example neither route completes the full lollipop course)
- Two services run by two different operators, sharing a line label.
- Two different physical routes with the same line label.
- Timing status on stop usage other than 'Principle Timing Point (PTP)
- Additional operating days (see section below) for regular and bank holiday operation
- Express stopping pattern for some journeys.
- Use of Stop Sequence Numbers (see section below)
- Use of Dynamic Destination headings
- Reuse of shared sections (see section below)
- Reuse of VehicleJourney Link
- Layover Point
- General Schema

Published as PDF:

- PDF general: With*publish lollipop.xml* ***-full*** TransXchange publisher option (includes all stops)
- PDF vosa: With p*ublish lollipop.xml* ***-vosa*** TransXchange publisher option (includes only stop usages with a timing status of '*PTP*')

Route Map



Timetable

Bus Station To Exchange

Column	#1	#2	#3	#4	#5
Operator	*ACO*	*ACO*	*ACO*	*RED*	*ACO*
Line	1B	1A	1B	1B	1B
Bus Station	15:55	16:15	16:35	16:40	16:55
High St				<16:46	
Robridge		16:26			
Barford	16:09	16:29	16:49	16:54	17:09
Egham	16:12		16:52	16:57	17:12
Pulford	16:15		16:55	17:00	17:15
Exchange	16:32	16:52	17:12		17:32
School		16:53		17:16	
Exchange				17:17	

The XML Representation

XML Document

Service Registration

- The service is not registered
- There are two **Operator** instances, *'ACO*'. and '*RED*'

Service Structure

The detailed map below shows the sections and stop sequences used.

- There are two **Service**instances whose Lines are labelled to appear to the public as the same:
    - *S1,* which has two **Line** instances; *L1*, labelled '*L1A',* and*L2,* labelled *'L1B' S1* is run by **Operator** *'ACO*'
    - *S2* which has **Line** *L3* also labelled *'L1B'*. *S2* is run by **Operator** *'RED*'
- There are three **RouteSection**instances;
    - *RS1: 'Bus Station'* to *'Pulford',* containing **RouteLink** instances *RL1* to *RL5*
    - *RS2: 'Pulford*' to *'School* ' via *'Exchange*', containing **RouteLink** instances *RL6* and *RL7*
    - *RS3: 'Pulford*' to *'Exchange'* via *'School*', containing **RouteLink** instances *RL8* and *RL9*.
- There are two **Route**instances:
    - *R1: 'Bus Station to School (via Exchange)',* containing *RS1* and *RS2*.
    - *R2: 'Bus Station to Exchange (via School)',* containing *RS1* and *RS3*.
- There are three corresponding **JourneyPatternSection** instances, *JS1, JS2* and *JS3,* one for each route section.
    - Egham is not a 'Principle Timing Point' ('*PTP*'), so for the call at Egham the **JourneyPatternTiminkLink** has an override **TimingStatus** of 'Timing Information Point' (''*TIP*')
- S1 has two **JourneyPattern**instances:
    - *JP1:* Following **Route** *R1,* with sections*JS1* and*JS2*, passing '*Pulford'* without stopping
    - *JP2:* Following **Route** *R2,* with sections*JS1* and*JS3*.
- S2 has one **JourneyPattern**instance:
    - *JP3: Also* following **Route** *R2*, with sections*JS1* and*JS3*, passing '*Pulford'* without stopping. It contains two named layover points *lay_1* and *lay_2*.
- There are five **VehicleJourney** instances, one for each colum
- S1 has three **VehicleJourney** instances:
    - *VJ1:* following **JourneyPattern** *JP1* over **Route** *R1, 'Bus Station to School (via Exchange)'* , as **Line** *'L1B',* passing '*High Street'* and *'Robridge*', without stopping. Short working of the second section, i.e. termination at Exchange, is indicated by a dead run.
    - *VJ2:* also following **JourneyPattern** *JP1* over **Route** *R1*, *'Bus Station to School (via Exchange)'* but as **Line** *'L1A'*, passing '*High Street'*, '*Egham'* and '*Pulford'* without stopping

    - *VJ3:* reuses the timing links of VJ1, and so also follows **JourneyPattern** *JP1* over **Route** *R1, 'Bus Station to School (via Exchange)'*
    - *VJ5:* reuses the timingg links of VJ1, and so also follows **JourneyPattern** *JP1* over **Route** *R1, 'Bus Station to School (via Exchange)'*
- S2 has one **VehicleJourney** instance:
    - *VJ4:* following **JourneyPattern** *JP3* over **Route** *R2, 'Bus Station to Exchange (via School)'*, as **Line** *L3* , which has the same label of *'L1B'* as *S1/L2* , although it actually goes round the last two stops in a different sequence from the other journeys with the same label, and so needs a different underlying **Route**. *VJ4* passes *'Robridge*', without stopping

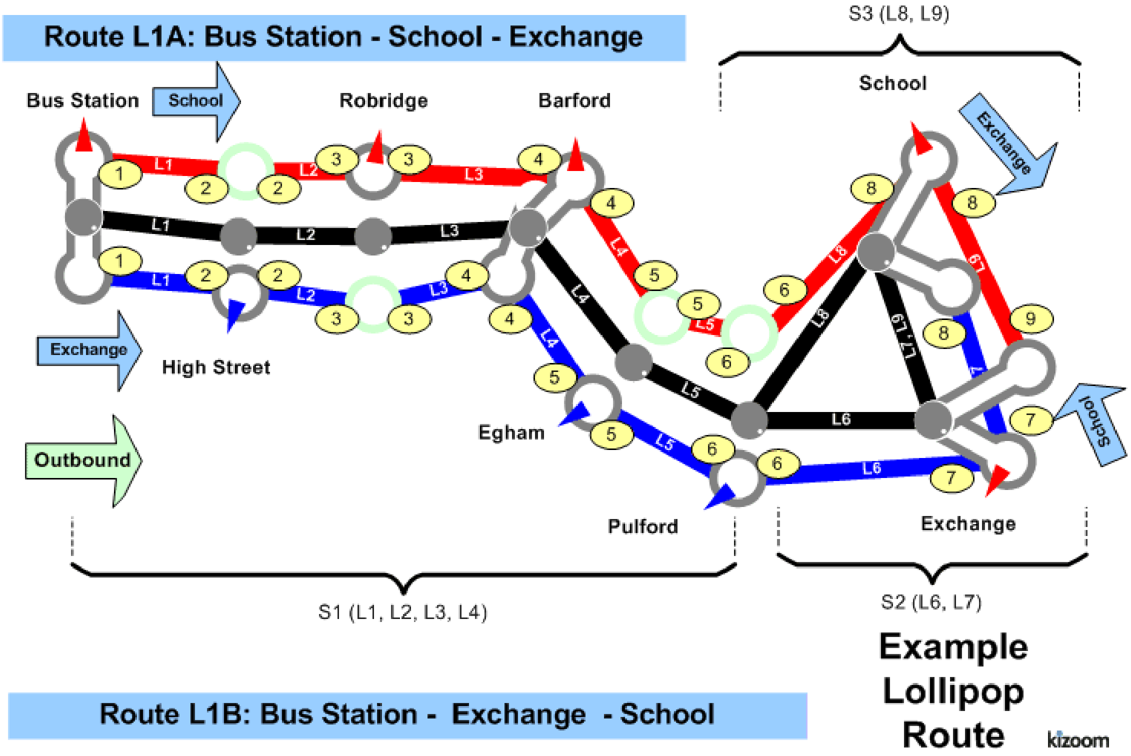
Operating Days

- The **Service operating period** for *SV_1* starts on*01/01/2004* for all vehicle journeys, and continues until 13/06/2005
- The OperatingProfile for the **Service** *SV_1* states values that apply to all journeys unless overridden on a journey pattern or individual vehicle journey.
    - The RegularDayType **DaysOfWeek** specifies journeys of the service by default runs Monday to Saturday throughout the year
    - The **BankHolidayOperation / DaysOfOperation** states journeys of the service run on Jan2ndScotland, MayDay, EasterMonday, SpringBank, AugustBankHolidayScotland, ChristmasDayHoliday, BoxingDayHoliday and ChristmasEve.
    - The **BankHolidayOperation / DaysOfNonOperation** states journeys of the service do not run on ChristmasDay, BoxingDay, GoodFriday, NewYearsDay, NewYearsDayHoliday and NewYearsEve.
- The Vehicle Journeys VJ1 and VJ5 have a different set of day type specified
    - The RegularDayType **DaysOfWeek** specifies journeys of the service run Monday, Wednesday, Friday, Sunday throughout the year
- The **Service operating** period for *SV_2* starts on *01/01/2004* for all vehicle journeys, and continues until 13/06/2005
- The **OperatingProfile** for the Service *SV_2* states values that apply to all journeys unless overridden on a journey pattern or individual vehicle journey.
    - The **RegularDayType** DaysOfWeek specifies journeys of the service by default runs Monday to Sunday throughout the year
    - The **BankHolidayOperation / DaysOfNonOperation** states journeys of the service do not run on **Christmas**, ie ChristmasDay, and Boxing day

Use of Sections & Stop Sequence Numbers

Sections are used to reuse links between journeys.

Stop sequence numbers are used to coerce a specific ordering of the stops within a matrix timetable when published. The following diagram shows the journey pattern sections annotated with stop section numbers.



Page last updated: 2013/04/13

Examples 2.1 - Merge Frequency journeys

Summary

Registration for a route that has been coded as individual journeys but is to be shown as a Frequent Service.

- Many stops
- Many vehicle journeys
- Merging of multiple journeys by the publisher (2007 enhanced version only)
- Some operational date rules
- Operational data for Journey pattern for vehicle typ
- Operational data for vehicle journey bloc
- Vehicle Journey private code
- Non PTP servic

Published as: (i) PDF (merged) or (ii) PDF (unmerged)

Route Map

Timetable

Service operates from 22/09/2004 until further notice

Suborn - St James's Church								
Outbound, Monday to Friday								
	L1	**L1**	**L1**		**L1**	**L1**		**L1**
Suborn, Suborn Bus Station	07:00	07:30	08:00	Frequent service at least every 10 mins until	09:10	09:10	Frequent service at least every 10 mins until	10:45
Suborn, Garden Village Shops	07:20	07:50	08:20		09:30	09:30		11:05
Suborn, Plough	07:40	08:10	08:40		09:50	09:50		11:25
Suborn, Red Lion	07:50	08:20	08:50		10:00	10:00		11:35
Suborn, Golden Lion	08:00	08:30	09:00		10:10	10:10		11:45
Suborn, Paradise	08:10	08:40	09:10		10:20	10:20		11:55
Suborn, Kensal Green	08:30	09:00	09:30		10:40	10:40		12:15
Suborn, Much Binding	08:50	09:20	09:50		11:00	11:00		12:35
Suborn, Village	09:00	09:30	10:00		11:10	11:10		12:45

Hall								
Suborn, War Memorial	09:10	09:40	10:10		11:20	11:20		12:55
Suborn, The Cricketers	09:20	09:50	10:20		11:30	11:30		13:05
Suborn, Thirkhill Drive	09:30	10:00	10:30		11:40	11:40		13:15
Suborn, Woolworths	09:40	10:10	10:40		11:50	11:50		13:25
Suborn, Police Station	09:50	10:20	10:50		12:00	12:00		13:35
Suborn, Mattmans Garage	10:00	10:30	11:00		12:10	12:10		13:45
Grassy Knowle, Nelson Mandela Way	10:10	10:40	11:10		12:20	12:20		13:55
Grassy Knowle, Robinsons Store	10:20	10:50	11:20		12:30	12:30		14:05
Grassy Knowle, Post Office	10:40	11:10	11:40		12:50	12:50		14:25
Grassy Knowle, High Street	10:50	11:20	11:50		13:00	13:00		14:35
Grassy Knowle, Badgett	11:00	11:30	12:00		13:10	13:10		14:45
Grassy Knowle, Gropers Corner	11:10	11:40	12:10		13:20	13:20		14:55
Grassy Knowle, Hughes Hall	11:20	11:50	12:20		13:30	13:30		15:05
Grassy Knowle, Snow Hill	11:30	12:00	12:30		13:40	13:40		15:15
Grassy Knowle, The Jolly Roger	11:40	12:10	12:40		13:50	13:50		15:25
Grassy Knowle, Gibbards Cross	11:50	12:20	12:50		14:00	14:00		15:35
Grassy Knowle, White Water	12:00	12:30	13:00		14:10	14:10		15:45
Grassy Knowle, Key Holme	12:10	12:40	13:10		14:20	14:20		15:55
Grassy Knowle, Grassy Knowle	12:20	12:50	13:20		14:30	14:30		16:05

Grassy Knowle, Hughes Library	12:30	13:00	13:30		14:40	14:40		16:15
Grassy Knowle, Dixon's	12:40	13:10	13:40		14:50	14:50		16:25
Grassy Knowle, St James's Church	12:50	13:20	13:50		15:00	15:00		16:35

The XML Representation

XML Document

- There is a single**Service**instance *SV1*, with one **Line** - '*L1*'.
- The service has multiple individual services and more journeys than will fit on a single page

Service Registration

- The service is Registered.
- There is a single **Operator**.

Service Structure

- There is a single**Service**instance *SV1*, with one **Line** - '*A1*'.
- There are 31 **StopPoint** instances, more than will fit vertically on a single page. At least one is a TIP, i.e. non PTP
- There are two **RouteSection** *rs_1* and rs_2 with **RouteLink** instances connecting the stops.
- There are two **JourneyPatternSection** jp_s1 and jp_s2 made up of five and 25 **JourneyPatternTimingLink** instances respectively.
- There is a single **JourneyPattern**instance *JP_1*, with two sections: *JS_1 and js_2*.
- There are 27 **VehicleJourney**instances, all for *Ln_1*, all based on JP_1
- The vehicle journeys fall into three groups:
  - *vj_1 to Vj_2*, which are described as individual journeys since they are spaced at more than 10 minutes.
  - *vj_3 to Vj_15*, which are marked as belonging to the first frequency group by a **Frequency** element with a statutory**ScheduledFrequency** of every *8* minutes, and an **EndTime** of 09:10, and **FrequentService** *true*. If published with the *mergeFrequentJourneys* option of the enhanced publisher, the journeys will be grouped as a Frequency group of a starting column and then a column stating the frequency as at least every *8* minutes.
  - *vj_16 to Vj_27*, which are marked as belonging to the second frequency group by a **Frequency** element with a statutory**ScheduledFrequency** of

every 10 minutes, and an **EndTime** of 10:45, and **FrequentService** *true*. If published with the *mergeFrequentJourneys* option of the enhanced publisher, the journeys will be grouped as a Frequency group of a starting column with the initial set of times and then a column stating the frequency. as at least every *10* minutes.

- Each vehicle journey has operational data on i

Notes

N.B. The *mergeFrequentJourney option is only available with the 2007 2.1* Enhanced publisher. For Versions prior to that the individual journeys will all be published as separate Frequency Group columns.

If any frequent services are provided as individual journeys, then all the individual journeys must be provided.

Page last updated: 2013/04/13