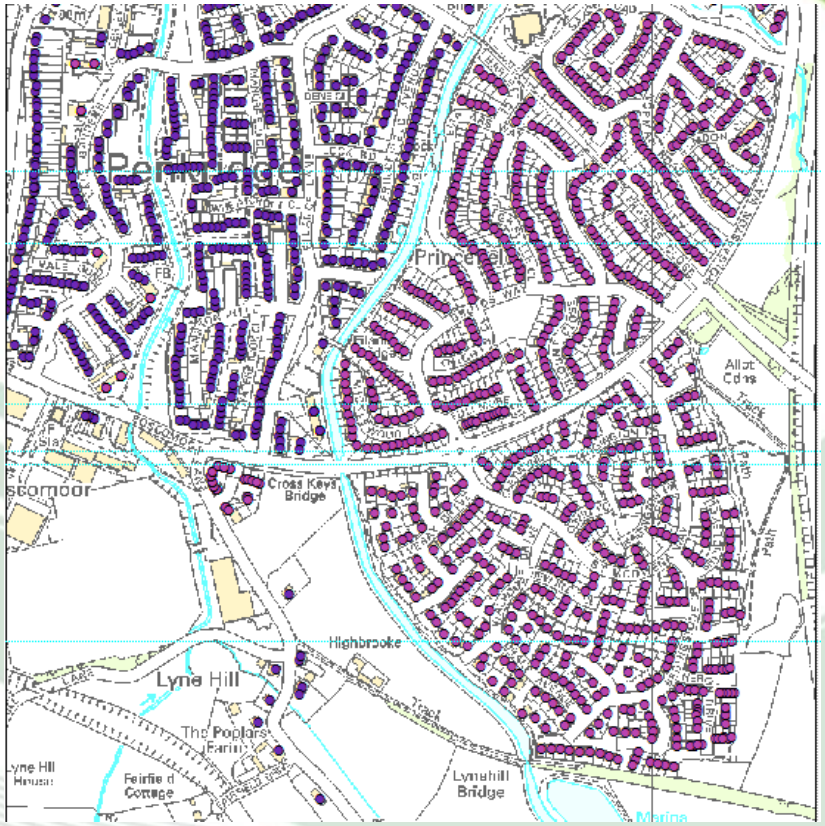
South Staffordshire Council

Route optimisation: saving you more than just money

EMG Webinar, London

Tuesday 3rd March 2015



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South Staffordshire Council

Introduction

Routesmart introduced Summer 2011 to conduct desktop efficiency exercise

Additional benefits not known at this time:

- ❑ Scenario testing for new waste and recycling service. Biggest SSC contract
- ❑ Creation of maps and lists for distribution of 42,500 new blue bins (February 2013)
- ❑ Generation of 150 new collection routes for domestic/organic/recyclable material (Summer 2013)
- ❑ Integration of property database with range of SSC systems: GIS, Springboard, online calendar tool
- ❑ Ability to test alternative collection options as part of 'TEEP' analysis (Autumn 2014)

Data

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Accuracy of data integral to project success

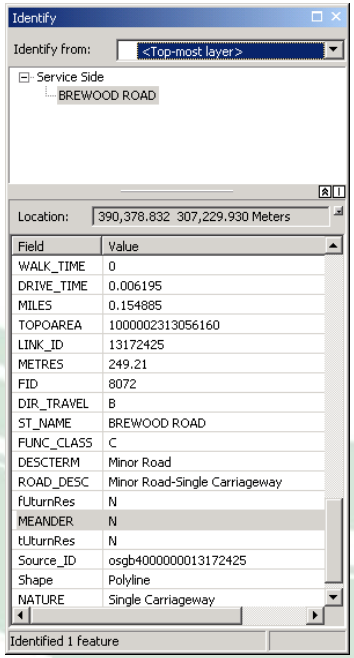
Existing SSC property data for WM was poor

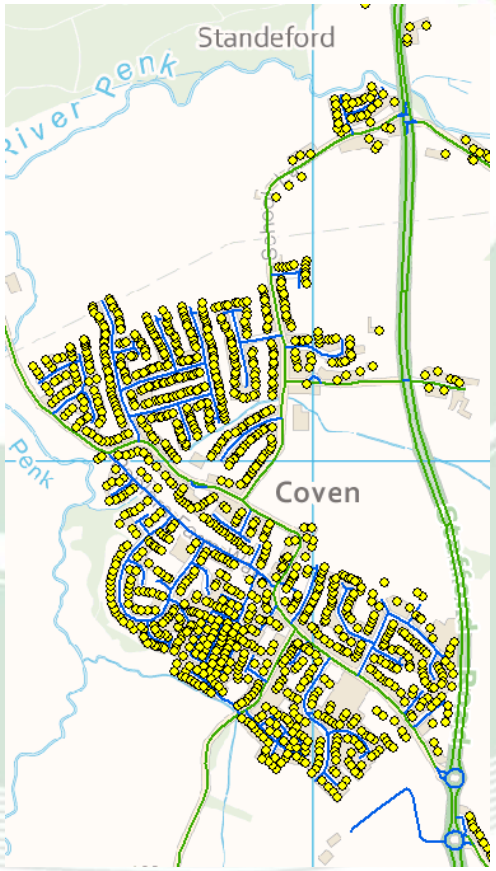
Cleansing of NLPG for waste management: time consuming

Primary information to incorporate into route optimisation system:

- ❑ Integrated Transport Network (ITN): available from relevant Highways LA
- ❑ Depot and disposal facilities
- ❑ Property locations (including relevant attributes)

Health and safety: input RRAs for single sided collections





Distribution of wheeled bins: February 2013

Property data exported from Routesmart to GIS

Further cleanse: identify properties not requiring blue bin delivery

Attribute table details addresses in list form to accompany maps

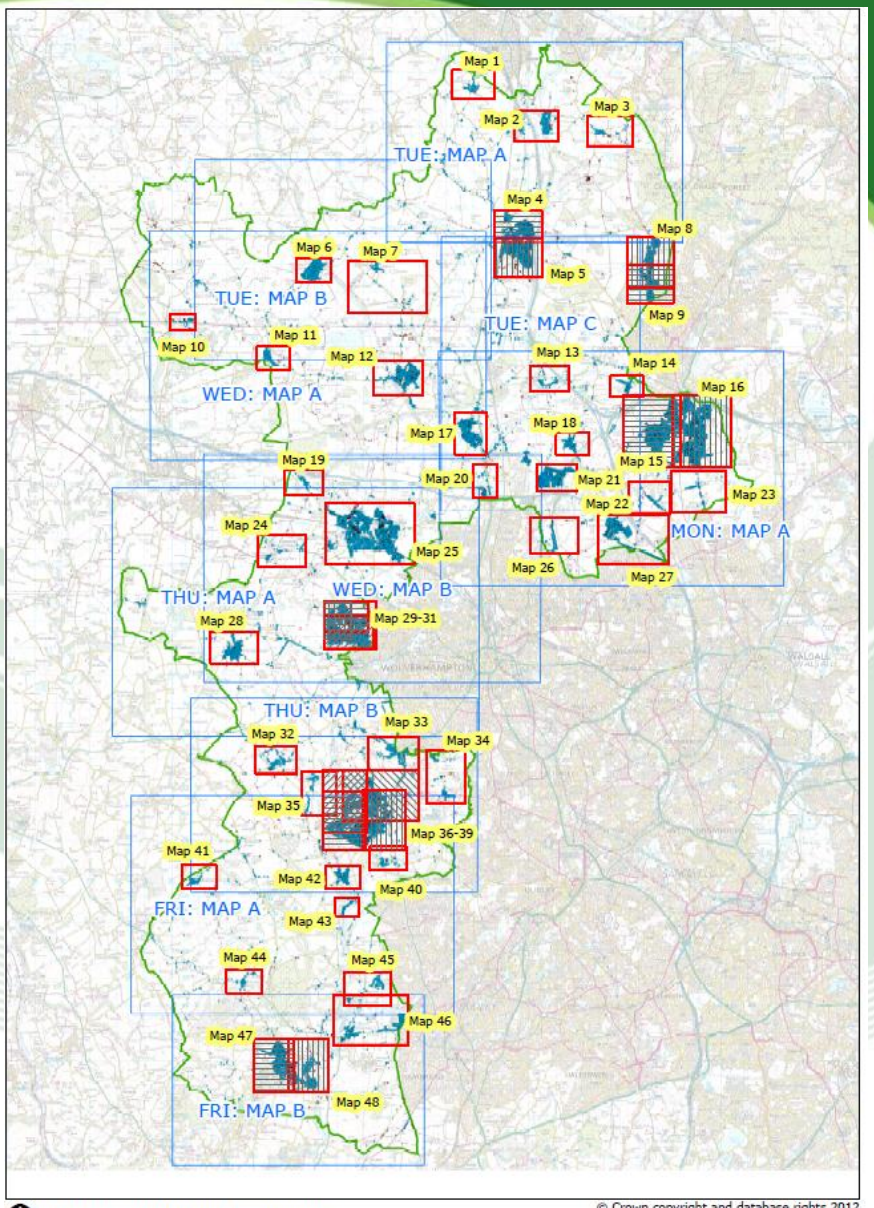
Maps devised with Craemer PLC and TJK Logistics Ltd

Easier communication with residents

Importance of accurate data: limited SSC support as 'pilots'

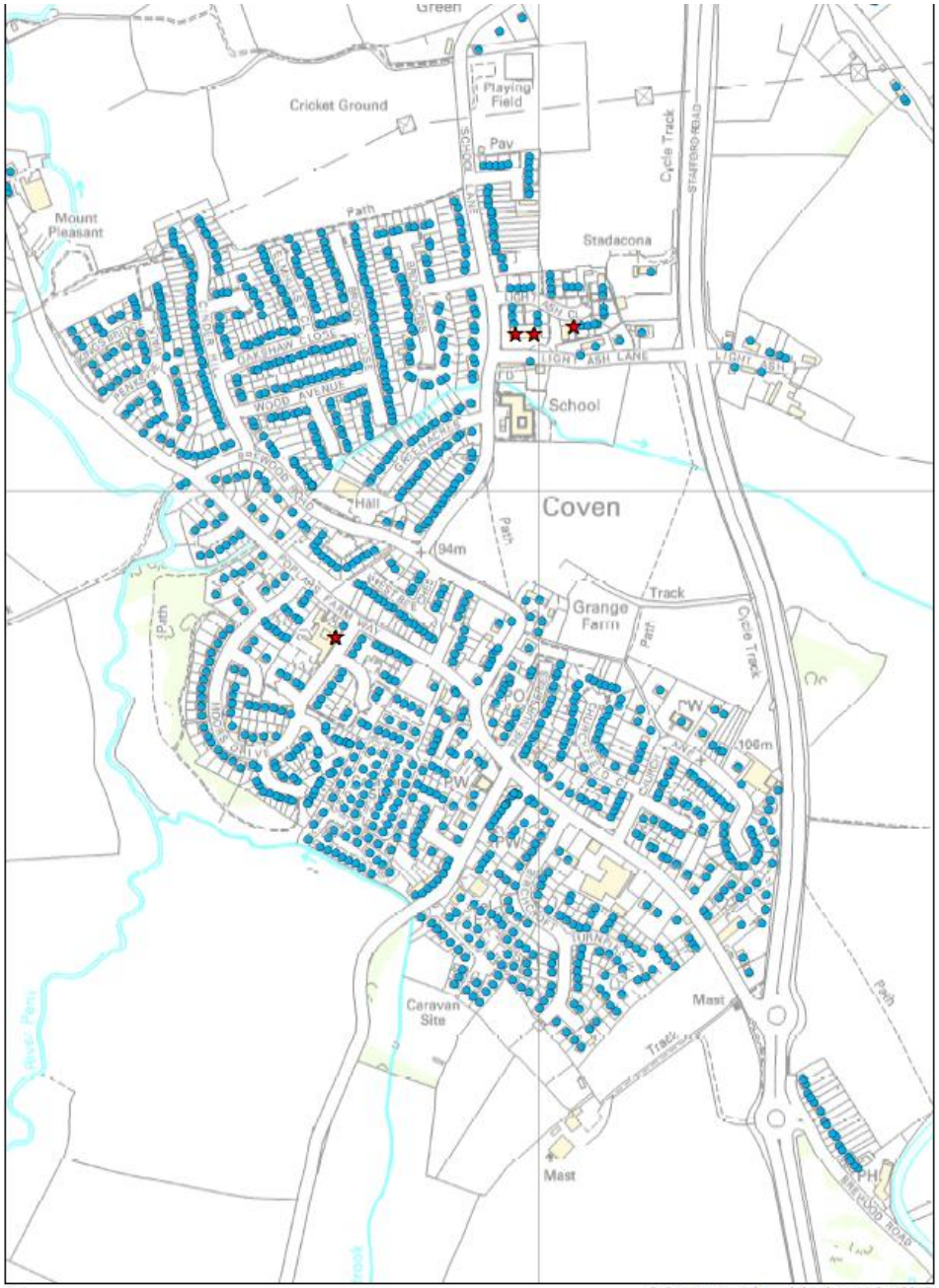
Deliveries completed 1 day ahead of schedule

127 non deliveries (42,500 properties). 99.70% success rate



Right: Example of village specific map issued to blue bin distribution crews

Below: TJK Logistics Ltd delivering blue bins in Huntington, February 2013



Re-route of waste collection rounds: October 2013

Three residual waste disposal points changing to one from October 2013

Collection routes developed "organically" over 10 years

Changes to disposal points, housing developments, waste collection systems, waste composition, technology and available data

Communal properties incorporated into mainline rounds

Key service data:

- ❑ weight per property
- ❑ participation rates
- ❑ collection time per property
- ❑ vehicle capacity
- ❑ collection hours
- ❑ allocated break times
- ❑ spatial distribution of assisted collections and additional bins

Re-route of waste collection rounds: October 2013

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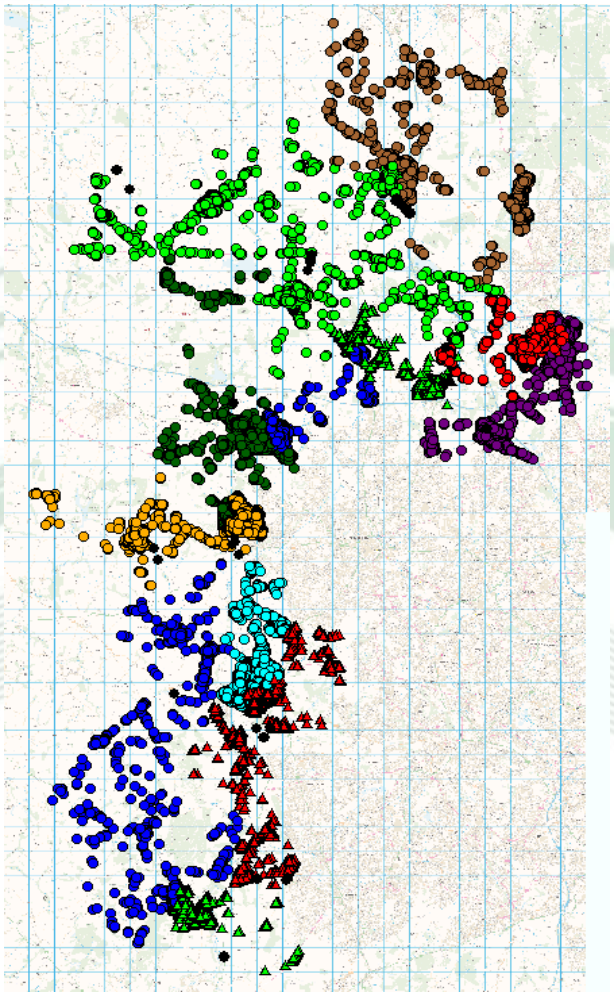


Development of balanced collection zones and individual routes in partnership with Biffa during Summer 2013

150 routes developed: same day collection

443 individual round maps

Recognises seasonal variations, i.e. rationalising garden waste collections during winter

Routes for 'narrow access' RCV optimised also

2/3 of properties received a day/week change (~30,000 props)

Additional collections during re-route identified via definition queries

Operational input essential: driver committee

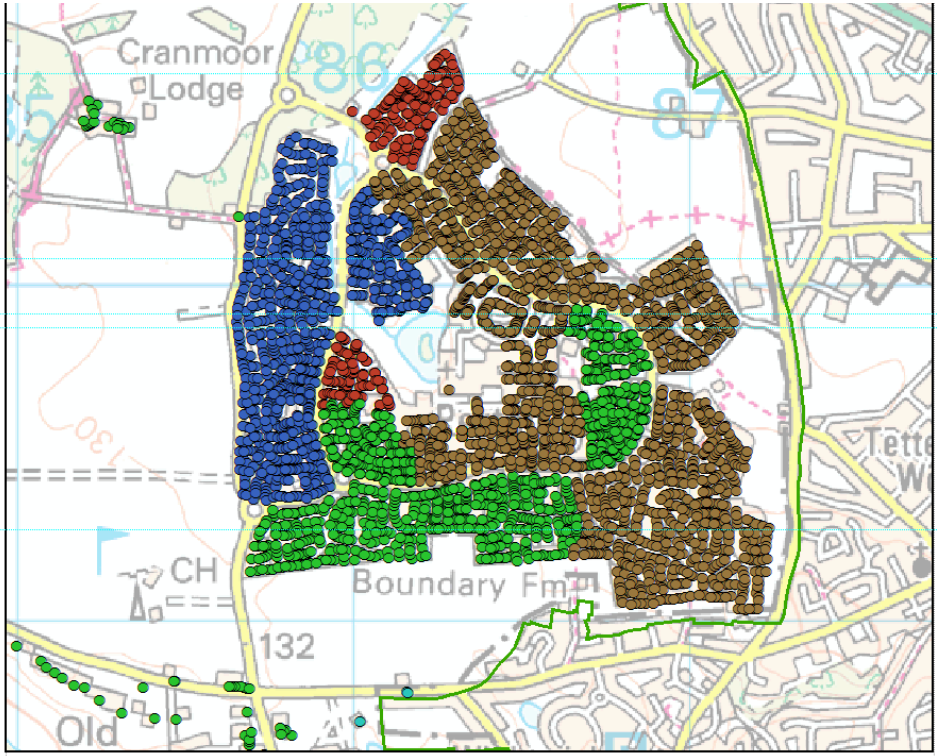
Route Summary - Extended

Solution Name: Residual Rounds Inc Flats FII
Solution Label:

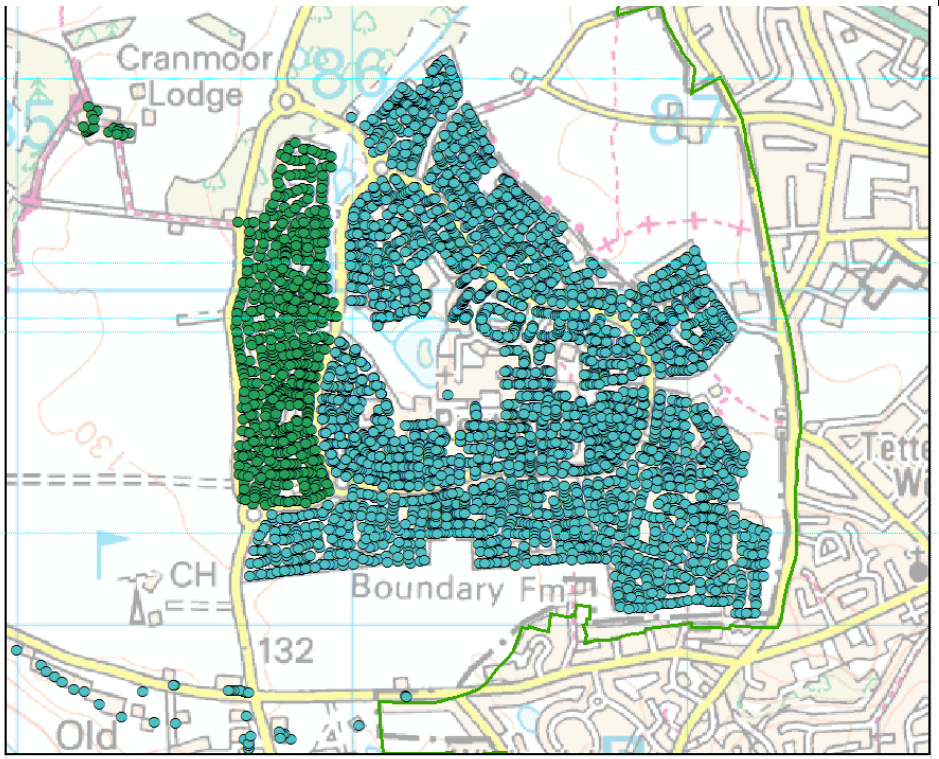
Report Date: 03/07/2013
Report Time: 5:42 PM

Route ID	Location							Time										Distance
	Start Location	End Location	Seq Stops	UnSeq Stops	Total Stops	Demand	# of Trips	Start Time	End Time	Travel Time	Service Time	Idle Time	Extra Time	Int Facility Time	Time at Start	Time at End	Total Time	Total Distance (miles)
Dom_A1_R1	Poplars HWRC	Poplars HWRC	1,584	0	1,584	27.00	2	6:30	16:43	1:51	6:27	0:45	0:00	0:40	0:15	0:15	10:13	49.1
Dom_A1_R2	Poplars HWRC	Poplars HWRC	1,560	0	1,560	27.00	2	6:30	16:16	1:41	6:10	0:45	0:00	0:40	0:15	0:15	9:46	44.7
Dom_A1_R3	Poplars HWRC	Poplars HWRC	1,152	0	1,152	20.00	2	6:30	14:23	1:31	4:42	0:30	0:00	0:40	0:15	0:15	7:53	43.3
Dom_A1_R4	Poplars HWRC	Poplars HWRC	1,221	0	1,221	21.00	2	6:30	14:26	1:18	4:59	0:30	0:00	0:40	0:15	0:15	7:56	36.8
Dom_A2_R1	Poplars HWRC	Poplars HWRC	1,117	0	1,117	19.00	2	6:25	15:56	3:07	4:29	0:45	0:00	0:40	0:15	0:15	9:31	79.1
Dom_A2_R2	Poplars HWRC	Poplars HWRC	1,383	0	1,383	23.00	2	6:25	16:21	2:12	5:49	0:45	0:00	0:40	0:15	0:15	9:56	56.8
Dom_A2_R3	Poplars HWRC	Poplars HWRC	1,048	0	1,048	18.00	2	6:25	15:53	3:14	4:19	0:45	0:00	0:40	0:15	0:15	9:28	73.4
Dom_A2_R4	Poplars HWRC	Poplars HWRC	992	0	992	17.00	2	6:25	15:04	2:54	4:06	0:30	0:00	0:40	0:15	0:15	8:39	66.1
Dom_A3_R1	Poplars HWRC	Poplars HWRC	1,314	0	1,314	22.00	2	6:20	16:13	2:47	5:12	0:45	0:00	0:40	0:15	0:15	9:53	66.7
Dom_A3_R2	Poplars HWRC	Poplars HWRC	1,404	0	1,404	24.00	2	6:20	16:20	2:15	5:50	0:45	0:00	0:40	0:15	0:15	10:00	56.1
Dom_A3_R3	Poplars HWRC	Poplars HWRC	1,185	0	1,185	20.00	2	6:20	15:12	2:22	4:50	0:30	0:00	0:40	0:15	0:15	8:52	59.6
Dom_A3_R4	Poplars HWRC	Poplars HWRC	934	0	934	16.00	2	6:20	16:15	4:09	3:51	0:45	0:00	0:40	0:15	0:15	9:55	98.3
Dom_A4_R1	Poplars HWRC	Poplars HWRC	1,179	0	1,179	20.00	2	6:10	15:41	2:54	4:42	0:45	0:00	0:40	0:15	0:15	9:31	75.1
Dom_A4_R2	Poplars HWRC	Poplars HWRC	1,239	0	1,239	21.00	2	6:10	15:56	2:49	5:02	0:45	0:00	0:40	0:15	0:15	9:46	72.6
Dom_A4_R3	Poplars HWRC	Poplars HWRC	1,114	0	1,114	19.00	2	6:10	15:32	2:55	4:32	0:45	0:00	0:40	0:15	0:15	9:22	75.8
Dom_A4_R4	Poplars HWRC	Poplars HWRC	1,061	0	1,061	19.00	2	6:10	15:44	3:18	4:21	0:45	0:00	0:40	0:15	0:15	9:34	82.0
Dom_A5_R1	Poplars HWRC	Poplars HWRC	1,004	0	1,004	17.00	2	6:00	16:01	4:03	4:03	0:45	0:00	0:40	0:15	0:15	10:01	98.6
Dom_A5_R2	Poplars HWRC	Poplars HWRC	1,380	0	1,380	23.00	2	6:30	16:16	2:21	5:30	0:45	0:00	0:40	0:15	0:15	9:46	57.0
Dom_A5_R3	Poplars HWRC	Poplars HWRC	866	0	866	15.00	2	6:00	16:13	4:41	3:37	0:45	0:00	0:40	0:15	0:15	10:13	111.8
Dom_A5_R4	Poplars HWRC	Poplars HWRC	1,075	0	1,075	18.00	2	6:00	15:57	3:32	4:30	0:45	0:00	0:40	0:15	0:15	9:57	85.2
Dom_B1_R1	Poplars HWRC	Poplars HWRC	1,538	0	1,538	26.00	2	6:30	16:34	1:57	6:12	0:45	0:00	0:40	0:15	0:15	10:04	53.9
Dom_B1_R2	Poplars HWRC	Poplars HWRC	1,410	0	1,410	24.00	2	6:30	16:02	2:00	5:37	0:45	0:00	0:40	0:15	0:15	9:32	59.1
Dom_B1_R3	Poplars HWRC	Poplars HWRC	1,230	0	1,230	21.00	2	6:30	14:41	1:29	5:02	0:30	0:00	0:40	0:15	0:15	8:11	41.4

Example of first draft Route Summary generated from Routesmart

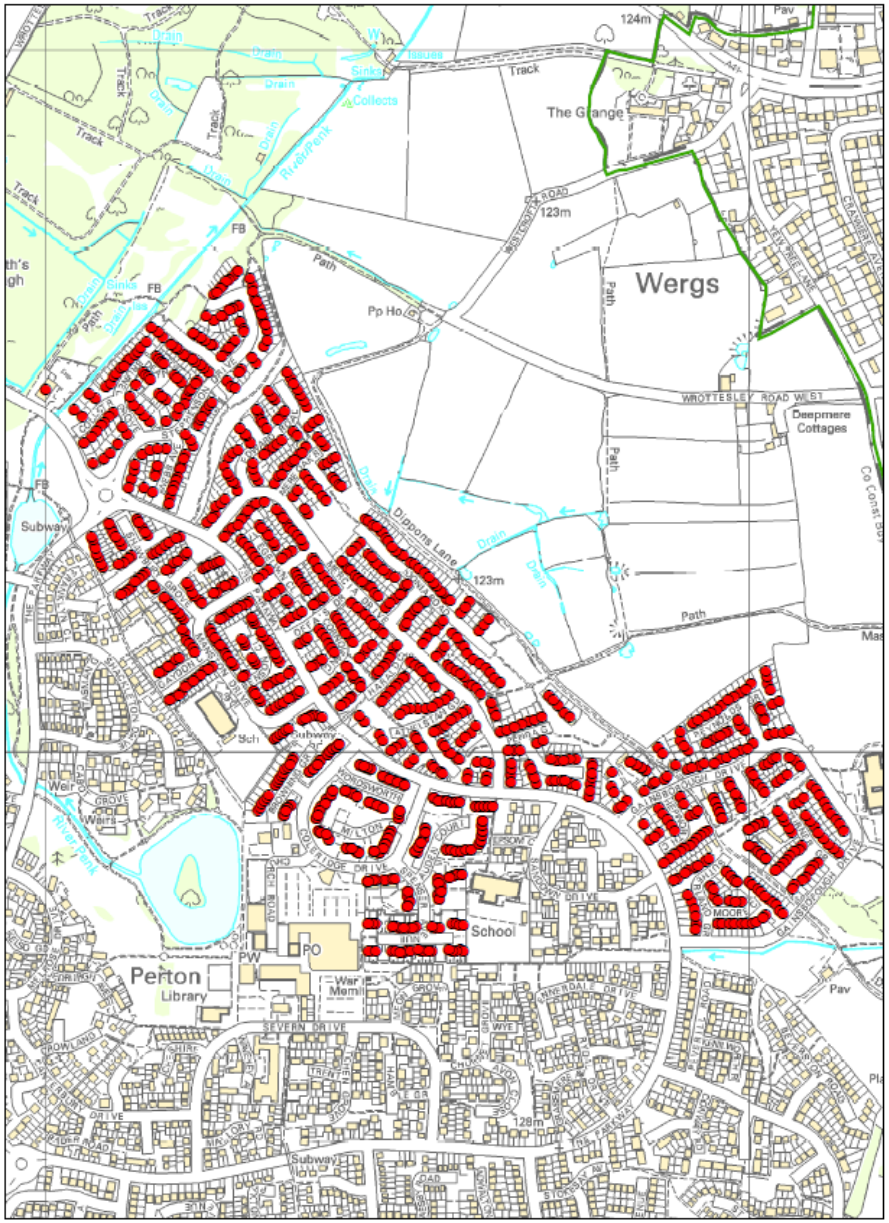


Pre October 2013 Collection Calendars: Perton

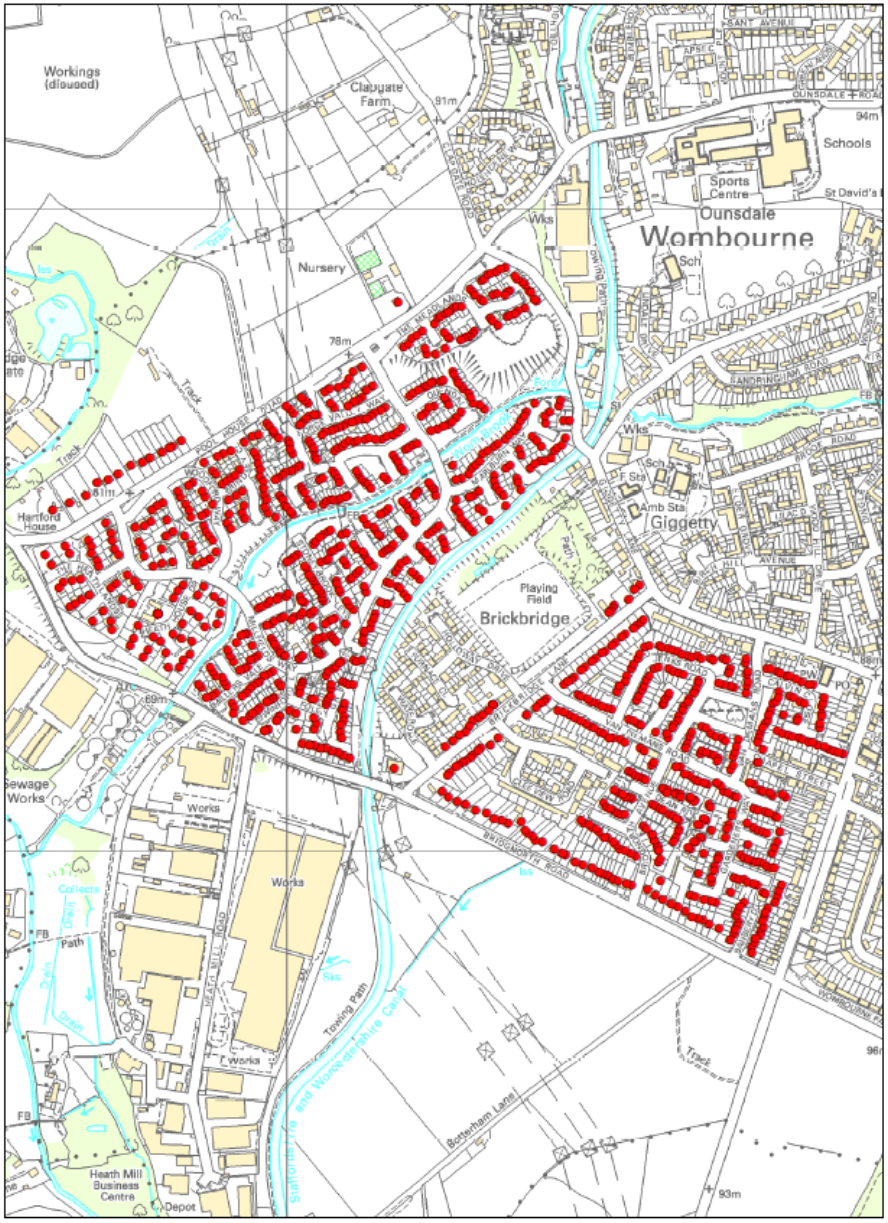


Post October 2013 Collection Calendars: Perton

Rationalised collection calendars. Example above of collection calendars for village of Perton before and after the re-route of waste collection rounds in October 2013



Dom B3 R1 Overview



Dom A4 R1 Overview

Examples of digital round maps generated in GIS and issued to crews

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Attribute table: database of property information contained within Routesmart

Examples of outputs: online calendar (left) and screenshot of Springboard (below) using consistent data generated from Routesmart

Your collection day is: **Wednesday**

Container	Date
Grey Bin	25 February 2015
Green Bin and Blue Bin	04 March 2015
Grey Bin	11 March 2015
Green Bin and Blue Bin	18 March 2015
Grey Bin	25 March 2015
Green Bin and Blue Bin	01 April 2015
Grey Bin	08 April 2015
Green Bin and Blue Bin	15 April 2015
Grey Bin	22 April 2015
Green Bin and Blue Bin	29 April 2015

1 2 3 4 5 Page size: 10 42 items in 5 pages

Standard collection (A3)

Mode : Refuse DOMESTIC ROUND 3 A WEEK Service Date : 24/02/15

Address	Properties	Lockouts	Haz	Time
START OF SHIFT				06:41:54
Slab Lane, Slab Lane, , Little Onn Gorse	1		N	07:16:52
Weston Park, Weston Park, , Weston Under Lizard	29		NR	07:25:38
Bridgeman Court, Bridgeman Court, , Weston Under Lizard	17		NR	07:47:57
Watling Street, Watling Street, , Weston Under Lizard	40	13	MR	07:48:30
Rectory Drive, Rectory Drive, , Weston Under Lizard	28		NR	07:52:13
All Saints, School Lane, , Bednall	1		T	07:52:23
Beighterton Lane, Beighterton Lane, , Weston Under Lizard	20	1	N	08:00:34
Watling Street, Watling Street, , Stretton	58	16	M	08:28:59
Ivy House Lane, Ivy House Lane, , Brewood	7	4	NR	08:35:48
Deacons Field, Deacons Field, , Brewood	38		NR	08:50:45
The Ridings, The Ridings, , Brewood	10	2	NR	09:04:10
Stafford Street, Stafford Street, , Brewood	31		NR	09:14:01
The Orchard, The Orchard, , Brewood	17	3	NR	09:23:43
8.15,9.00 14.45 1530, Bargate Street, , Brewood	28	5	T	09:29:00
Newport Croft, Newport Croft, , Brewood	9		NR	09:32:48
Newport Street, Newport Street, , Brewood	24	6	N	09:38:07
School Road, School Road, , Brewood	15	4	N	09:47:44
High Green, High Green, , Brewood	23		N	09:52:39
Cresswell Lane, Cresswell Lane, , Brewood	1		N	09:52:51
Wharf Lane, Wharf Lane, , Brewood	5	1	NR	10:03:59

Benefits of route optimisation for SSC

Overall waste management contract efficiency savings of £461,000 (net budget 2011/12 = £2.403m). Cost of household waste collection (2013/14) = £47.92

13% reduction in fuel usage

Same day collection, ease of service contributed to 97% customer satisfaction

Non collection rate = 6 per 100k

Dec 2014: 8,000 hits on online calendar. Self service/channel shifting

H+S at core of new service: RRAs integrated into new service design. Key tenet of recent HSE inspections

Data consistency: GIS, CRM, in-cab PDAs

Fundamental part of 'TEEP' assessment

Summary

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Waste is dynamic: route optimisation has long term value

Review or service re-design

Ability to objectively test potential service changes: depots, disposal points, changes to waste composition etc

Assist mobilisation of major service changes

Robust tool to ensure legal compliance: quantitative outputs form fundamental part of TEEP assessments

Cannot work in isolation: LA responsibility to ensure dataset is waste management specific and remains up to date

Importance of crew consultation

Consider what outputs will be used for (e.g. CRM, in-cab PDAs, GIS, digital maps etc)

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Thank you for listening

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