Litter Bin QR Code Project

Bradford Metropolitan District Council

APSE Street Cleansing Seminar - 12th Feb 2021

Background

- Interest in having definitive asset register for litter bins

- Locations not recorded anywhere – apart from in driver's heads

- Could be anywhere between 3,000-5,000 bins across 2,500 km's highway

Phase 1 – Where are the bins?

- Quick asset register created by asking street cleansing drivers to take pictures of bins they emptied (GPS enabled on smart phone)

- Pictures run through Python script and locations plotted on maps

- 'Rough and ready'
  - No data other than location and picture captured
  - Variation in standard of accuracy depending on driver taking picture
  - Example pictures provided for guidance but still some 'lazy' pictures taken

Phase 1 – Data Captured

Two Year Hiatus

- Lack of budget / resources

- Not a strategic priority in austerity era

- Uncertainty about how to collect data

- Changes to how service works – new questions being asked about litter bins
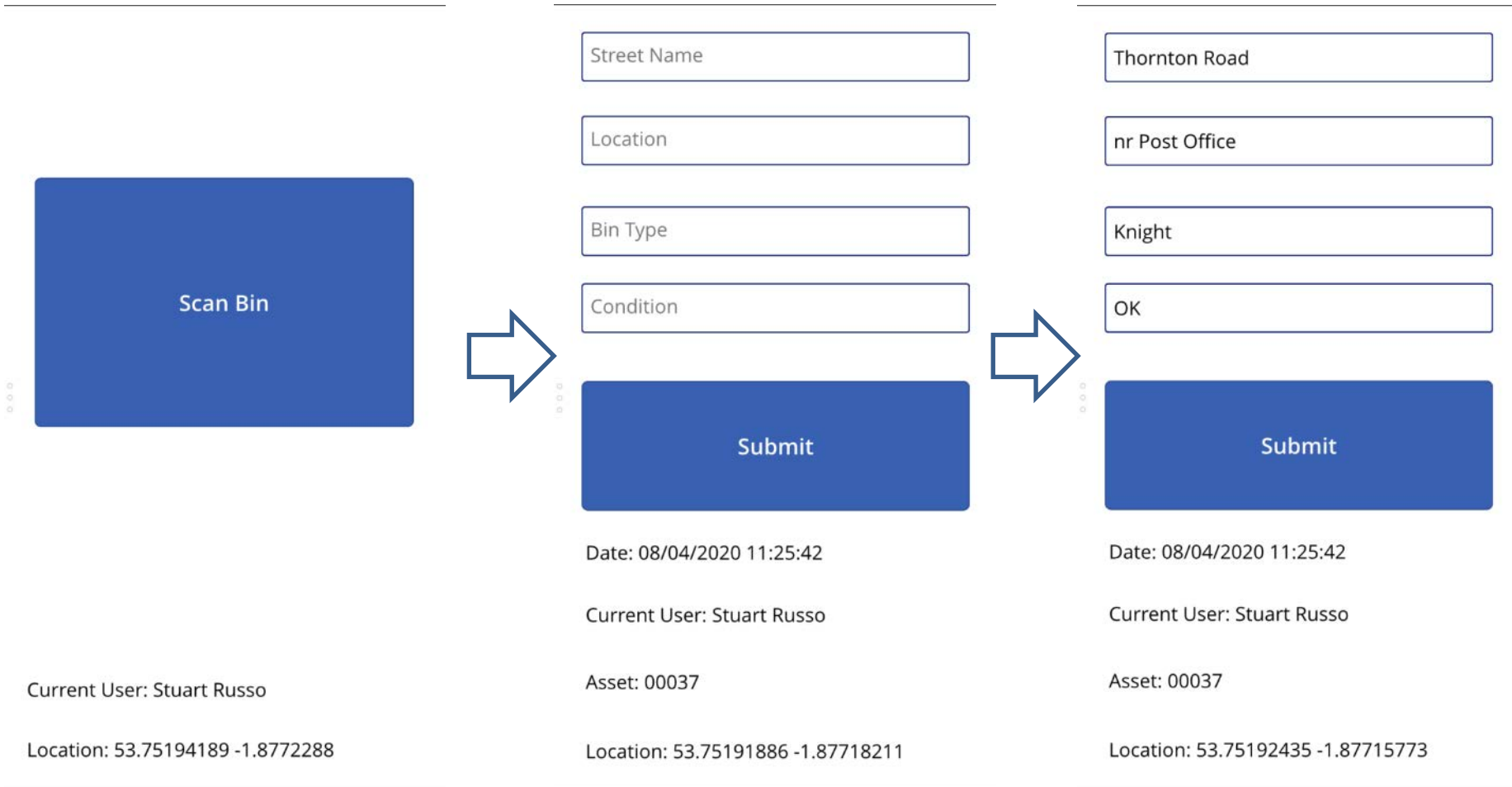
What changed?

- Coincidence

- Separate discussion between IT and Street Cleansing Service about QR codes and MS Power Apps planted seed for litter bin asset register plan

- Sudden availability of a single person to work through whole district but only for short window whilst on light duties

- Rapid development needed to be able to utilise window of opportunity

Phase 2 – The *'to-do'* list

- Design a data-collection app in MS Power Apps

- Design & test required: 4000+ unique QR codes

- Design sticker & print stickers in format suitable for outdoor street furniture (traffic film / weather etc)

- Train operative in use of app

- Provide operative with maps from Phase 1 (or lists)

- Protocol on asset numbers - future proofing live system

- Have web-page for QR-code-users to land on

MS Power Apps

Key to QR Code Logic

- Accurate understanding of which bin is being reported by customer

- Many bins very close together on main roads

- Each QR code has the asset number embedded so when the database is completed, scanning the QR code will bring back the street name automatically in the web form – no free text mistakes

- Examples of QR codes can be scanned on next page

Customer Web Page

- As the roll-out needed to be swift their needed to be a holding web-page before a finished article could be created

- Very basic free-text submission form set-up to last the roll-out phase

- Final web-page not completed yet

- Holding web page can be seen by scanning QR code on next slide

City of BRADFORD
METROPOLITAN DISTRICT COUNCIL

TO REPORT ISSUES WITH THIS BIN

SCAN THE QR CODE
OR
CALL 01274 431000

www.bradford.gov.uk/litterbins

Bin Asset Number:

00037

YOU CAN BE FINED £100 OR MORE FOR PUTTING HOUSEHOLD OR TRADE WASTE IN THIS LITTER BIN

City of BRADFORD
METROPOLITAN DISTRICT COUNCIL

TO REPORT ISSUES WITH THIS BIN

SCAN THE QR CODE
OR
CALL 01274 431000

www.bradford.gov.uk/litterbins

Bin Asset Number:

00038

YOU CAN BE FINED £100 OR MORE FOR PUTTING HOUSEHOLD OR TRADE WASTE IN THIS LITTER BIN

EXAMPLES OF FINAL STICKERS USED

City of BRADFORD
METROPOLITAN DISTRICT COUNCIL

TO REPORT ISSUES WITH THIS BIN

SCAN THE QR CODE
OR
CALL 01274 431000

www.bradford.gov.uk/litterbins

Bin Asset Number:

00039

YOU CAN BE FINED £100 OR MORE FOR PUTTING HOUSEHOLD OR TRADE WASTE IN THIS LITTER BIN

City of BRADFORD
METROPOLITAN DISTRICT COUNCIL

TO REPORT ISSUES WITH THIS BIN

SCAN THE QR CODE
OR
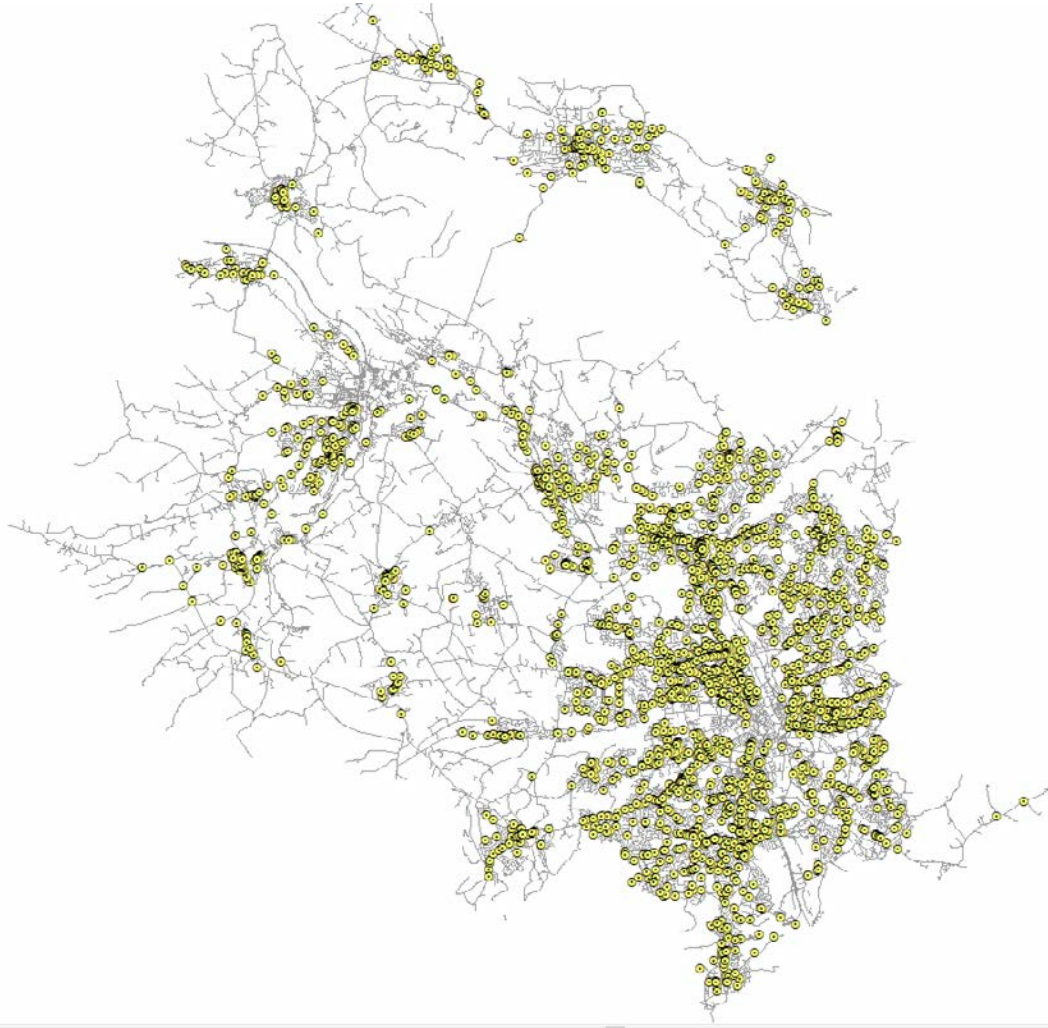CALL 01274 431000

www.bradford.gov.uk/litterbins

Bin Asset Number:

00040

YOU CAN BE FINED £100 OR MORE FOR PUTTING HOUSEHOLD OR TRADE WASTE IN THIS LITTER BIN

Processing Data

- Each use of the App on a QR code created a formatted email that was sent to a specific Inbox

- Periodically emails in the Inbox were run through FME and added to an expanding table of records

Data Captured

Bar 100-200 bins in the City Centre BID area all the known bins are captured.

Lots of streets with few or no bins in the less dense rural north of district.

Data Captured - Attribute

AssetRefer	DateTimeLo	Street	USRN	Location	Over_Cond	Lock	Damage	BinType	Longitude	Latitude	Eastings	Northings
1313	2020020712002	Barkerend road	7708359	Opposite nuttall road junc	Good	n/a	n/a	Squire	-1.7426281	53.79686882	417051	433425
1314	2020020711584	Barkerend road		Near to 130	Good	n/a	n/a	Other	-1.74229198	53.79684774	417073	433422
1331	2020020710324	Barkerend road	7708359	Outside shop no 272	Good	n/a	n/a	Squire	-1.73365854	53.79756087	417641	433504
1332	2020020710342	Barkerend road	7708359	Junction with barlow stre	Good	n/a	n/a	Squire	-1.73417956	53.7974219	417607	433488
1333	2020020710350	Barkerend road	7708359	Next to lamp no 48	Good	n/a	n/a	Squire	-1.73471977	53.79730811	417572	433476
1334	2020020710370	Barkerend road	7708359	Junction with binnie stree	Good	n/a	n/a	Squire	-1.73552066	53.79712224	417519	433455
1336	2020020710395	Barkerend road	7735410	Junction with harewood	Good	n/a	n/a	Knight	-1.73631401	53.79696412	417467	433437
1337	2020020710413	Barkerend road	7708359	Next to lamp no 42	Good	n/a	n/a	Squire	-1.7372651	53.79683248	417404	433422
1339	2020020710525	Barkerend road	7708359	Next to lamp no 65	Good	n/a	n/a	Knight	-1.72888546	53.79830833	417956	433588
1340	2020020710544	Barkerend road	7708359	Near to lamp no 69	Good	n/a	n/a	Squire	-1.72719031	53.7982543	418067	433583
1341	2020020710564	Barkerend road	7708359	Near to lamp no 73	Good	n/a	n/a	Squire	-1.72523933	53.79819106	418196	433576
1342	2020020710595	Barkerend road	7749080	Junction with marchbank	Good	n/a	n/a	Knight	-1.72227994	53.79821436	418391	433579
7	2020011313351	Beacon road	7708930	Lamp 16	Good	n/a	n/a	Knight	-1.78700332	53.76842575	414137	430251
8	2020011313141	Beacon road	7708930	Outside no 68	OK	n/a	n/a	Knight	-1.7857027	53.76845471	414223	430254
9	2020011313121	Beacon road	7708930	Junc mill street	Good	n/a	n/a	Knight	-1.78542484	53.76841821	414241	430250
10	2020011313074	Beacon road	7708930	Outside no135	Good	n/a	n/a	Knight	-1.79127784	53.76932408	413855	430350
11	2020011313053	Beacon road		Next to 222	OK	Broken	n/a	Knight	-1.79073745	53.76938276	413891	430356
12	2020011313015	Beacon road	7708930	Outside no 268	Good	n/a	n/a	Squire	-1.79379987	53.770007	413689	430425
13	2020011312584	Beacon road	7708930	Junc beacon place	OK	n/a	n/a	Valley	-1.79882842	53.77093102	413357	430527
14	2020011312561	Beacon road	7708930	Junc hebb view	Good	n/a	n/a	Knight	-1.79914702	53.77102758	413336	430538
67	2020011313210	Beacon road	7708930	Outside no19	Good	n/a	n/a	Wybone	-1.782045	53.76786198	414464	430189
419	2020012008284	Beacon road	7708930	Ne was to house 303	OK	Broken	n/a	Knight	-1.80369034	53.77112225	413037	430547
996	2020012208031	Beamsley road	7732320	Junction granville road	Poor	n/a	n/a	Knight	-1.77463364	53.82204072	414934	436218
298	2020011614265	Beckside road	7709240	Outside no 53	OK	n/a	n/a	Other	-1.78792507	53.78615754	414071	432223
307	2020011614283	Beckside road	7709240	Outside no 37	OK	n/a	n/a	Knight	-1.78840303	53.78645455	414039	432256

Where exact name match was possible the USRN (Unique Street Reference Number) was automatically added. Data still needs to be cleaned up so final street names will not be free text but derived from the LLPG(Local Land & Property Gazetteer)

More data is being appended to the attribute table such as operational responsibility for emptying it e.g. Ward / Route / Manager etc

Correlation With Gateways Routes & Shops

Filter By Attributes – Condition of Bins

Holding Web Page

- Scanning QR Code launches this form

- Upon completion email sent to generic Inbox

Future Web Page

- Dynamic look up from web page to Litter Bin Asset Register

- Scanning QR code brings bin asset and street name through to customer display – ***No typing by customer***

- Selection of problem determines where email is sent (dynamic look up on database)e.g.
  - Repair of bin goes to central maintenance team
  - Graffiti goes to central graffiti team
  - Emptying of bin goes to area-based cleansing team

Costs

SOFTWARE	HARDWARE	MATERIALS
NONE	NONE	NONE
PRINTING	TIME	TRANSPORT
NOMINAL	NONE	NOMINAL

- By utilising in-house software and staff expertise no extra costs incurred
- Next slide (reference only) gives breakdown of what resources were needed

Breakdown of Costs

- MS Power Apps part of existing 365 license
- Arc GIS already used in-house by serval staff within local authority
- QR Code generator was free online one
- Used existing smart phone issued to employee
- In-house Highways Sign Shop did the printing at very basic rates, effectively 4000 x A5 stickers
- Some old rags from stores
- Couple of cans of solvent for removing highways film from bins
- IT Professional as per any other Service Request (accumulative 1-2 week approx)
- Cleansing Manager (accumulative 1-2 week aprox)
- Cleansing operative on light duties - approx 35 working days doing 80-120 bins p/day
- Web Services Professional - 3 hrs approx
- Used spare cleansing transit or corporate rate discounted hire vehicle

Next Steps

- City Centre bins (100-200 bins in BID area) consultation needed, put on hold due to pandemic

- Develop final web page for customer – automatically loads street name as QR code holds the unique asset number so no free text data capture needed

- Protocol for 'business as usual' – adding, updating or removing assets by service (not IT)

- Put data in to web map format for wider users within service (when confident in all data)

Learning Points

- Done as a side-project with no budget
- Can-do attitude
- Knowing the right people internally
- Fostering collaborative working
- More time for trial and error with stickers
- Contingency planning – Covid
- BAU maintenance work fell through the cracks

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Always happy to share ideas and experiences with other local authorities and partner agencies, so please feel free to contact me directly at any time.