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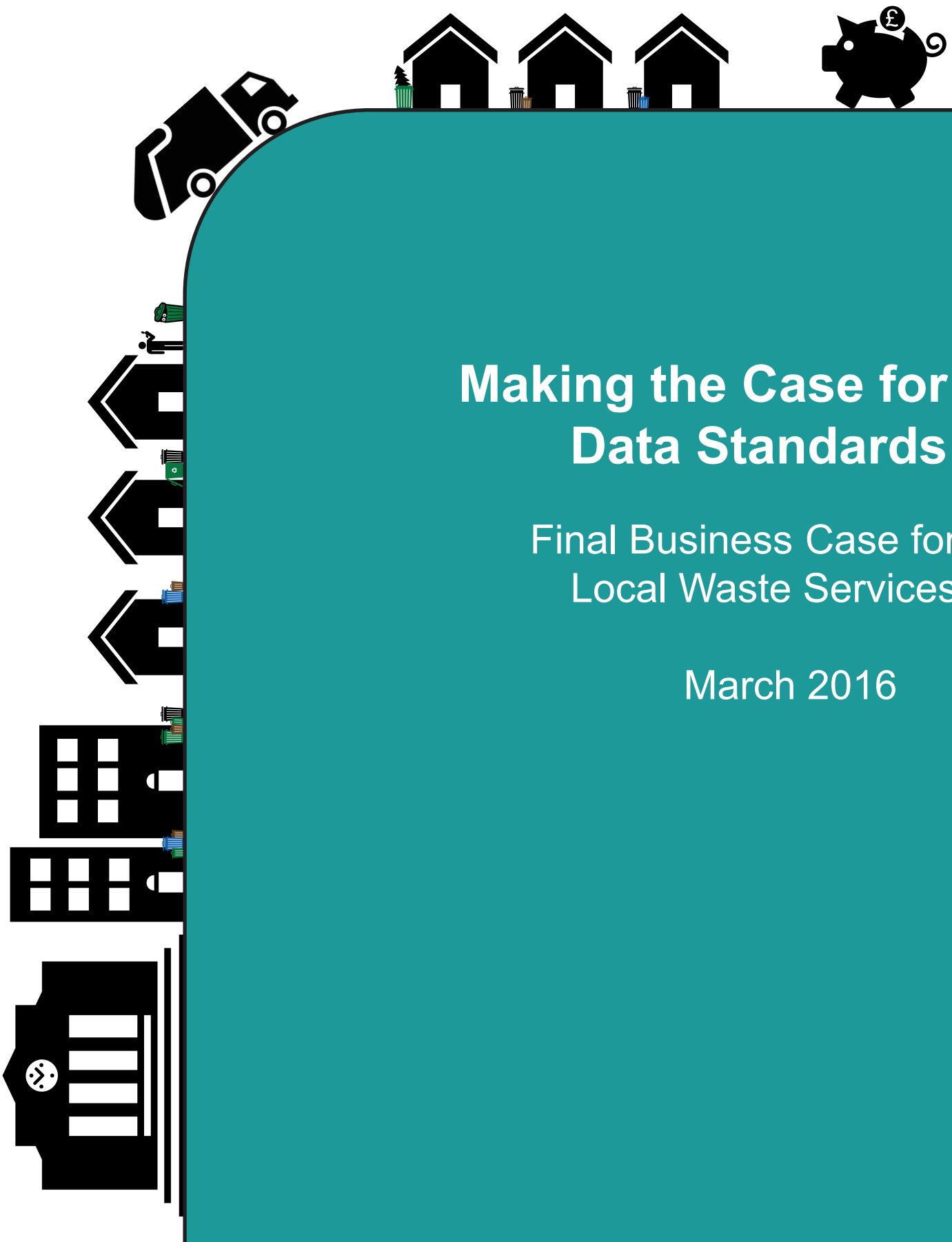

Making the Case for Data Standards

Final Business Case for Local Waste Services

March 2016

ABOUT THIS DOCUMENT

This is the final version of the business case for common data standards (especially data protocols) in local authority waste management services. It is a primary output of the DCLG Local Waste Service Standards Project,[1] and should be read in conjunction with the final financial model spreadsheet.[2]

This business case has been developed for use within councils, partnerships, businesses and industry or national bodies - wherever the case for data standards needs to be made. Demand for a financial model and business case came from representatives of all of these groups who participated in the project.

A quick introductory video - produced as part of the 'Alpha' phase of the project - is online at bit.ly/WasteStandards. Continue reading the text below, or download the document (PDF) for our final business case findings.

1. For more information, visit: bit.ly/WasteProject
2. Accessible at: bit.ly/WasteData

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1. EXECUTIVE SUMMARY

- Use of a waste data standard could drive a total of **£505 million** in savings for English local authorities over a 14 year period
- **£120 million** of these savings could be realised in the first 7 years
- £362.8 million of the 14 year savings are directly associated with waste data standards, with an additional £142 million coming from associated channel shift savings
- We estimate that individual councils could save **between £117,900 and £219,255** annually by implementing data standards (including resulting channel shift savings)[3]
- We make the case that data standards are essential for enabling better systems integration, which in turn leads to more successful and sustainable channel shift
- Standards can also enable new partnerships and business models as well as stimulating innovation
- While we make the case that councils and suppliers should invest in adopting common standards, we acknowledge that the benefits of adoption are only guaranteed when a critical mass of councils and their suppliers have implemented the standard, and that there are some barriers to achieving this
- Based on the experience of this pilot project, we also make the case for local data standards to be developed in an agile, iterative, integration-driven way, both to sustain the momentum this project has created, and as a means of tackling other local service transformation challenges

3. This is based on a national average number of households per council of 68,000 households and represents a range of council types. See 2.3 below for more detail on the underlying model.

2.CONTEXT

2.1 Why data standards?

The purpose of this business case is to articulate the benefits of developing and working to some foundational data standards[4] around a particular local government service (waste management), and from that start to make the case for data standards more generally. The project grew out of a growing consensus[5] that data standards should be an important enabler of local government digital transformation, and in doing so should unlock significant savings. The Local Waste Service Standards Project was designed to test that theory.

Often the inefficiencies and avoidable costs in the delivery of a service come when information or data has to pass between people or systems. This is as true in the digital age as it was in the days of filing cabinets and cashiers, but the inefficiencies are harder to spot.

In an efficient service all the people and systems involved have a common understanding of the information they are dealing with, and are able to pass this information around and use it without having to explain or re-format anything. This applies not only to council staff and systems, but also to those of the partners and suppliers involved with the delivery of the service.

In order to achieve this efficiency all parties need to be working to common agreed standards - speaking the same language, so to speak. In our case we are especially interested in data standards, the underlying rules that help software systems to communicate. If these exist, all parties can refer to them in their initial negotiations, in the design and delivery of solutions, and in their management reporting. Technical systems that are built with reference to the same standard can talk to each other more easily, without the need for intervention or manual work, unlocking further efficiencies. This kind of automated communication between systems is enabled by “APIs” (application programming interfaces).

Markets or sectors that adopt data standards therefore tend to be more efficient markets, as suppliers and clients know what to expect, removing the cost of bespoke work, and making it easier for either party to move between suppliers/clients. Standards can also enable and stimulate innovation. (These and other market benefits are explored further in Section 5 below).

2.2 Why waste services?

Every household and organisation in the UK generates waste, and around 350[6] English local authorities are responsible for aspects of its collection and management. Waste generates a lot of customer contact - it’s the third biggest source of calls to unitary authorities (14% of all contact) and often generates more contacts to district councils than any other service area.[7] In the 2014 Socitm Website performance report waste featured in the top five reasons to visit local authority sites - coming top of the list for districts (21.44% of visits), Metropolitan Borough Councils (12.27% of visits) and unitaries (16.68% of visits).[8] Fortunately very few of these contacts are likely to involve sensitive personal data or coordination with other agencies, so it’s a relatively simple and

4. When we refer to data standards we are particularly referring to ‘data protocols’, the fundamental building blocks of any software system, which generally include common taxonomies or ways of referring to things, common categories, and common information hierarchies. We do not mean common processes or creating a standardised approach to local services - although data standards could help to enable both of these which could in turn deliver further savings. Technical Lead Paul Mackay explains more about these common building blocks in several blog posts: bit.ly/PaulblogA and bit.ly/PaulblogB and bit.ly/PaulBlog. Data standards also include common reporting and publishing formats; however, we have not focused on the benefits of these in this work.
5. Data standards were a common theme at DCLG and other local government events in 2014. LocalGov Digital (http://localgovdigital.info) had also begun work on their Localo project (http://localgovdigital.github.io/localo) and had generated interest but had no funding to develop further or scale. At LocalGov Camp 2014 a discussion group decided that this was an area that should be investigated further, and funding was subsequently found via DCLG to design and run this project.
6. There are 353 local authorities in England. For convenience we have rounded this down to 350 in our financial model.
7. Red Quadrant & CIPFA Customer Contact Benchmarking Club - *Contact Benchmarking Tool Insight Report 2014.*
8. As referenced in the LGA report *Delivering better local online transactional services.*

safe area for us to work with. It was also a service area that many of the authorities interested in this project were planning to work on in the next few years.

2.3 Methodology

In keeping with the overall approach of the Local Waste Service Standards project this business case has been developed in a bottom-up collaborative and iterative way. Based on our learnings and prioritisation in the Discovery phase we were able to build an end-to-end view of the processes and costs around managing missed bin collections, and from this extrapolate the picture for waste services more widely. The resulting Alpha model was populated with data from participating councils as well as from other councils and suppliers who volunteered data to the project. The Alpha business case was then published in September 2015[9] and generated much interest, support and feedback. Based on this feedback and on further data and analysis a Beta version was published and discussed in February 2016. At each stage we have published a narrative document and an accompanying detailed spreadsheet. The final spreadsheet that partners this narrative document can be found here: bit.ly/WasteData.[10]

These are the overarching assumptions that inform this final business case:

- The model is based on a council serving 68,000 households as this is the national average (in England). However, this can be adjusted to reflect the number of households served by any given council by changing cell B2 in the spreadsheet.
- The model reflects the fact that approximately 50% of councils outsource their main waste contract, whilst 50% manage this in house.
- The model also reflects that not all councils have the same degree of digital confidence and that they are at different stages in their digital transformation with different existing technical set-ups and skills. This will affect how much it might cost them to implement data standards, and also how much they stand to save. We have assumed that 25% of councils are digitally confident with 75% less so.[11]
- The model assumes contact costs of £3 per call and £0.15 per online contact. These are in keeping with SOCITM benchmarks.[12] Councils can change these figures in the financial model to reflect their own contact costs, where these are known (row 74 & 80 in the Detailed workings sheet here: bit.ly/WasteData2).

Further reflections on the process of developing this business case will be shared via a blog post.[13]

9. Available here: bit.ly/AlphaBC
10. The spreadsheet has three sheets: 1. Overview (the headline numbers) 2. Yearly breakdown (how the savings are distributed over the 14 years) 3. Detailed workings (detailed breakdown of all the activities in scope, with costs and savings, for each category of council).
11. This reflects that over half of council websites (58%) are still getting only one or two stars in Socitm's 2015 Better Connected survey (bit.ly/1M6RB3w), with councils reporting recently to the LGA and DCLG that 73% of their transactions have some scope for further digitisation. While the published report quotes "a high proportion of councils report that there is scope for further digitisation." (p. 18 of Delivering Better Local Online Transactional Services, bit.ly/1U3M2KX), the underlying survey showed 73% of councils reported scope for further digitisation.
12. Our cost per call of £3 is based on SOCITM Insight, Potential for channel shift in local government (England), 2012(bit.ly/1R77bxi) where they suggested £2.83 per telephone contact and £0.15 digital per transaction. Other benchmarks and studies suggest the cost per call can be as high as £5 for councils, so we have rounded up to £3.
13. See: bit.ly/SarahBlog2

3. SAVINGS & BENEFITS FOR COUNCILS

The main focus of the detailed bottom-up business case work[14] has been missed collections, as they are currently managed, with the model then used to extrapolate out to all waste services. We have looked primarily at the current costs of implementing and running services, and the savings that could be achieved through the use of data standards. The broader opportunities enabled by standards, including how services could be reimagined rather than just made more efficient, is covered in Section 5 below.

During the iterative development of the model, and looking at how services are currently delivered, four main areas of costs and potential savings emerged. These are:

- Tendering and implementing new contracts
- Creating a joined-up service
- Customer contact and channel shift
- Investigating contacts

The detailed calculations in each of these areas can be found in the spreadsheet where they are colour coded[15] and also labelled in text.

3.1 Tendering & implementing new contracts

Procurement emerged as a pain point for both councils and their suppliers. We heard that the procurement process for waste contracts can often take over two years to complete, and that the resulting contracts have an average length of seven years.[16] Just getting through this process currently takes considerable investment from both sides, yet we heard that in spite of this there are still unforeseen implementation challenges when the contract finally starts.

Our primary focus in this business case is to demonstrate how data standards can help to make the tendering and implementation of waste services more efficient. However during the course of the project other suggestions for improving procurement emerged. These are touched on briefly in Section 6 below (service design) and will also be explored more fully in a separate document published in late March 2016.[17]

There are three aspects of the tendering and implementation process which were examined as part of the core business model. They are:

- Scoping and negotiating the technical details of a new contract (by “technical” we mean aspects of the contract that involve software and machines talking to each other).
- Cleansing and preparing council data for use by the new supplier
- Integrating the supplier’s systems and data with the council’s other systems e.g. their CRM.[18] This is the highest and least predictable area of cost.

The detailed numbers can be found in the purple sections of the spreadsheet,[19] but the headlines are:

- We estimate that councils spend up to £220,000 on these activities each time they go through the procurement of a new waste contract[20]

14. See: bit.ly/WasteData2
15. For those that are able to navigate using colour these are: purple for Tendering and implementing new contracts, blue for Creating a joined-up service, green for Customer contact and channel shift and pink for Investigating contact.
16. Evidence came from the DCLG Waste Policy team, the Environmental Services Association (www.esauk.org) and from individual councils and suppliers
17. See: bit.ly/WProcurement
18. CRM = Customer relationship management system
19. See: bit.ly/WasteData
20. As described in 2.3 above the model shows costs and savings for a range of councils: those that manage waste in house and have low

- Nationally that's £4.829 million spent by councils each year[21]
- The first time a council goes through procurement with reference to common data standards they will make relatively modest savings, as they will have to do work to adapt to the standard. The bigger savings come the next (second) time they go through the process.
- We estimate that each council could save up to £214,000 over these two renewal cycles, which is a national saving of £33 million over 14 years.

These savings are based on the following assumptions:

- Councils will refer to common data standards in their requirements specification, reducing the amount of bespoke documentation needed
- Suppliers will recognise these standards, which will reduce the need for detailed conversations and negotiation about the specification and transmission of data (more details on the savings and benefits for suppliers in Section 4 below)
- Councils will only have to do a wholesale data clean-up to meet the standard once, and will be saved data cleansing costs from then on
- Both parties will have more confidence in the level of integration work required, and the cost of this work will be reduced.

3.2 Creating a joined-up service (integration)

Regardless of whether a council's waste services are in house or outsourced they will need to join-up various software systems and processes in order to create a coherent end-to-end service - a process known as integration. This is increasingly the case as both residents and staff start to expect and demand more joined-up services, and as councils themselves seek to reduce the costs of customer contact and inefficient internal processes. (See sections 3.3 and 3.4 for detail of how standards based integration can lead to channel shift and reduced staff effort.)

Local government decision makers are increasingly aware of the significance of integration. The 2015 CIPFA[22] and Red Quadrant Customer Contact Benchmarking Club found that "Better system integration" was in the top three factors that respondents felt would influence their ability to improve management of customer contact (68% of the respondents). Many of them also flagged "technology issues preventing channel shift and automation" as one of their top five challenges to improving the customer contact experience. The LGA dedicated a whole section of their recent report to the issue of integration (or the lack of it).[23] This was also reflected throughout the course of this project with integration emerging as a key area of cost, work and uncertainty for both councils and suppliers.

Data standards can make it easier to plug things together into a joined-up coherent service. Currently a lot of time and money is spent on both sides when two systems need to be brought together - both the work to understand how each system operates, and then further work to design and build the connections between them. If both systems are working to common data standards (speaking the same language) the effort to bring them together is much less, and is more predictable.

Our model considers the costs and possible savings across four main areas of activity:

- Cost of cleansing/adapting data to enable integration across systems[24]

digital confidence, those that manage in house with high digital confidence, those that outsource waste services and have low digital confidence, and those that outsource with high digital confidence. Detailed figures for each can be found in the spreadsheet. Throughout this document we will use the highest of the four figures and say councils spend/save "up to" this amount.

21. This is based on the assumption that 25 councils a year go through this process, which is based on the average contract length of 7 years
22. The Chartered Institute of Public Finance & Accountancy (www.cipfa.org)
23. LGA - Delivering better local online transactional services, (p.15), "Lack of integration leads to substantial re-keying of data" (bit.ly/1U3M-2KX)
24. This only applies for councils that manage waste in house, as those that outsource have already covered this as part of implementation of their waste contract

- Cost of implementing a new or improved online transaction for missed bins
- Cost of integrating this with existing/internal systems e.g. customer account, CRM, address lookup
- Cost of integrating with waste back office (including data from in-cab tech)

Based on the above, we estimate that councils currently spend up to £160,000[25] on creating an end-to-end experience for a service like missed collections.

Ideally the optimisation of services should become a process of continuous improvement and iteration rather than big bang tech refreshes,[26] but for simplicity the model assumes the equivalent of two technology refreshes in 14 years.[27] As with procurement, the full benefits of data standards won't be realised until the second time around, once all suppliers and systems are using the standards.

In order to create a view across all waste services we have taken the costs and savings for missed collections and multiplied them by 2.5.[28] This is based on the assumption that once a council has been through the process of standards enabled integration for one service it will be easier to transform others. Although councils may run many waste related service in addition to resolving missed collections (e.g. bulky waste collection, specialist collections, trade waste collection, fly tipping etc), we have assumed the effort of transforming all of these is 2.5 times the effort of transforming the first.

Based on the above, we estimate that councils could save up to £228,750 each over 14 years through use of data standards in their waste services. A national saving of £64.367 million.

3.3 Customer contact & channel shift

As referenced in 2.2 above waste services currently drive a lot of customer contact to councils. Although some of this has already been "shifted" from more expensive[29] phone contact to less expensive online options councils still receive many phone calls about missed bin collections and other waste services.[30]

Residents are more likely to self-serve online if it is quicker, more convenient, more accurate and more up to date than phoning.[31] As the LGA and the CIPFA/Red Quadrant Benchmarking Club members also recognise, well integrated services, where data flows efficiently between the citizen, the website, customer services and service delivery teams are more likely to succeed in channel shift than less well integrated services.

We estimate that the councils currently spend between £44,000 and £88,000 per year on waste related customer contact (depending on the extent of existing channel shift, tied to digital confidence). This is a total spend of £25.8 million per year across the sector.

We believe the potential channel shift savings for the sector, across waste services, could be as high as £18.9m per year by year 14 - once all councils are offering a joined-up efficient citizen experiences - with a total saving across the period of £142 million. (For the full detail see the green sections of the spreadsheet).

25. This is the spend for a less digitally confident council which manages waste in house. The full range can be found in the blue section of the spreadsheet.
26. See further notes on this in Sections 5.2 and 6 below
27. This is perhaps conservative, but is in line with the average procurement cycle for those that outsource their waste contract.
28. This can be adjusted in row 58
29. As documented in the 2012 Digital Efficiency Report and elsewhere phone contact is more expensive than online. In our model we have taken the Socitm guide of an average cost to a council of £3 to answer the phone and £0.15 for online.
30. Amongst the councils we worked with, most of which were digitally confident, approximately 50% of contact was now handled online. In the model we assumed 66% for digitally confident and 33% for less digitally confident.
31. The example we demonstrated early in this project was of a citizen finding out online if and why their bin hadn't been emptied, and having the option to challenge this via the website, rather than by phoning the council. (See: bit.ly/WasteStandards)

Whilst we can't directly claim all of this for data standards, we do think these savings can't be fully realised without them.

3.4 Investigating contacts

Whilst we found that most councils could provide an overview of the volume of waste related calls and what it cost to answer them, very few also measured the time and expense of processing and resolving those calls.[32] During the course of the project via our workshops and modelling this has emerged as the fourth key area of cost that could be reduced by data standards.

In the Discovery workshops we walked through the end-to-end process from a resident noticing a missed bin, either through to that bin being emptied, or through to the resident being told why it hadn't been collected. During these exercises we heard a lot of anecdotal evidence of frustration with the current workflow and processes. These included:

- Customer service or waste teams being handed paper logs of missed collections a day or more after the event
- Staff having to login to several systems to check why a bin hadn't been emptied and/or whether the resident had a history of issues
- Staff taking information from one system and re-keying it into another
- In the absence of data on screen, staff having to call colleagues in another team to check the status of a case.

This is the day-to-day work generated by poorly integrated (and/or poorly designed) services.[33]

- We estimate that the sector currently spends £53.5 million a year investigating waste contacts (up to £171,500 per council per year)
- We assert that 75% of this could be saved if well-integrated standards-based systems were enabling customers to self-serve and staff to efficiently look into issues
- That's a potential saving of £35 million a year by year 14.

3.5 The size of the prize for local government

All of Section 3 above is focused on what individual councils and, multiplied up, what the local government sector as a whole, could save if data standards were in use. The big picture can be summarised as:

- £505 million of savings for local government over 14 years
- £120 million of which could be realised in the first 7 years
- £362.8 million of the 14 year savings are directly associated with waste data standards, with an additional £142 million coming from associated channel shift savings
- Individual councils could save between £117,900 and £219,255 annually by implementing data standards (including resulting channel shift savings).

However, by their very nature, standards only become powerful when they are used across a market - when enough suppliers are offering compliant products and services, and enough client councils are seeking to buy them.

32. On several occasions we heard that the end-to-end cost of resolving a contact wasn't measured because it crossed different organisational silos and budgets i.e. the cost of answering the phones belonged to customer services, but the cost of investigating a missed bin belonged to Waste Services.
33. Re-keying of data in particular is often a hidden cost lurking behind seemingly "digitised" services. The National Digital Report of 2015 found that 54% of the data transferred from online forms to the back office was re-keyed NDL National Digital Report of 2015 (p. 16). (bit.ly/1R-RvaE4)

The private sector therefore has a very important role to play in adopting and promoting standards. In fact, the public sector benefits outlined above can't be realised without them. The Local Waste Service Standards team has therefore worked with representatives of the private sector throughout the project[34] and the following section lays out how they can also benefit from adopting and supporting data standards.

34. 41 companies and 23 industry groups and professional bodies have attended events and/ or provided feedback, data and insight to the project

4. SAVINGS & OTHER BENEFITS FOR THE PRIVATE SECTOR

Throughout the project we have heard much anecdotal evidence of the challenges and pain points that suppliers encounter as they tender for, implement and run waste related services for local government clients. What has been less forthcoming is quantifiable data around their costs and what could be saved or generated if standards were adopted.

However, the BSI published a significant report[35] in 2015 looking at the economic benefits of standards and this does present data on benefits for businesses. The summary in the press release[36] accompanying the report states:

> *Through enhanced reputation and confidence in the quality of products and services, standards open up market access for businesses….By providing transparent and transferable knowledge, and improving compatibility and interoperability, standards are shown to be a catalyst for innovation.*
>
> *The survey of 527 decision makers in businesses across the UK revealed:*
>
> 1. *70% said standards enhance the quality of products, by improving their supply chain activity, including improved quality of supplier products and services;*
> 2. *89% said standards have optimized their compliance with regulation;*
> 3. *84% said using standards has enhanced their reputation;*
> 4. *54% said technical information is now more accessible through standards;*
> 5. *Mid to large businesses said standards are enabling them to diversify into new markets in the UK and abroad;*
> 6. *SMEs said they are benefitting from increased productivity, better innovation and an expanding customer base*
>
> *Vicky Pryce, the Chief Economic Adviser at Cebr said: "Standards play a vital and often invisible role in supporting economic growth and open up the channels for boosting productivity and innovation. They are an underused tool giving businesses that aspire to a higher level, the opportunity to work together to share innovation. The benefits to companies are multiple and range from enhanced quality of products and the efficiency of processes, to the effective functioning of supply chains."*

The BSI report also concludes that standards contribute £8.2 billion to the UK economy, and that 37.4% of UK productivity growth and 28.4% of annual UK GDP can be attributed to standards.

The ICT sector is one that is examined in detail and has the highest GVA (Gross Value Added) impact of all the sectors surveyed - a GVA of £2.1 billion per year. The sector also has the highest reported increase in productivity. As the delivery of waste services - and all public services - is increasingly dependant on the use of software and the standards that underpin it this analysis is of particular interest.[37]

4.1 Who stands to gain?

It's important to recognise that there are various types of commercial products and services offered to councils around the delivery of waste services. Some companies offer a suite of these solutions, other might specialise in one part of the chain. We've identified the following groupings:

- Waste service/logistics suppliers (collection & cleansing) e.g. Veolia, Biffa

35. Accessible here: bit.ly/1nwIBON
36. Accessible here: bit.ly/21ZSTKg
37. The BSI press release can be found at: bit.ly/1M6QiSe and the full report can be read here: bit.ly/1QHhpc5, with the ICT sector analysis starting at page 88.

- Specialist waste related technology suppliers e.g. Bartec and All On Mobile/Whitespace for in-cab technology
- Suppliers of back office & workflow technology (CRMs, payment systems etc) e.g. Arcus Global, Salesforce
- Suppliers of front-end digital services (websites, CMS, webforms etc) e.g. Jadu, Firmstep
- Suppliers of new/specialist digital apps & services e.g. Bbits with Love Clean Streets, Big Belly smart bins

We believe that all of the above could benefit from the adoption of waste data standards - although the extent of that benefit, and in some cases of the associated costs or risks, is likely to vary from group to group.

We make this assertion because we have come across some major common themes in our conversations with suppliers.

4.2 Savings

Firstly, we've identified common challenges & pain points which we believe can be reduced by use of data standards, resulting in time and therefore money saved. Unsurprisingly several of these are similar to the pain points for their council clients:

Common costly pain point for suppliers	How data standards can help
a) Overly complex or unrealistic requirements and lengthy procurement processes (particularly around larger service outsourcing contracts).	As outlined in 3.1 above - by giving both councils and suppliers a common set of standards to refer to in their scoping conversations and in the associated paperwork.
b) The cost and time taken to integrate with and adapt to each council's bespoke data and internal tech set up, often with key information only coming to light once work has started.	Once councils adopt data standards suppliers should find greater consistency across clients, which reduces the element of surprise and the amount of bespoke work needed.
c) The cost and time taken to integrate with and adapt to products provided by other suppliers.	Adoption of data standards by suppliers should result in greater interoperability between products with data exchanged via common APIs.
d) Missed opportunities to build economies of scale and to optimise products & services across a portfolio, because of the level of bespoke work for each.	Less time spent on customisation (see above) and more time spent looking across the portfolio identifying opportunities to optimise and innovate. Also a more consistent approach to KPIs based on common data enabling comparisons across a portfolio.

4.3 Revenue generation

Secondly, some common potential for new opportunities unlocked by data standards, leading to new or increased revenue streams have come up in our discussions:

a) Compliance with standards can be a sales benefit for suppliers. Suppliers that advertise that they work to a standard (and the associated benefits that brings to clients e.g. ease of integration) may be more likely to get selected. This would certainly be the case if data standards were referred to in procurement frameworks, as they are beginning to be for central government.[38]

38. For example the new frameworks offered as part of the Digital Marketplace (www.digitalmarketplace.service.gov.uk) which require suppli-

b) If the use of data standards makes it more straightforward and affordable to procure and integrate solutions built by 3rd parties then more councils might choose to go down this route and outsource some or all elements of their waste service. This could open up a bigger market for suppliers.

c) The use of data standards should enable councils to take a more modular or iterative approach to improving services, potentially breaking up large multiyear contracts into shorter or more specific contracts for e.g. in-cab technology.[39] This move away from all-in, 'big-bang' refreshes every 7 or more years will open up opportunities for companies to sell upgrades, perhaps via "software as a service", or to introduce new products.

d) As referenced by the BSI above, standards drive innovation providing opportunities for disruptive new entrants with new products, and for incumbents to diversify (more on this in 5.3 below).[40]

4.5 Risks and barriers

Suppliers consulted as part of this project have been supportive of the principle of standards, and of the benefits we've identified. However, they have also flagged that there are some risks and barriers to overcome.

- Upfront investment, longer term benefits: As we've identified in the model for council savings, the benefits of standards are only likely to be realised once councils and suppliers have made the initial investment in adopting them. The real savings come from implementations that take place once the standard is already in use - and the scale of savings comes when this is the case across multiple clients. There is therefore an element of invest-to-save in any adoption of standards.
- Legacy technology: Even when standards are adopted councils and suppliers are rarely working in a greenfield site - they will be working in the context of the existing technology and processes of the council which may still require bespoke work and adaptations even if aspects of the implementation are to a standard.

  However, although this is a challenge it is possible to work to a standard and to put in place mechanisms to deal with legacy inputs or outputs. For example, BBITS have adopted this approach with their current Love Clean Streets product. They say:

  > *"Our approach has been to offer our current data standard, support existing open standards such as Open311, and to provide multiple ways that the data can be exchanged – from an email processor where an external system can send us XML in an email which we automatically process, right up to a Service Bus in the Cloud. This has enabled us to in the main provide fixed prices for integration, and help reduce the time needed for 3rd parties to provide their testing and development work. This could be a model that is taken more widely as part of a bigger standard."*

- Bespoke demands from clients: It's often the councils themselves who are demanding the unique requirements or features that lead to bespoke work i.e. it's through deliberate design rather than just forced by legacy technology. Suppliers argue that they have to respond to those requirements and that pushing back and suggesting a more standardised approach might lose them business. They need the demand for standards to come from councils.
- Process and service design: A common observation has been that the introduction of data

ers to confirm that they are aware of and will work to various published standards and protocols around service design, security and data.

39. One issue that came up in a workshop was the cascading of requirements from the council to the primary waste contract supplier, then down to the vehicle manufacturer and the in-cab technology provider. This up-front and top-down approach to requirements meant that the specialist technology providers were working to unrealistic specs, and/or had no opportunity to work with the council on innovations or improvements

40. Jacob Hayler, Executive Director of the Environmental Services Association commented that adapting solutions so specifically to individual clients means that service providers "lose out on the learnings, efficiencies and innovation of running and optimising consistent services"

standards and standards-compliant products in the market needs to be accompanied by changes in the local government approach not only to procurement, but also to workflow, process design and to service design more widely. This would help to maximize the benefits and is explored further in Section 6 below.

- Bespoke work is profitable: Several suppliers we spoke to made it clear that much of their profit currently comes from the bespoke implementations that are either demanded by councils or which arise because of the bespoke nature of their technology and data. The introduction of standards could therefore potentially undermine this profitability. Others have argued that this is an opportunity to diversify and innovate.
- Keeping standards standard: Data standards that are agreed might become watered down. One concern is that there will be too many extensions demanded by councils or suppliers wanting to accomodate their own requirements. Another is that the need to meet the needs of a whole sector will lead to the “lowest common denominator” approach, meaning that it will need to be high level and generic, limiting the ability to cater for more specialist or innovative features or services. These risks will need to be considered when setting up the governance for the standards (see Section 7 below). Consideration needs to be given to whether and how custom extensions are managed.

5. BROADER OPPORTUNITIES

Most of the benefits laid out so far in this business case relate in some way to the more efficient delivery of existing services. However, the use of data standards across a sector can also open up broader opportunities.

5.1 Partnerships, shared services, devolution

As highlighted by the LGA[41] many council services are now provided through shared services or outsourcing arrangements that involved a mix of partners.[42] These shared service arrangements can deliver efficiency savings (estimated at £462 million for the 416 currently in place) but to unlock these savings councils, partners and suppliers need to be able to efficiently integrate and inter-operate their systems.

The Somerset Waste Partnership is an early example of this. They say "partnership has certainly delivered valuable efficiency and eliminated significant duplication in management of data. The world has moved on since Somerset Waste Partnership was formed [in 2007] and, with recycling services so much more entrenched in local authorities across the country than they were a decade ago, merging collection services is certainly more challenging than it was before. In that context it could be that data standardisation offers a viable and achievable alternative to, or step towards, partnership working in today's world."[43]

Surrey Waste Partnership are also starting to experience the benefits of a joined-up approach to data flow. Previously they were spending 3,000-4,000 hours of staff time a year on waste reporting across their 11 districts and boroughs - at a cost of £75k a year. They've now put in place a new waste data management system that will save them £135k over the first four years as well as delivering valuable management data in real time (rather than waiting for over 6 months).[44]

The Government's devolution agenda is likely to initiate more shared services. Data standards can help enable mergers, and devolving around common data standards could optimise the efficiencies and innovation that devolution is intended to trigger.

5.2 A more open market

As already referenced in Section 4 above the BSI state that "*through enhanced reputation and confidence in the quality of products and services, standards open up market access for businesses*"[45] and we have already provided more detail on what that might mean for businesses in the context of waste data standards in 4.3.

What our bottom-up model hasn't considered is the possible savings and other benefits to councils of this more open market. We've estimated what they could save if the products they were buying were more interoperable, but we've not quantified what they could save by shopping around for these products in the first place.[46] Potentially the use of standards removes some of the barriers of moving between suppliers, and opens up the market to new entrants, encouraging competition on pricing - another outcome that could save councils money.

As already touched on from a supplier perspective, data standards and interoperability could also enable councils to break down large contracts for end-to-end solutions into more specialist components, allowing them to buy in the best-fit solution for specific needs e.g. for mobile reporting on

41. In Delivering Better Local Online Transactional Services (bit.ly/1U3M2KX) and also in their shared service map (bit.ly/1SGcYAC).
42. This is increasingly true of technology and ICT services, for example the Camden-Islington-Harringay ICT partnership (bit.ly/1USRobC).
43. Interview between Mark Blaker of Somerset Waste Partnership and the DCLG Local Digital Programme on 5th January 2016.
44. See a presentation on this from Surrey Waste Partnership on the Local Digital website: bit.ly/swp-waste-data
45. In the BSI press release here: bit.ly/1M6QiSe
46. We've not quantified this partly because we have been focused on building a bottom-up service-focused business case, but also because we would require commercially sensitive data from both councils and suppliers to be able to model the possible impact of a more competitive market

incidents, or a particular plug-in for their back office that visualises management data in accessible dashboards.

This more flexible approach coupled with lower barriers to moving between suppliers could also support more innovation and risk taking in council service design, enabling service teams to try out solutions and move towards the possibility of continuous improvement.

5.3 Innovation

The BSI report also refers to the role standards can play in boosting innovation in a market and this has been supported by some of the SMEs who have contributed to the project.

- BBITS, the company behind the Love Clean Streets app have been very active supporters of the Local Waste Service Standards Project. They are a good example of the type of company and product innovation that provides cost benefits[47] for clients by supporting existing open standards, and could continue to innovate and reduce costs further if more standards were in place.
- The Fix My Street[48] app built by MySociety is based on the Open311 standard enabling councils to integrate it more predictably with their internal systems. Lewisham council recently reported that they expect to save £118,000 by using it.[49]

Larger companies could also innovate more widely if they were freed from complex bespoke integration requirements. Additionally, as mentioned above, councils themselves can be bolder and braver in their experimentation and specification of services, knowing that the technology barriers and costs have been lowered.

Finally, as mentioned in 5.1 above, standards could enable innovation at a more fundamental level - new kinds of partnerships or even business models. Paul MacKay, technical lead on this project gave a small example of this in a blog post, where he explained that the bulky items taxonomy he's developed could potentially "*identify electrical items that can be forwarded onto local charities for reuse or resale. And, if the software that charities use to find material is powered by the same data formats, it becomes possible for them to proactively find materials that councils are collecting.*"[50]

47. They are currently commissioning independent analysis of this which will be published later in 2016
48. See: www.fixmystreet.com
49. "Lewisham council switches to Open311" (bit.ly/1M6Qnpd)
50. "What our technical standards mean for you" (bit.ly/PaulBlog)

6. APPROACHES TO COLLABORATION AND SERVICE DESIGN

One of the aims of this project has been to demonstrate some of the latest techniques used in service design[51] and to apply those to the process of bringing together the local public sector as a whole to collaborate on developing, testing and making the case for data standards.

6.1 Enabling cross-sector collaboration

From the start the project was designed using agile and service design approaches.[52] These included:

- Starting with the outcomes we wanted to achieve and then working out how to iterate towards them
- Developing a roadmap that worked through Discovery, Alpha and Beta stages and agreeing the milestones that would mark the end of each phase
- Investing in a series of Discovery workshops[53] to understand and map user needs, leading to the identification and prioritisation of "Epic" needs that would be taken into alpha development[54]
- An approach of 'learning through doing' and 'working out loud' via workshops, showcases, blogs and videos enabling us to communicate learnings and decisions openly and accessibly to help bring stakeholders with us
- Iterative development of all products - both the more technical products like data taxonomies and APIs but also products like this business case
- Working via sprints, with regular sprint review and planning calls (although this had limited application in this project)

During this project the response to these techniques has been overwhelmingly positive,[55] and the project has managed to successfully achieve all of its preliminary objectives, proving that this approach also delivers results.

6.2 Use of these techniques by councils

Our primary objective was to demonstrate these approaches at a project level, but it has also become clear that councils and their suppliers could benefit from adopting similar approaches, both in how they design and deliver waste services, but also for services more widely.[56]

A specific example of this is procurement approaches. Some of the current challenges include:

- Councils specifying detailed solutions and then looking for a supplier who can deliver them, rather than specifying the outcome they want to achieve and then codesigning the solution with a specialist supplier
- Requirements that are based on internal processes and legacy systems, rather than user need
- Multi-year contracts that fix a solution up front rather than contractual arrangements that allow for continuous improvement and technology review/refresh

51. As demonstrated by, but not exclusive to, the Government Digital Service and their Service Design Manual (www.gov.uk/service-manual) and as celebrated at the annual Service Design in Government conference
52. Our project timeline is on the product page (bit.ly/WasteProject) and a toolkit explaining our methodology in more detail will be released as part of our legacy on the same page.
53. Visit bit.ly/PragDiscovery for more info.
54. You can find the complete list of the 'Epic' needs we identified during our discovery workshops at bit.ly/waste-epics
55. More reflections on how the process has gone can be found here: bit.ly/LindaBlog
56. Luton council's reflections on working on this project can be found here: bit.ly/LutonBlog and Bristol City Council recently presented their approach to transforming care services using service design techniques

A more holistic and user-centred approach to service design might help address some of these challenges. For example a Discovery process could help councils to identify, agree and prioritise the outcomes they want to achieve before going to the market to procure solutions. This could in turn enable suppliers to bring more innovative solutions to councils, and potentially both could then take a more iterative approach to service delivery, taking advantage of new technology as it emerges (the “software as a service” model). We expound on this further in a blog post on service design, published in late March 2016.[57]

57. See: bit.ly/WasteServiceDesign

7. ACHIEVING 'CRITICAL MASS' AND UNLOCKING THE BENEFITS OF STANDARDS

7.1 Progress achieved through this pilot

This project has successfully developed a methodology for collaborative data standards development and standards testing by bringing a group of councils, their suppliers and other stakeholders through an agile and iterative process.

The pilot project was run using a grant of £105,000 and some DCLG Local Digital programme staff resource, a combined central government investment of about £180,000. Public and private sector collaborators also gave their time at workshops and interviews, doing internal integration planning and feeding back on our work to help us deliver what we've done to date.

In under 12 months, the pilot was able to:

- design a collaboration methodology and timeline and secure partnership commitments from 5 local authorities
- agree some common taxonomies and a data model for waste management[58]
- design an API and test it with Luton Borough Council, and with Bartec and Whitespace in-cab technology platforms
- build this business case for local service data standards, focusing on waste management
- have meaningful engagement (email exchanges, event attendance, project planning input or partnership talks) with people in 90 UK councils, 41 supplier businesses and 23 representative bodies or change stimulation organisations

7.2 Recommendations to achieve 'critical mass'

Although much has been achieved, a small pilot alone cannot tip the market that supports a well established, high-value local public service, in favour of a new data standard. However, we believe that a 2- to 3-year 'scaler project' that builds on the momentum we've created could bring a critical mass of organisations in line with the standards and tip the market as a whole in their favour within 3 years. We believe that this would unlock the savings and benefits outlined in this business case, and provide a roadmap for transforming local authority business models around open, interoperable standards.

The scaler project, or phase 2 of this project should aim to:

- get a minimum of 20 UK local authorities and their suppliers to continue the process of standards development and ensure these organisations have implemented the standards within 2 years from the start of the scaler
- create the reference material - business case, technical documentation and procurement guidance - for all local authorities to demand the standards of their suppliers in all future tenders and tech refreshes
- develop a mechanism for the public and private sector to collaboratively govern and develop the standards periodically
- develop a model approach to standardising all local service data, one that builds on our methodology and maps out how to get to the 'critical mass' stage of data standards implementation

58. You can find all our technical assets to date on the project GitHub page at bit.ly/WasteGitHub

We estimate that this coordinating ‘scaler’ work could tip the local waste service market in favour of waste data standards in 2 to 3 years at a cost of £250,000 per year.

The first organisations to adopt new standards risk not receiving the full return on investment outlined in this business case - until enough other organisations also adopt them (this may be particularly the case if they’re already digitally confident and have optimised their existing technology). Therefore, we also recommend that some incentives should be made available to these early adopter councils, helping to absorb the cost of adopting the standard. We estimate that up to £50,000 per council for at least the first 20 councils would help councils to take the risk and ensure that enough councils collaborate to establish the standard. This money should be spent as the council needs given their unique technical set-up - either on data cleansing, integration costs or both.

Our detailed procurement recommendations have been published here: bit.ly/WProcurement

8. WHAT NEXT?

This is the last iteration of the business case for data standards in waste services that we will produce as part of this pilot. Additional project outputs will be published on our project page under the 'resources' section, with the technical standards remaining on our GitHub page. We aim to leave a complete 'how we did it' legacy toolkit, with all resources being posted on the project web page, which will remain live on national archives after the Local Digital programme closes.