



ISLINGTON

## **Smart Cities Scrutiny Review**

# **REPORT OF THE ENVIRONMENT AND REGENERATION SCRUTINY COMMITTEE**



**London Borough of Islington  
May 2016**

# EXECUTIVE SUMMARY

## Smart Cities Scrutiny Review

### Aim

To explore and understand the different approaches that Islington Council should consider to becoming a 'Smart City' and how new technologies can influence this.

### Evidence

The review ran from July 2015 until April 2016 and evidence was received from a variety of sources:

1. Presentations from witnesses – Lean Doody and Amanda Bailey - Arup Consultants, Trevor Gibson - Opportunities Peterborough, Joe Dignan - Future Cities, Catapult and Dr Terry Norman - Wireless Explorers.
2. Presentations from council officers – Matthew Homer, Waste Strategy Manager and Sally Millett, Head of ICT Strategy and Transformation

### Main Findings

1. Smart Cities meant many things to many people. Smart cities was about having smart and connected communities. The growth in local populations, the increase in visitor numbers and commuters meant that all urban areas faced a broad range of problems ranging from traffic management to pollution to rising energy costs. Pressure on council resources and increasing demand for public services meant that there was a need to redesign services and technology was a significant enabler in service transformation and improvement.
2. Islington was doing lots of Smart Cities work without thinking of it as Smart Cities work. This work could be used as a catalyst to learn across the wider remit of the council.
3. The Clean Islington App was a mobile app which enabled residents to easily report issues to the council. It was a good example of using mobile technology to improve services for residents. It was possible that in time this could be expanded to report issues to other services.
4. Smart Infrastructure work in Islington included street based WIFI. The council received £500,000 initially from the operator who would put boxes on lampposts free of charge and it was anticipated that when the revenue streams were in place, the council would receive £2million per year. Initially the WIFI would be on Holloway Road and Upper Street and would then be rolled out. Existing initiatives included smart bins and links with Future Cities Catapult. The registrars system was fully online, repairs was due online shortly, some non-office based officers had been given mobile devices to help them report issues and conduct more work whilst out of the office and smart technology was used to record carers' visits and timings.
5. The next step for Islington was to develop the Smart City Framework for Islington. This would include assigning leadership for the Digital Collaboration Strategy, engagement with communities, partners, private sector experts and technology providers, to review the strategic objectives and delivery principles as well as the opportunities and to create an action/delivery plan.
6. The council should consider internal challenge and think about what else could be done, how it could link up with other external initiatives and funding opportunities and how it could encourage local communities to participate towards making Islington digital.

7. The internet of things was the enabling technology of smart cities. The internet of things optimised business processes, led to efficiency improvements, and cost savings. It also had the potential to improve the environment and could have health benefits.
8. Smart cities and the internet of things had three tangible benefits:
  - 1) To help deal with population growth and sustainability without additional resources.
  - 2) To reduce the cost of services.
  - 3) To enable the introduction of new services in the future.

## **Conclusions**

The Smart Cities Scrutiny Review heard evidence about a number of Smart City schemes across the country and smart city work that was being undertaken in Islington. The Committee heard about a number of ideas for becoming a Smart City in the future. The Committee hoped the recommendations would improve smart city work in the borough.

## **Recommendations**

- 1) **That a senior officer be made responsible for promoting, coordinating and leading the Smart Cities work within the council ensuring the smart agenda is communicated and embedded to all areas of the council and its staff.**
- 2) **That consideration be given to whether the Clean Islington App could be expanded to other areas of the council.**
- 3) **That the Smart City Framework for Islington be developed to include assigning leadership for the Digital Collaboration Strategy, engagement with communities, partners, private sector experts and technology providers, to review the strategic objectives and delivery principles as well as the opportunities and to create a smart city action/delivery plan.**
- 4) **The council should undertake a ‘Smart Audit’ to ascertain what services could already be described as smart, and to look at what services could be delivered.**
- 5) **That the council should consider internal challenges and where smart cities work could be undertaken, how it could link up with other external initiatives and funding opportunities and how it could encourage local communities to participate toward making Islington digital.**
- 6) **That smart cities be considered when procuring services, including piloting new procurement processes.**
- 7) **That the Internet of Things (the enabling technology of smart cities) should be considered when undertaking smart cities work to ensure that systems were Internet of Things ready so once technology improved, outcomes could be maximised.**
- 8) **That the Environment and Regeneration Scrutiny Committee receive an annual report on Smart Cities.**
- 9) **The council should package our existing smart work better, actively promote this work and look to maximise the opportunities that exist in terms of funding and grants available.**
- 10) **That in preparation for the internet of things, the council should have an assessment of the current and potential value of data, and look to retain the ownership of data wherever possible.**

## **MEMBERSHIP OF THE ENVIRONMENT AND REGENERATION SCRUTINY COMMITTEE**

### **COUNCILLORS – 2015/16**

#### **Councillors:**

Councillor Court (Chair)  
Councillor Diarmaid Ward (Vice-Chair)  
Councillor Debono  
Councillor Doolan  
Councillor Hamitouche  
Councillor Heather  
Councillor Jeapes  
Councillor Russell  
Councillor Spall

#### **Substitutes:**

Councillor Kay  
Councillor Diner  
Councillor Alice Perry  
Councillor Poyser

*Acknowledgements: The Committee would like to thank all the witnesses who gave evidence to the review.*

#### *Officer Support:*

*Zoe Crane – Democratic Services  
Anthony Akadiri – Digital Services*

## 1. Introduction

- 1.1 Smart Cities meant many things to many people. Smart cities was about having smart and connected communities. The growth in local populations, the increase in visitor numbers and commuters meant that all urban areas faced a broad range of problems ranging from traffic management to pollution to rising energy costs. Pressure on council resources and increasing demand for public services meant that there was a need to redesign services and technology was a significant enabler in service transformation and improvement.
- 1.2 BSI PAS 181 Smart City Framework defined a smart city as “the effective integration of physical, digital and human systems in the built environment to deliver a sustainable, prosperous and inclusive future for its citizens”.
- 1.3 ISO June 2015 stated that “A smart city dramatically increases the pace at which it improves its sustainability and resilience by fundamentally improving how it engages society, how it applies collaborative leadership methods, how it works across disciplines and city systems, and how it uses data and integrated technologies, in order to provide better services and quality of life to those in and involved with the city (residents, businesses, visitors)”.

## 2. Findings

### The Smart City Approach

- 2.1 The Smart City Leadership Programme was developed in partnership with BSI and Urban DNA Ltd. It was built around the PAS 181 Smart City Framework. It was aimed at increasing the personal and collective knowledge of city leaders about the need for, and possibilities arising from, a smart city approach. It established the foundations to increase the pace at which cities responded to the Smart City opportunity.
- 2.2 Standards Based Assessment engaged city leadership in a simple assessment process (personal or small groups) that provided a snapshot of their city’s current state of ‘smartness’. It helped to reposition ‘standards’ in the eyes of city leaders. It directly related to the PAS 181 framework and added rapid value to the Smart City standards. The assessment approach was now included in the BSI Smart Cities Overview guide, PD8100:2015.
- 2.3 The smart city approach should accelerate the pace of change in addressing city challenges, framework guidance could help inform each area’s approach, there was no Smart City without Smart City leadership and engagement, collaboration and partnerships were the key starting point – Smart Cities was not just about technology or investing significant resources.
- 2.4 The Committee heard that technology allowed data to be collected and to connect systems together and that efficiencies could be made across many areas including transport, energy, waste, water and environmental efficiencies. Digital clusters were becoming more common and attracted investment and technology impacted upon people and the impacts could be positive or negative.
- 2.5 Arup was an independent firm of designers, planners, engineers, consultants and technical specialists had conducted a market opportunity study for the Department for Business Innovation and Skills (BIS). Arup representatives advised that some people were reluctant to spend money on Smart Cities work but cities already spent a substantial amount of money on technology e.g. transport infrastructure, energy, logistics and waste management all used technology. Often though the technology was not joined up and was duplicated. Arup had produced a smart London plan and found if organisations such as the GLA, TfL, business start-ups, universities and local authorities brought budgets together, more could be achieved and relationships could be strengthened. Councils could enable this.

## Work Being Done In Islington

- 2.6 Islington was doing lots of Smart Cities work without thinking of it as Smart Cities work. This work could be used as a catalyst to learn across the wider remit of the council. Publicising the Smart Cities work more would help the Smart Cities agenda, help with gaining feedback and technology providers who worked where there were opportunities, could see Islington as a good place to work.
- 2.7 The Clean Islington App was a mobile app which enabled residents to easily report issues to the council. It was a good example of using mobile technology to improve services for residents. It was possible that in time this could be expanded to report issues to other services.
- 2.8 Smart Infrastructure work in Islington included street based WIFI. The council received £500,000 initially from the operator who would put boxes on lampposts free of charge and it was anticipated that when the revenue streams were in place, the council would receive £2million per year. Initially the WIFI would be on Holloway Road and Upper Street and would then be rolled out. Existing initiatives included smart bins and links with Future Cities Catapult. The registrars system was fully online, repairs was due online shortly, some non-office based officers had been given mobile devices to help them report issues and conduct more work whilst out of the office and smart technology was used to record carers' visits and timings.
- 2.9 Smart recycling and waste measures improved efficiency and improved service. Recycling and waste sites were currently emptied on a regular weekly schedule irrespective of how full they were. Bins filled at different rates at different times of the year so a regular schedule was not always possible. Visiting a half empty bin was twice as expensive as visiting a full bin.
- 2.10 Dynamic scheduling meant emptying a bin when it needed to be emptied and finding the best route from site to site. This resulted in efficient collections, better customer service and improved monitoring.
- 2.11 A bin sensors trial was taking place. The sensors were fitted to recycling bins on one of the rounds. These measured hourly fill levels and reported back to a database. The sensors advised officers when each bin was full and also predicted when the bin would be full. Commercial bins and wheelie bins were currently excluded. Prison bins had been excluded pending prison security checks on the system. Potential uses for sensors were in the remaining recycling sites, communal waste bins, skips, grit bins and litter bins. Big Belly bins were litter bins with inbuilt sensors. They provided fill data and alerts.
- 2.12 Islington's digital strategy included four strands: 1) Digital Collaboration which involved data sharing; 2) Digital Place which was how citizens were involved in a digital way; 3) Digital Customers and 4) Digital Workforce.
- 2.13 In 2015 a joint workshop with Islington and Camden had been hosted by Catapult. A BT innovation event was held in November 2015. Spacehive was used for crowd sourcing for funding opportunities.
- 2.14 It was important to consider accessibility and inclusivity when becoming more digital. There were 154 computers in libraries that could be used by those without access to technology and there was mediated access where staff helped customers access services digitally.

## Work Being Done Outside Islington

- 2.15 Arup representatives gave examples of projects they had been involved with across the world included: 1) Following the earthquake in Christchurch, infrastructure was reconfigured. Children were given portable sensors to monitor air and water quality. There was an open data platform and apps could be built from this. The system encouraged ownership of the area. 2) In Nigeria, there was a My Home is My Phone scheme. Many people did not have street addresses but could access services through their phones. 3) In Helsinki, there was an objective to have a car free city and so smart initiatives had been introduced. There was a bus which responded like a taxi if called and it could deviate from its route.
- 2.16 Peterborough was the UK's second fastest growing city. It had a population of over 188,400 people. It was one of four cities which received funding from the Technology Strategy Board to develop and test ideas for how smart, future-proofed cities could work. A requirement of the funding was that projects should be replicable and scalable.
- 2.17 The project was delivered by Opportunity Peterborough and Peterborough City Council. It received £3million to deliver a project over 3 years.
- 2.18 The principles of the Peterborough project were to focus on innovation, sustainability and growth, to provide a catalyst to change mind-sets towards an efficient and sustainable urban future and act as an enabler to delivering the city's vision. Transparency, participation, empowerment, collaboration, engagement and openness were important.
- 2.19 Peterborough was actively involved in national Smart City thinking and standards development and applying PAS 181 (the Smart City Framework) to systematically approach the challenge from strategy through to implementation.
- 2.20 Key Initiatives were 1) Digital Peterborough – having open data and becoming the first gigabit city with superfast broadband for businesses and residents; 2) Brainwave – a platform to facilitate immediate match-making between innovators and challenges; 3) Circular Peterborough – working demonstration projects were developed to improve resource efficiency; 4) Developing Skills for our Future through the Peterborough Graduate Scheme, bursaries and Smart Suppers in which young people pitched their solutions to city challenges and one was chosen and its development supported. There had been few problems with the installation of the super broadband other than many of the main roads being dug up. The broadband was working effectively and many businesses had relocated to where the superfast broadband was in place. The council had installed the superfast broadband in conjunction with City Fibre who had undertaken the work in a number of cities.
- 2.21 Peterborough was 2 ½ years into its Smart Cities work so was in the early stages of seeing benefits. It would be another 2-3 years before tangible benefits would be seen. Opportunity Peterborough had six members in the team; three of which were part time. It was well integrated with the council.
- 2.22 Peterborough was going to put sensors in the homes of vulnerable people who received social care in order to monitor temperature and movement. In addition 25 weather stations were being installed in schools. The data would be connected so that when temperatures were recorded as extreme, this would trigger support where necessary. It was anticipated that this project could build partnerships in the community, improve the quality of service and result in a corresponding reduction in the cost of service.
- 2.23 On a global perspective, India and China had infrastructure based plans, Singapore had the 'World's First Smart Nation Programme and Beijing's new 2025-2050 master plan based crowd funding community projects focussed on the everyday needs and challenges residents faced.

- 2.24 Milton Keynes was using smart technology in infrastructure and parking/traffic management, Glasgow was building a new university and had a Smart Campus, Bristol and Birmingham were working on infrastructure and open data, Manchester had done Smart Cities work in sustainability, EU partnering and funding and Leeds had a Data City Partnership.
- 2.25 In London, the Greater London Authority had the Smart London Plan and was looking to share data with communities, in Westminster, smart parking had been introduced. This involved having sensors in the parking bays. Economies of scale increased when the scale of the schemes did.
- 2.26 Bristol and Loughborough had appointed Smart Cities leaders. Leadership at a political and director level helped in building momentum for Smart Cities but as well as a top down approach, a bottom up approach was also required. Those who delivered the services knew where the challenges were.

#### Working Towards Smart Cities in Islington

- 2.27 The next step for Islington was to develop the Smart City Framework for Islington. This would include assigning leadership for the Digital Collaboration Strategy, engagement with communities, partners, private sector experts and technology providers, to review the strategic objectives and delivery principles as well as the opportunities and to create an action/delivery plan.
- 2.28 It was important to: 1) enable participation and involve communities e.g. young people, schools, residents, volunteers and local businesses; 2) collaborate with the private sector, funding bodies, industry experts and communities; 3) identify data sets and; 4) create a culture of open data to enable external partners/communities to create apps which delivered value for citizens.
- 2.29 The council should consider internal challenge and think about what else could be done, how it could link up with other external initiatives and funding opportunities and how it could encourage local communities to participate towards making Islington digital.
- 2.30 The Director, Public Realm stated that technology was necessary to deliver services in a more efficient way. It was hoped that in time 80-90% of people would self serve and then a dedicated service could be provided to the remaining 10-20%.
- 2.31 Smart Champions in the council could help to promote Smart Cities. Leadership and support from management was crucial.
- 2.32 Potential opportunities for the Waste and Recycling Service could include 1) the digitalisation of services e.g. digital back office systems, in cab devices for front line staff and vehicle technology (GPS tracking, bin weighing and cameras); 2) management and efficient services e.g. real time dynamic routing, GPS tracking, service productivity, resource allocation, reduced administration and health and safety implications; 3) customer and better services e.g. messaging to crews, better customer service information, more use of the web and phone app.

#### The Future of Smart Cities

- 2.33 There were many technological advances that would happen in the short, medium and long term future. These technological advances would drive Smart Cities. To be successful a Smart City required a focus on the citizens living in it and the challenges they faced.
- 2.34 Conceptually the possibilities associated with "Smart Cities" were endless and it provided one of the answers to enable the council to do more with less especially as urban data and technology could be used to make places healthier, safer and more efficient for citizens,

businesses and visitors. Homes, buildings and spaces would become significantly more intelligent. 1.6 billion connected things would be used by Smart Cities in 2016. This was a 39% increase on 2015.

- 2.35 The latest thinking on Smart Cities was that it addressed urban challenges by using digital technologies to engage and enable citizens, however it could be too concerned with hardware and technology and citizens should be put first and technology put second. “Collaborative technologies” offered cities another way to make smarter use of resources, smarter ways of collecting data and smarter ways to make decisions. Collaborative technologies could also help citizens themselves shape the future of the cities.
- 2.36 The charity NESTA had produced a report entitled “Rethinking Smart Cities from the Ground Up”. The policy recommendations included realigning the Smart Cities approach. This could involve:
1. Setting up a civic innovation lab to drive innovation.
  2. Using open data and open data platforms to mobilise collective knowledge.
  3. Taking human behaviour as serious as technology.
  4. Investing in smart people not just smart technology.
  5. Spreading the potential of collaborative technologies to all parts of society.
- 2.37 Local Communities engaging, mobilising and collaborating was the key to success. Connecting interlocking smart technologies was complex and exploiting the opportunities associated with making open non-personal, non-commercial data sets available for innovative purposes required careful and realistic consideration of issues such as information management, protection and security.
- 2.38 Future Cities Catapult was a not for profit organisation working with digital communities across the UK to drive innovation and accelerate growth for the UK’s digital economy. This represented £1bn funding over next 5 years.
- 2.39 There were opportunities to collaborate with the private sector. IT Vendors such as Cisco, BT and Arqiva were involved in Smart Cities work. London had a £100m annual fund for Smart Cities.
- 2.40 The internet of things was the enabling technology of smart cities. The internet of things optimised business processes, led to efficiency improvements, and cost savings. It also had the potential to improve the environment and could have health benefits. In smart city designing, it was important to combine data, make it available to others, record times, places, locations, people and numbers to see how people were using the city. Assets could be put on a network with information being collected from each asset through the network and applications used to optimise performance by monitoring, controlling and enriching.
- 2.41 There was a need for a holistic approach to the internet of things to combine various types of data together. A technology strategy should straddle departments and bring about transformational change in procurement, business models and project approval – business case assessment.
- 2.42 Concern was raised about councils selling WIFI as they would need street furniture for the internet of things in the future. It was important to protect the council’s right to earn revenue from data and focus on long term rather than short term gain and retain the ownership of data.

- 2.43 Data was produced by many organisations – e.g. councils, TfL, mobile phone companies and there were apps that assembled data from many data sources to give the user a range of relevant information e.g. how to travel from one place to another in a variety of ways. The telecommunications network and in particular a good broadband connection was important for Smart Cities.
- 2.44 At a time when council budgets were under significant pressure, it was important to think innovatively, see what was being done currently, address any gaps, consider the work of other boroughs and the GLA and look at barriers and outcomes. Working with others made smart working more achievable and effective. It was also important to ensure that the vulnerable were not excluded.
- 2.45 The way councils procured services was important. Pre-procurement mechanisms meant councils could procure research to work with a vendor. Doing collaborative work first could result in a better brief and this way of working encouraged innovation. Many boroughs were sharing resources and back office functions.
- 2.46 Having public health within local authorities created an opportunity to come to smart solutions. Arup was working with the NHS on a new towns initiative. Work would be undertaken to see the role technology could play in health outcomes for an area. It could help plan future services, identify vulnerable people and pilot projects would be taking place. Bristol was using control centre monitors to provide telecare. Technology did not replace healthcare professionals but would be an enabler.
- 2.47 Some councils appointed a chief officer to work across the council looking at data and infrastructure and joining it up. The committee was advised that there was a need to engage with good quality engineers on the practicalities of smart cities.
- 2.48 It would be at least 5 years until the internet of things would be sufficiently mature to provide technology infrastructure. Currently data science and data management policies were immature. Projects should be made Internet of Things Ready by:
- 1) Aligning the project with the wider strategic objectives of the authority e.g. citizen engagement, management of the environment, sustainability etc.
  - 2) Establishing the project within a strong data management policy framework to ensure data integrity, protection of an individual's privacy and secure storage.
  - 3) Understanding the opportunity to effect transformational change upon existing business processes, e.g. choice of funding, procurement approach.
  - 4) Analysing the financial benefits in full, including indirect and long term benefits.
- 2.49 There was a need for a trusted organisation to take responsibility for individuals' data. In time, legislation would have to be updated to address privacy and security of data. The council had tight controls on personal data. A lot of organisations wanted data but monetising it had to be an opt-in process for the individual. It was important to manage peoples' perceptions when managing data and ensuring it was made anonymous.
- 2.50 In the long term technology would create employment although there could be a displacement from lower skilled jobs to higher skilled jobs. Technology would create training opportunities. Work was being done in schools to teach children coding which would help with technology in the future.
- 2.51 In the future CCTV analysis would become more advanced and would monitor road usage, cycle usage, HGV usage, the safest route to travel for cyclists etc.
- 2.52 Smart cities and the internet of things had three tangible benefits:

- 1) It would help to deal with population growth and sustainability without additional resources.
- 2) The cost of services would reduce.
- 3) There would be a lot of new services required in the future.

### **3. Conclusion**

The Smart Cities Scrutiny Review heard evidence about a number of Smart City schemes across the country and smart city work that was being undertaken in Islington. The Committee heard about a number of ideas for becoming a Smart City in the future.

The Committee hoped the recommendations would improve smart city work in the borough.

## APPENDIX – SCRUTINY INITIATION DOCUMENT

<b>SCRUTINY REVIEW INITIATION DOCUMENT (SID)</b>
Review: Smart Cities
Scrutiny Review Committee: Environment and Regeneration
Director leading the Review: Bram Kainth
Lead Officer: Anthony Akadiri
<p>Overall aim:</p> <p>To explore and understand the different approaches that Islington Council should consider to becoming a ‘Smart City’ and how new technologies can influence this.</p>
<p>Objectives of the review:</p> <p>We would like to develop a list of ideas for Smart City innovations that Islington should consider for development, based on advice from experts and other local authorities.</p>
<p>How is the review to be carried out:</p> <p>Scope of the Review</p> <p>Types of evidence will be assessed by the review:</p> <p>2) Documentary submissions: Arup Consultants have submitted for 7<sup>th</sup> September:</p> <ul style="list-style-type: none"> <li>• <a href="#">‘Future Cities: UK Capabilities For Urban Innovation’</a></li> <li>• <a href="#">‘Delivering the Smart City: Governing Cities in the Digital Age’</a></li> <li>• <b>Connecting Bristol, Bristol Council</b>, Kevin O’Malley – Future Cities Team Manager – Documentary Evidence</li> </ul> <p>3) It is proposed that witness evidence be taken from:</p> <ul style="list-style-type: none"> <li>• <b>Arup Consultants</b> (Amanda Bailey, Associate &amp; Lean Doody, Director) – Independent firm of designers, planners, engineers, consultants and technical specialists</li> <li>• <b>London Borough of Islington</b> (Adrian Gorst &amp; Emma Marinos)</li> <li>• <b>British Standards Institute</b></li> <li>• <b>Digital Birmingham (Birmingham City Council ) Greater London Authority</b></li> </ul> <p>4) Visits – N/A</p>
<p>Additional Information:</p> <p>All witnesses have been asked to present an overview of different ideas for LBI to consider</p>