

# Delivering the aspirations for a Digital Birmingham:

## Digital City Programme

Final Report  
January 2022

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**00**

Executive Summary

# 00 EXECUTIVE SUMMARY

## Introduction

Our world is digitalising at an astonishing rate. The iPhone, launched in 2007, popularised the use of digital services through its broadly accessible touchscreen, always-on internet connection, and store of social media apps. It began a period of dramatic acceleration in digitalisation. A decade later, seven businesses that built platforms on those technologies were amongst the ten most valuable in the world, collectively worth 3% of global Gross Domestic Product (GDP). By the start of 2021, they were worth 10% of Global GDP. The digital economy has achieved this growth by building online marketplaces in which we now buy and sell an unimaginable variety of products and services, both locally and globally.

Since 2020, the COVID-19 lockdowns have not only further accelerated the use of these services, but they have also shown the great extent to which we are now reliant on them and brought in a new era of remote and hybrid working. In coming years, the true extent of their impact on employment will become clear – the World Economic Forum predicted in 2020 that 44% of the activities undertaken in the workplace today will be digitalized by 2025.

Without even considering the vital role that digitalisation will play in reducing carbon emissions, it is clear that our economy, society and cities are transforming. To be successful in its post-pandemic recovery strategies for Inclusive Growth and Route to Zero, Birmingham will depend on a transformative digital strategy supporting its economy, communities, and environment.

**The Digital City Programme will equip Birmingham's institutions, communities and businesses with the digital infrastructure, data platforms and enablement programmes required to thrive in this new digital world.**

This report is not a Smart City or Digital City strategy for Birmingham. We believe that Birmingham should not have a separate Smart City or Digital City strategy – rather, we recommend a Digital City Programme that will deliver against Birmingham's strategic objectives as a city – as articulated by the City Council's Grand Challenges – in both the short term and the long term.

This report therefore recommends a Digital City Programme for Birmingham that comprises:

- A Digital City Roadmap, comprising an initial set of projects that are deliverable now, and supported by high-level strategic business cases and stakeholder support, alongside candidates for further medium-term projects and future technologies
- A Governance and Delivery Model which is responsible for setting direction for the Digital City Programme, and for overseeing delivery. This includes both delivery of the initial projects identified in the Roadmap, and the development of future projects so that the Programme makes a sustained, substantial contribution to Birmingham's future

## Scope of Work and Approach

Jacobs and the Connected Places Catapult have been jointly commissioned to create a roadmap for Birmingham's Digital City Programme.

**Our scope of work comprised 4 workstreams:**

**1) Stakeholder Engagement:** We have conducted an extensive programme of engagement with stakeholders to gain a thorough understanding of the challenges currently facing Birmingham and to identify opportunities for 'digital city' interventions. These stakeholders were strategically selected, in collaboration with the Council, from across the public, private, academic, voluntary and community sectors to ensure a wide and diverse representation of viewpoints.

**2) Maturity Assessment:** We have used our Digital City Maturity Assessment Framework to benchmark Birmingham's current level of maturity across 12 different 'Digital City' pillars. This benchmarking exercise has then been extended to assess the maturity of 5 other global cities. The output of this assessment has identified areas strengths and weaknesses within Birmingham's current Digital City efforts and has been used to determine where future projects should focus.

**3) Programme Roadmap & Business Cases:** We have prioritised five Digital City projects that best deliver on the Digital City programmes aims and ambitions. We have created high-level strategic business cases for each of these five projects, detailing: why the projects are needed, what the specific intervention will be, the benefits expected to be generated, the costs involved, and potential delivery pathways.

**4) Governance Structure:** To drive the successful delivery of the Digital City Programme, we have proposed an appropriate governance structure, including recommendations around roles, responsibilities, and key contributors. These recommendations have been synthesised into a draft

Terms of Reference (ToR) for members of the Digital City Programme governance structure.

Our approach has maintained a direct chain of logic from findings uncovered through stakeholder engagement and maturity assessment activities, through to the projects that have been taken forward for development, as outlined in the below diagram:

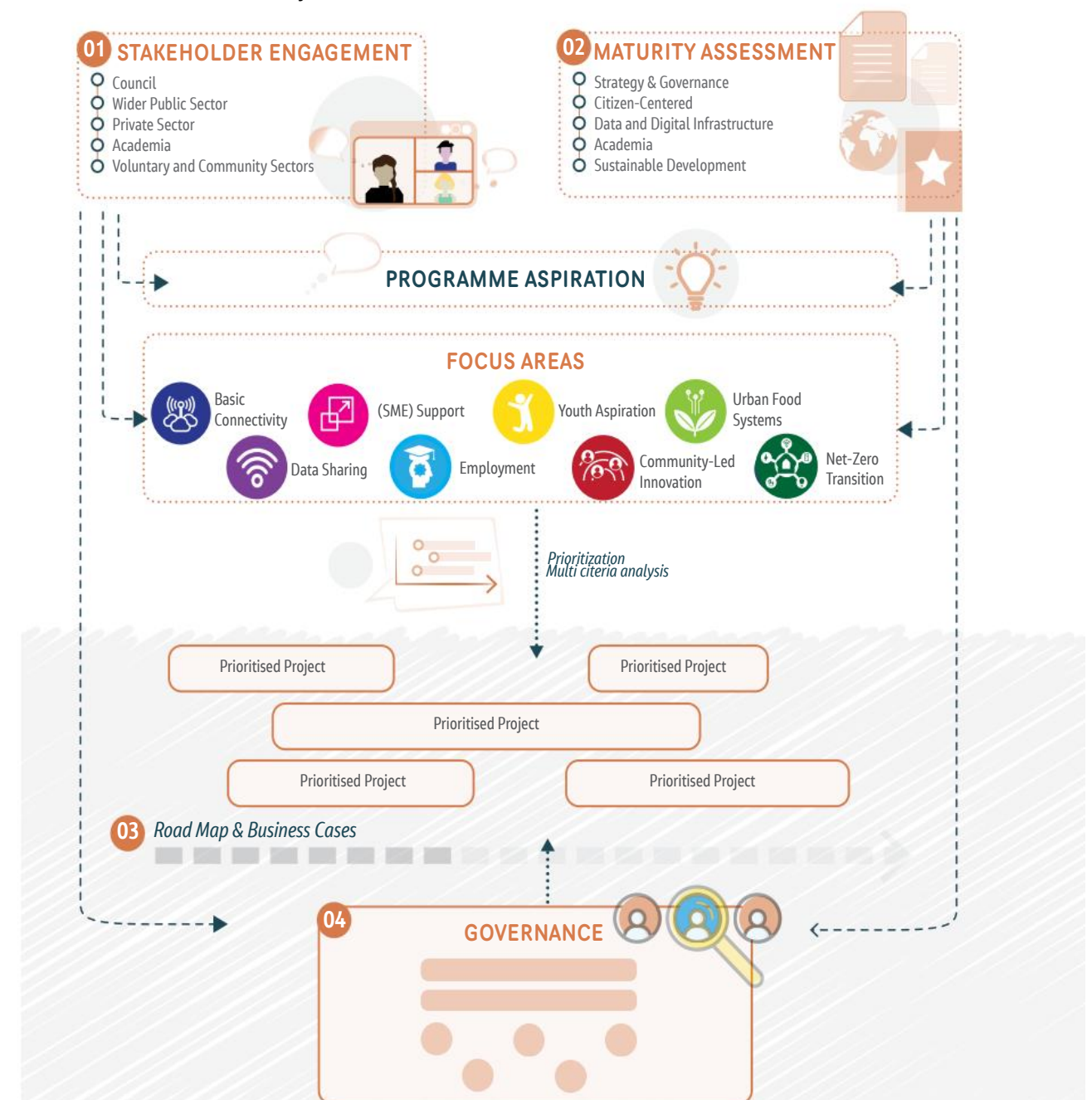


Figure A: Digital City Roadmap Approach



# Programme Aspiration

The core ambition of the Digital City Programme is to provide opportunity for all of Birmingham's residents and communities against this backdrop of a rapidly changing world. The programme aims to utilise digital connectivity, data, and technology to improve the way people in Birmingham live, learn, work, grow and enjoy themselves at every stage of life:



Figure B: Programme aspiration

## Maturity Assessment:

The Connected Places Catapult's Digital Maturity Assessment Framework aims to help cities:

- Understand their current digital challenges and opportunities
- Identify gaps in capabilities
- Provide an evidence base to support investment and business case development

- Prioritise actions and future projects to support digital transformation
- Provide a cross-cutting framework to work within and measure ongoing progress

The maturity assessment comprises 4 core dimension which together provide a holistic view of a city's digital maturity.

CITY	STRATEGY & GOVERNANCE	CITIZEN CENTRED	DATA AND DIGITAL INFRASTRUCTURE	SUSTAINABLE DEVELOPMENT
SINGAPORE	04	04	04	04
AMSTERDAM	05	04	04	04
MANCHESTER	03	03	04	02
MONTREAL	02	02	02	02
VIENNA	04	03	02	03
BIRMINGHAM	02	02	02	02

Figure C: Digital Maturity Assessment

- **Strategy and Governance:** explores strategy, leadership, governance structures and capabilities that are in place to support the delivery of the city's digital vision. This includes the processes and structures that exist to drive the digital economy such as support for digital skills and ecosystem development.
- **Citizen-Enabled Delivery:** explores the ability to drive citizen led innovation and service delivery, ensuring that citizens are at the centre of digital city initiatives, including actions to support digital inclusion.
- **Data and Digital Infrastructure:** explores current data and digital infrastructure in the city to form the backbone of a digital city and the opportunity this creates for inclusive digital growth.
- **Sustainable Development:** explores the city's focus in using digital to deliver sustainable development outcomes for the city, and not adopting technology for technology's sake.

For each dimension, the maturity model is used to provide an overall qualitative indicator of relative progress against each of these areas, with scores ranging from one to five (low to high). As part of this work, we have looked at a set of five cities, comprising both regional peers and global leaders, to compare their progress as a digital city with Birmingham, to allow us to identify learnings and valuable insights for Birmingham. The below graphic highlights the cities used in comparison with Birmingham and the scoring for each dimension:

The Digital Maturity Assessment highlighted Birmingham as having a strong cross-city leadership structure, but an absence of digital leadership across city wide priorities under one strategic vision. Birmingham currently has individual groups or areas focussing on small digital agendas in silo. This is notable when assessed against comparator cities, many of whom employ visible digital leaders such as a 'Chief Digital Officer'. Consequently, digital is not deeply embedded into innovation or forward planning. This is reflected in the lack of digital co-ordination and strategic use of digital technologies to understand complex challenges across the city.

The assessment also highlighted Birmingham as being particularly weak on empowering citizens through citizen-led innovation. This exposed weakness in fragmented planning to reduce digital exclusion in the city, as well as overall co-ordination for digital infrastructure improvements and opportunities from data management in the city to help solve challenges.

Birmingham currently scores low on sustainable development. However, the stakeholder interviews highlighted the emerging Route to Zero (R20) programme as an opportunity that could be further developed through complementary projects proposed in this Roadmap.

Birmingham is working towards a revised governance and leadership structure across the city, reflecting and recognising the challenge of engaging with a multitude of adjacent stakeholders and their innovation challenges spanning digital

transformation, inclusive growth and net zero. Specifically, there is a need to develop digital capability and co-ordination across key programmes to ensure city stakeholder and delivery teams achieve multiple complex goals.

### Project Selection

The objective of Birmingham's Digital City Roadmap is to identify a small number of initial projects that are viable in the short term and that will deliver tangible benefits for the city in the next one to three years. To support this objective, we have identified projects that are already in some form of development in the city, with strong stakeholder support, rather than projects that would need to be developed from scratch.

In order to select the relevant projects to take forward, we first compiled a list of c.40 candidate projects spanning focus areas highlighted from the stakeholder interviews. We then used a multi-criteria analysis to select the projects that will best deliver the desired benefits and outcomes of the Digital City Programme. The highest scoring projects prioritised for further development are outlined below:

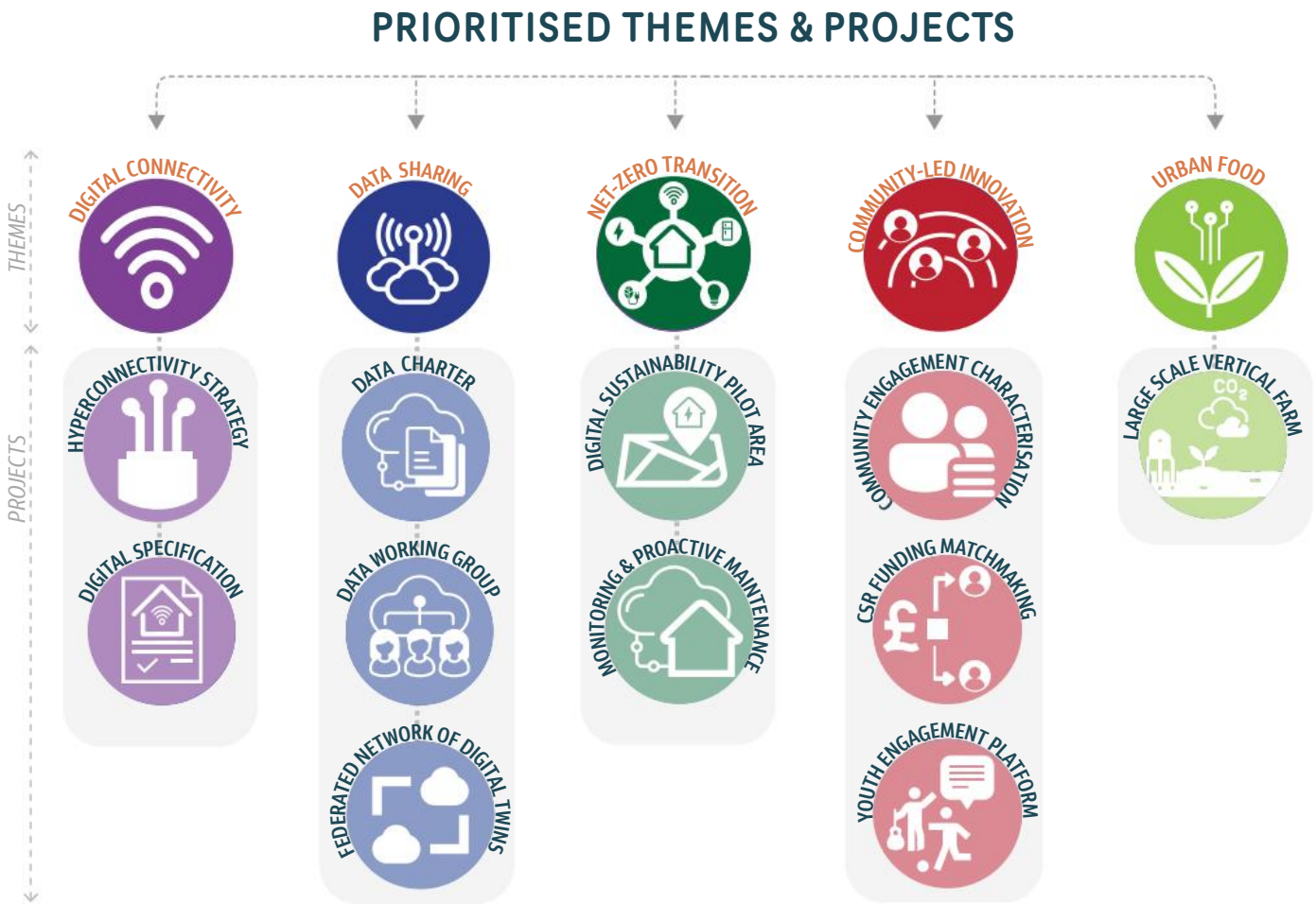
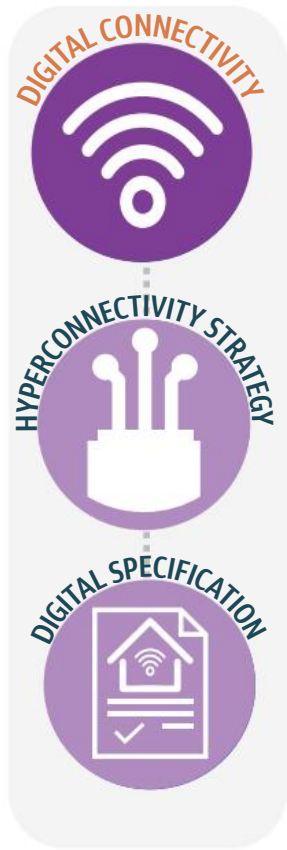


Figure D: Prioritised themes and projects for Digital City Programme

### 1. Digital Connectivity Foundations



There are two projects proposed under this theme that will address the need for widespread deployments of 5G or IoT network connectivity to support future technology use-cases. This will also modernise the city's existing policy environment that influences the ease, cost, and speed of connectivity deployments. These interventions complement the Council's Digital Inclusion Strategy and Action Plan and full fibre strategy to improve digital connectivity in the city:

- Birmingham Digital Connectivity Strategy:** This will focus on developing a strategy to accelerate the roll-out of connectivity technologies such as 5G and Low Power Wide Area (LPWA) networks which are critical to enabling future services and applications across the manufacturing, transport, energy and health and social care sectors. This project will also drive the transformation of the council's policies which influence the ease at which private sector companies can deploy connectivity.
- Digital Specification for Property and Infrastructure:** This proposes the development of a digital specification for property and infrastructure to ensure that in the future, major investments and interventions that reshape Birmingham, invest in digital infrastructure and services in a way that balances benefits for developments with benefits for the wider city.

#### Expected Economic Output -

The proposed project has the potential to generate over £760m of gross monetary value in the form of increased productivity across the business and consumer sectors.



## 2. Data Sharing



There are three projects proposed under this theme that will deliver fast coordination of Birmingham's city data landscape. Without this intervention there is a risk that Birmingham will be left with a host of disparate data platforms, containing unstandardised data, making extracting any value extremely difficult and costly. The interventions target city wide action at scale to complement the Council internal insights programme:

- **Birmingham Data Charter:** The creation of a publicly facing document which communicates how the city's institutions will ethically use data to deliver benefits to citizens and businesses. City organisations would be invited to become signatories, thereby creating a community of data owners.
- **Data Sharing Coordination Group:** The establishment of a group to drive cross-organisational data sharing. This group of prominent data owners from across the city would meet, prioritise use-cases and then work towards generating the data and analytics required to fulfil them.
- **Federated Network of Digital Twins:** This project proposes to create a federated network of city data platforms. Data within these platforms would conform to the same set of standards and would be signposted to by a master directory. Together these platforms can be developed into a comprehensive digital twin for Birmingham.

### Expected Economic Output -

The proposed project has the potential to increase gross domestic product (GDP) by approximately £145m-436m over the project period by improving access to, and availability of, data in the city.

## 3. Route to Zero Transition (Digital Sustainability)



There are two projects proposed under this theme that will deliver high-profile smart city infrastructure to tackle one of Birmingham's primary R20 challenges, reducing emissions from domestic homes. This intervention will also alleviate fuel poverty in one of the more deprived areas of the city, whilst also enabling cost savings in the maintenance of Council property:

- **Digital Sustainability Pilot Area:** The R20 programme is developing a large-scale domestic retrofit programme for council-owned properties in Druids Heath. This proposes co-locating a digital sustainability pilot area alongside the domestic property retrofit programme and proposes equipping a total of 1000 homes with a range of digital interventions.
- **Monitoring and Proactive Maintenance of Council Property Assets:** This will utilise the technology installed in the digital sustainability pilot to enable potential reduction in annual maintenance and management of social housing costs to BCC. Use-cases include early detection and remediation of damage to council properties and savings in the council supply chains.

### Expected Economic Output -

The proposed project has the potential to generate £11.7m of gross monetary value from the uplift in council property values. The project also has the potential to generate further benefits of between £1.5m and £1.8m per annum.

## 4. Community-Led Innovation to Deliver Social Inclusion Outcomes



There are three projects proposed under this theme, exploiting digital technology to better connect Birmingham's communities to Council and third-party services, and resources of benefit to them, ultimately helping the city to tackle its inequality and exclusion challenges:

- **Community Engagement Characterisation:** The extension of an existing exercise completed in the Eastside area which aims to collect and layer various data sources on local communities to provide a comprehensive view of the diverse and nuanced challenges they face.
- **Corporate Social Responsibility (CSR) Funding Matchmaking Platform:** The creation of a digital platform which allows charities, social enterprises and private sector companies with CSR budgets and resources to browse and fund social-purpose challenges or initiatives put forward by voluntary and community organisations (VCOs).
- **Youth Engagement Platform:** The creation of a digital platform which allows children and teenagers aged 5 to 18 years old, and school classes, to submit project ideas, vote for their favourites, and receive funding, either from community crowdfunding, corporate donations, or grants.

### Expected Economic Output -

The proposed projects has the potential to generate approximately £45.84m of gross monetary value per annum for Birmingham.

## 5. Urban Food Systems



Birmingham is uniquely positioned to lead the transformation of the UK's food system due to its existing sector strengths in food and drink manufacturing, nationally renowned restaurant scene and pressing health challenges. This proposed project will create a vertical farm as a prominent smart city flagship facility for Birmingham, making a significant contribution to the city's Route to Zero (R20) contribution by providing a more sustainable source of food. The large-scale, net zero vertical farm will be based in the Tyseley area, in conjunction with the Energy Park and the vertical farming start-up organisation, Harvest. The farm will focus on growing vegetables and herbs that the UK typically imports from the Indian subcontinent and East Asia, which will result in a significant reduction in food miles and associated carbon emissions.

### Expected Economic Output -

The proposed project has the potential to generate £1.7m of gross monetary value per annum from the creation of operational stage high value jobs in the Tyseley area. The project also has the potential to generate further benefits of c.£447k per annum.

High-level strategic business cases for each prioritised project can be found in the appendices C

Indicative Digital City Programme Roadmap

The below graphic provides a high-level view of how the projects above link together, and how we propose they are delivered over time:

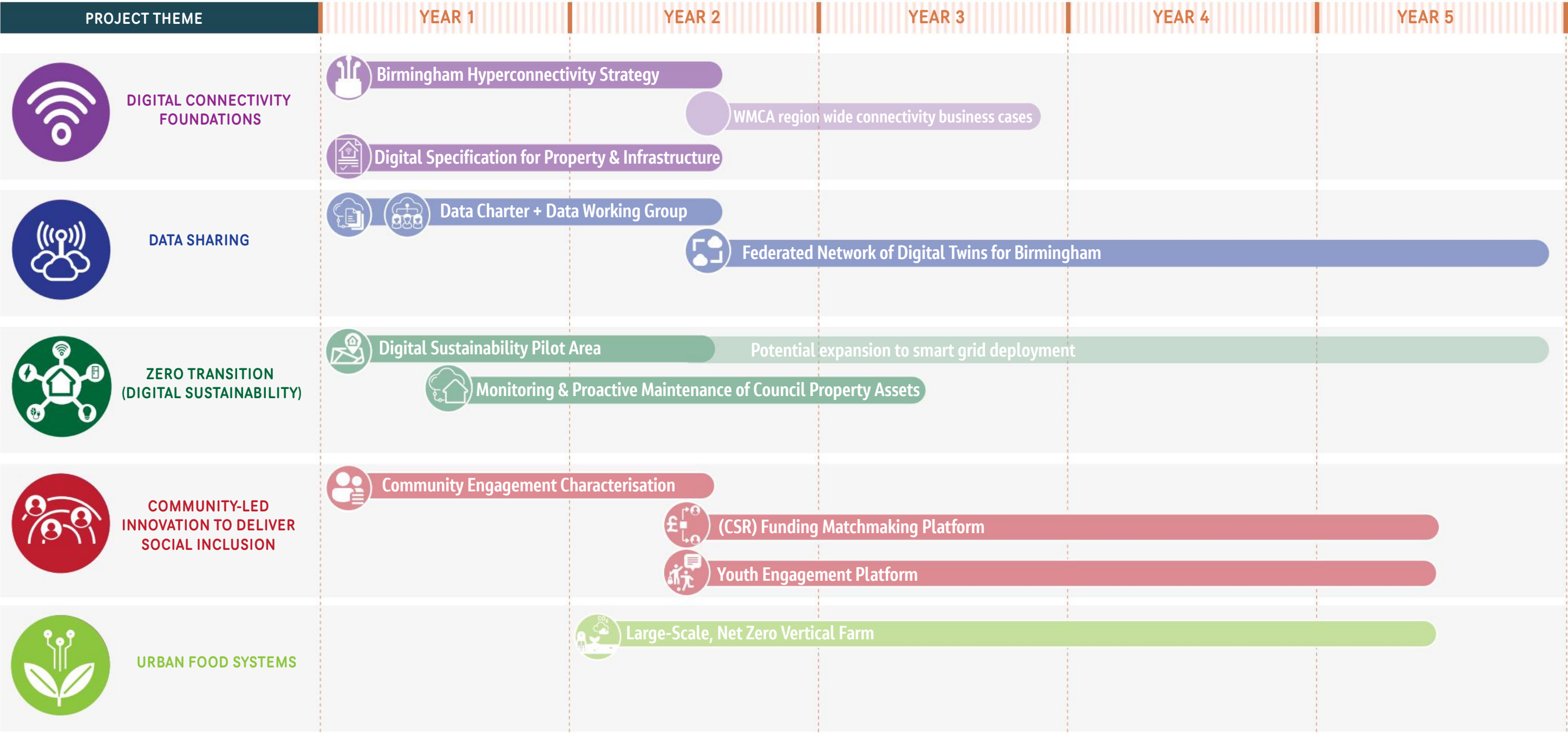


Figure E: Indicative Digital City Programme Roadmap



## Impact on Maturity Assessment Performance

The following graph shows how Birmingham's maturity assessment performance could improve if the roadmap projects listed above are successfully implemented. The grey columns show Birmingham's current performance against the maturity assessment pillars (the baseline), and the coloured additions give an indication of the potential uplift in scores from the various projects.

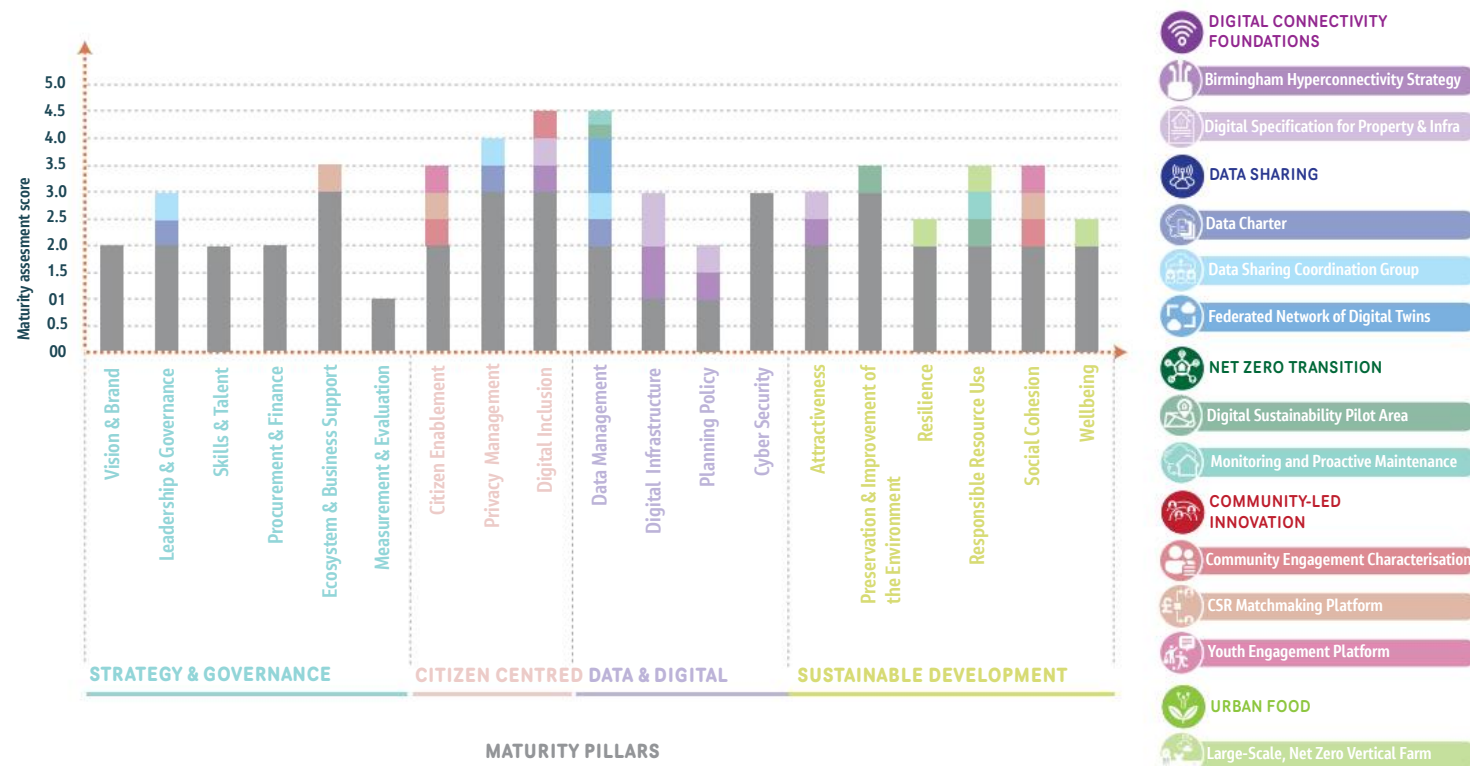


Figure F: Indicative Impact of Roadmap Projects on Birmingham's Maturity Assessment

## Governance

We recommend a city-wide Governance and Delivery Model to draw stakeholders together to drive and oversee delivery of the Digital City Roadmap, and its ongoing evolution and expansion in line with the city's objectives. The Governance and Delivery Model is required to:

- **Establish a coalition of stakeholders to drive Birmingham forward as a digital city**
- **Hold the Digital City Programme to account in delivering against the city's objectives**
- **Hold projects to account in delivering against their individual objectives**
- **Ensure that new projects aligned to the city's objectives are constantly identified and driven forward**
- **Ensure that the required resources are available to support the Programme**
- **Complement existing Council and City governance arrangements**

Critical to Governance and Delivery Model is the need to establish a city-wide responsibility for and commitment to the Digital City Programme. Birmingham City Council will play a crucial role in convening the Governance and Delivery Model bodies, and will lead or participate in many projects, but the Governance and Delivery Model bodies will report to the City Board, rather than to the Council, and may drive some projects that are independent of the Council.

The recommended model involves several different elements, each with a specific remit, characteristics, and Terms of Reference. These have been designed following extensive stakeholder engagement in Birmingham and are informed by international research and experience.

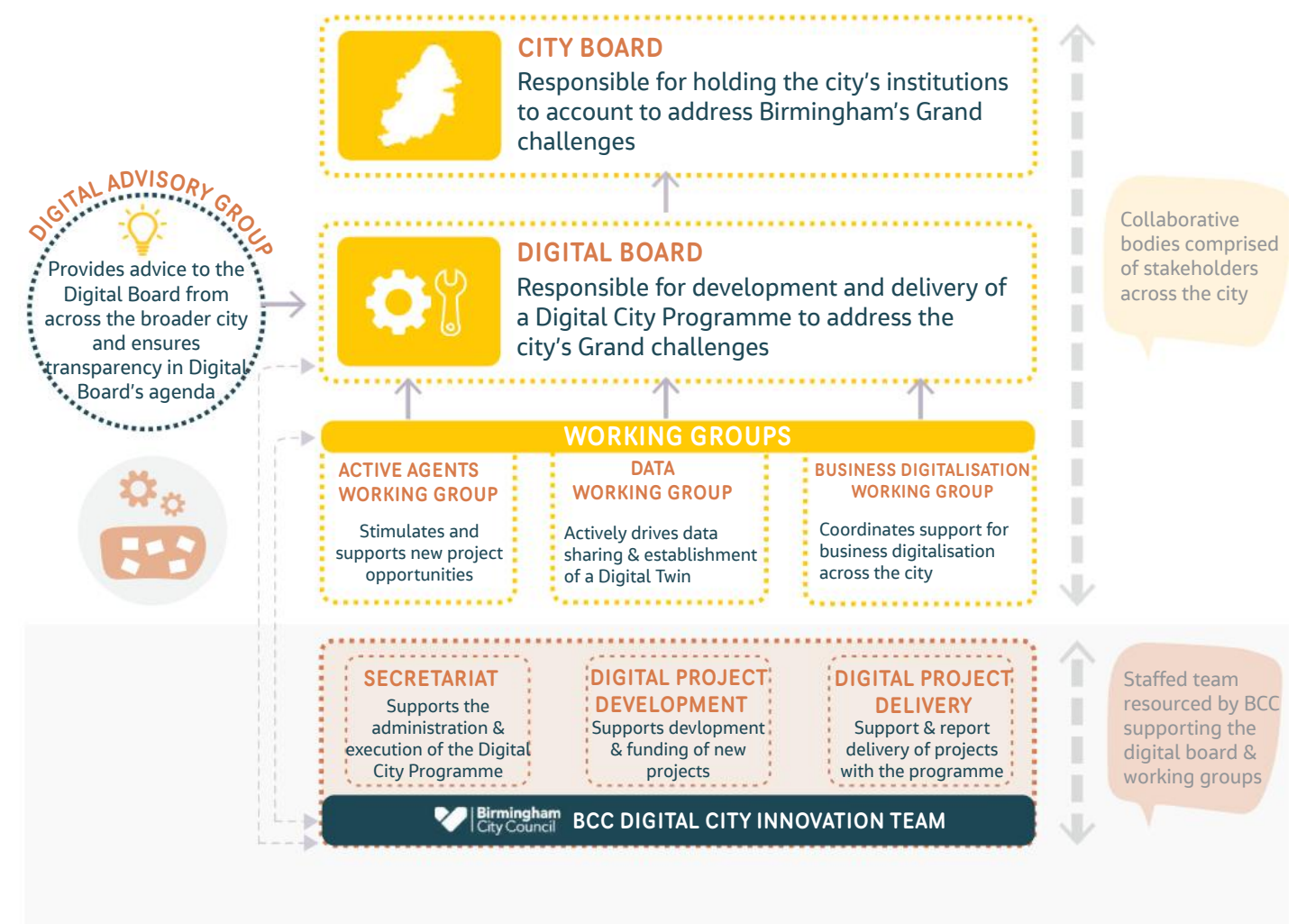


Figure G: Birmingham Digital City Programme Governance and Delivery Model

Using insights gained through extensive stakeholder engagement in Birmingham, analysis of the comparator cities identified in this report, and the collective experience of the project team, the following recommendations are made to establish a Governance and Delivery Model for Birmingham's Digital City Programme. The recommended structure will both oversee delivery of the initial Digital City Roadmap presented in this report, and drive ongoing development and expansion of the Programme. It will establish a body able to set the approach for digital initiatives to address the Grand Challenges established by the City Board, and that is linked to groups with the ability to deliver them.

The Governance and Delivery Model contains several different bodies intended to work together in specific ways. Experience has shown that a single body cannot successfully set direction for, oversee, deliver and continuously drive expansion of a city-wide digital programme – there are simply too many activities and responsibilities for a single body to carry them out. Additionally, whilst overall governance and delivery is a collaborative responsibility, there are some crucial tasks, particularly in project development, that are typically difficult to complete without committed, staffed resources. The recommended model therefore includes a combination of a collaborative Board and Working Groups, with a staffed supporting team provided by Birmingham City Council.





**01**

Introduction

# 01 INTRODUCTION

Digital technologies are radically changing every facet of our lives, from the way we live, work, and play in cities, to how we manage infrastructure and assets and how we deliver critical services. Cities that do not adapt and embrace the ongoing digital revolution will be left behind economically, socially, and environmentally.

**The Digital City Programme will equip Birmingham's institutions, communities and businesses with the digital infrastructure, data platforms and enablement programmes required to thrive in this new digital world.**

## 1.1 Transforming Birmingham for a Digital World

Our world is digitalising at an astonishing rate. The iPhone, launched in 2007, popularised the use of digital services through its broadly accessible touchscreen, always-on internet connection, and store of social media apps. It began a period of dramatic acceleration in digitalisation. A decade later, seven businesses that built platforms on those technologies were amongst the ten most valuable in the world, collectively worth 3% of global Gross Domestic Product (GDP). By the start of 2021, they were worth 10% of Global GDP. The digital economy has achieved this growth by building online marketplaces in which we now buy and sell an unimaginary variety of products and services, both locally and globally.

Since 2020, the COVID-19 lockdowns have not only further accelerated the use of these services, they have shown the great extent to which we are now reliant on them, and brought in a new era of remote and hybrid working. In coming years the true extent of their impact on employment will become clear – the World Economic Forum predicted in 2020 that 44% of the activities undertaken in the workplace today will be digitalized by 2025.

Without even considering the vital role that digitalisation will play in reducing carbon emissions, it is clear that our economy, society and cities are transforming. To be successful in its post-pandemic recovery strategies for Inclusive Growth and Route to Zero, Birmingham will depend on a transformative digital strategy supporting its economy, communities and environment.

1 <https://www.business-live.co.uk/economic-development/west-midlands-uk-hotspot-foreign-20893622>

2 <https://www.wmca.org.uk/media/4468/west-midlands-digital-roadmap.pdf>

3 ONS Business Register and Employment Survey

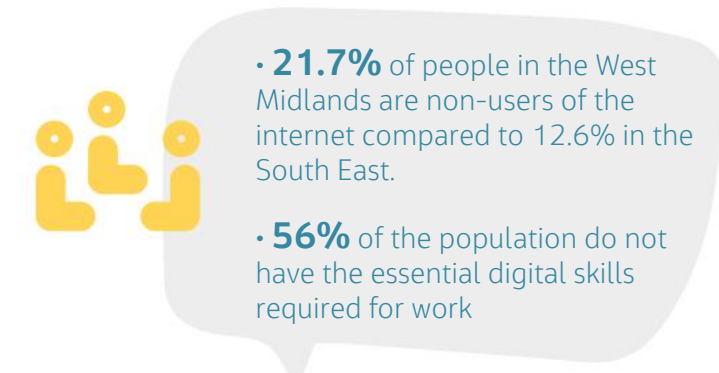


### Transforming Birmingham's Economy

Birmingham is in a national and international competition to secure investment, attract talent and grow its economy. The West Midlands has a strong track record of attracting foreign direct investment (FDI), holding the third largest share of all UK regions outside of London and the South East.<sup>1</sup> However, Birmingham has a large productivity gap, particularly in the digital and creative sectors, where it falls over £7,000 GVA per employee short of the UK's average.<sup>2</sup> 97% of businesses in the West Midlands are small and medium enterprises (SMEs), and many of these have little to no digital literacy. Despite the vibrancy of the local start-up scene, Birmingham only attracts 2.6% of the UK's equity funding<sup>3</sup>.

A strong, fast, and resilient digital infrastructure foundation, along with a series of targeted digital enablement initiatives, is critical to thriving the new digital economy and this Digital City Programme will put in place the structures and projects required to deliver. Without fast action, there is a risk that Birmingham is unable to continue attracting and supporting its business community and with the upcoming transport improvements in the form of HS2, there is a very real risk that Birmingham becomes yet another dormitory city to London.

### Transforming Birmingham's Communities



The rising importance of digital connectivity and technology is also having huge social ramifications on our communities and businesses. The World Economic Forum's predictions imply that by 2025, 44% of employee skills will need to change due to automation<sup>4</sup>. Furthermore, within the next two decades, 90% of all jobs will require some form of digital skills<sup>5</sup>. These shocking statistics point to an impending skills crisis. If left unaddressed, this skills gap will not only impact business growth and productivity, but also the health, wellbeing, and advancement of our society.

This skills crisis is likely to be felt more acutely in certain areas of the UK than others, and the West Midlands region is deemed particularly vulnerable. 21.7% of people in the West Midlands are non-users of the internet compared to 12.6% in the South East<sup>6</sup>. 56% of the population do not have the essential digital skills required for work and Birmingham has the highest share of people with no qualifications of any UK city<sup>7</sup>. This creates a dual set of problems which this Programme will attempt to address. Firstly, businesses are unable to find the skills they need to power their workforce. Secondly, people without digital skills are unable to participate in this new digital society, and therefore become increasingly excluded and left behind.

**It is critical that Birmingham acts now to address this skills gap and to ultimately realise its ambitions of becoming an inclusive, equitable and progressive city.**



4 ONS Business Register and Employment Survey

5 <https://www.gov.uk/government/publications/uk-digital-strategy/2-digital-skills-and-inclusion-giving-everyone-access-to-the-digital-skills-they-need>

6 The Digital Inclusion Landscape Review – Taking Stock Post Covid-19 Lockdown, Birmingham City Council, 2021

7 <https://www.centreforcities.org/reader/train-attract-retain-increasing-birminghams-skilled-workforce/birminghams-skills-profile/>

8 United Nations Environment Programme, Emissions Gap Report 2019

9 <https://www.nature.com/articles/d41586-021-00090-3>

10 Birmingham City Council, Birmingham Transport Plan 2020

### Transforming Birmingham's Environment

Lastly, as the world mobilises to fight the impending climate disaster, we will need to use all the tools at our disposal to transform every aspect of our society, from our consumption habits, to our transport infrastructure, to how we power our homes and businesses. The United Nations estimates that the world needs to cut carbon emissions by 7.6% per year for the next decade to prevent the globe from warming more than 1.5°C above pre-industrial levels<sup>8</sup>. For context, at the height of the pandemic in 2020, global carbon emissions fell by 6.4%, however this reduction came at a huge economic and social cost.<sup>9</sup> To restrict climate change to a 1.5°C temperature rise, we will need to deliver a similar level of reductions each year for the next 10 years, without bringing our economy to a standstill.

Birmingham has been commendably aggressive in its climate change commitments, aiming to achieve carbon neutrality by 2030.<sup>10</sup> While more physical interventions such as domestic property retrofits and increasing the provision of public transportation options will play a prominent role in realising this ambition, the potential of digital connectivity and technology in supporting these endeavours is often overlooked.

Digital connectivity enables remote working which in turn greatly reduces transport emissions. Sensors and data platforms enable a multitude of interventions, from the deployment smart infrastructures that minimise resource consumption, to vastly improved carbon monitoring and reporting. Digital behavioural rewards platforms have proved successful in incentivising consumer behaviour change, an often-overlooked component of this carbon reduction efforts. More fundamentally, digital platforms have the potential to enable more hyper-localised matching between supply and demand, enabling the realisation of a circular economy and carbon neutral lifecycles.

**This Programme will drive forward a series of projects which will demonstrate the valuable role 'digital' can play in achieving city-wide sustainability outcomes.**

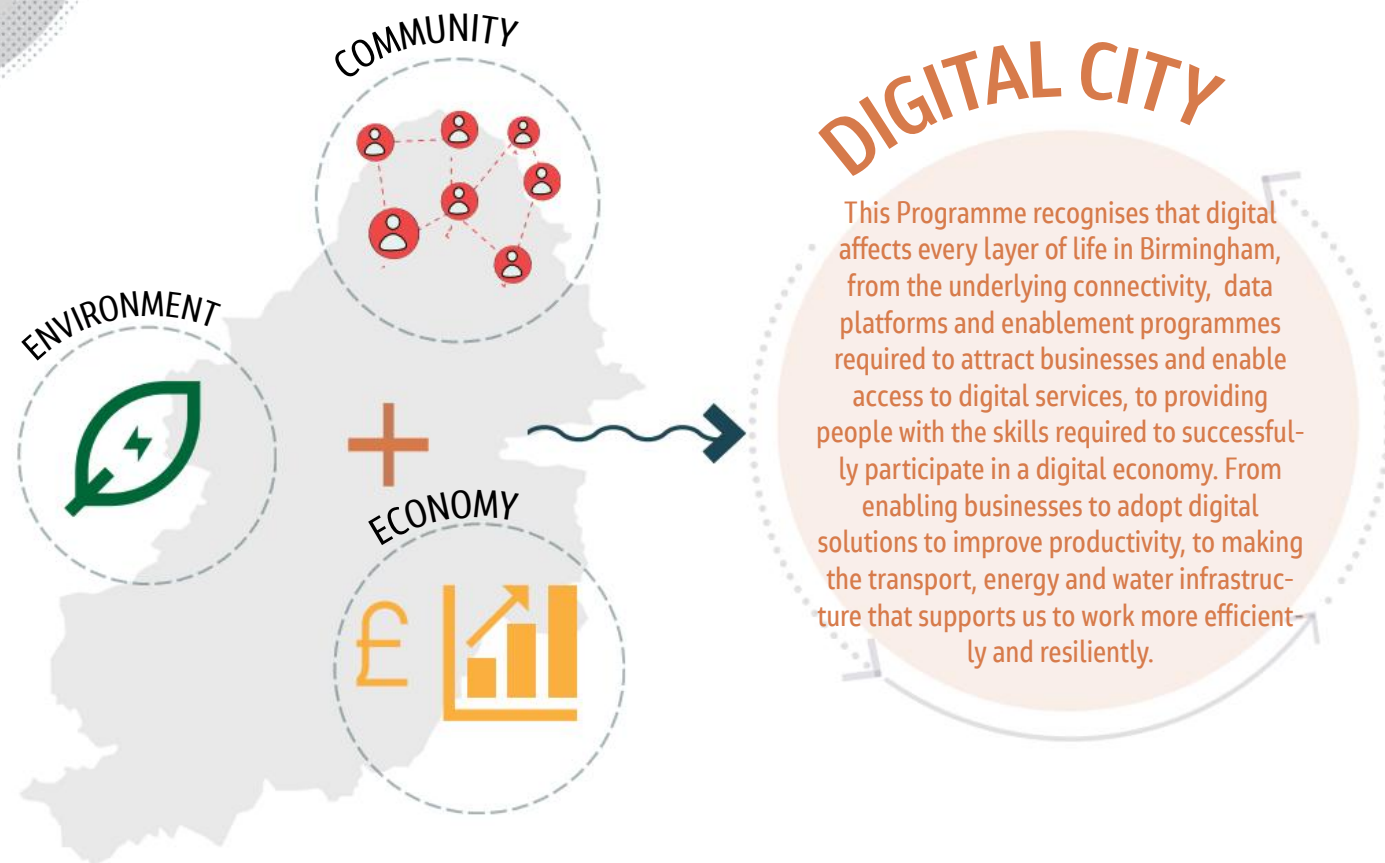


Figure 1: Digital City Programme will play a crucial role in the economic, social, and environmental functioning of a city.

## 1.2 What do we mean by a Digital City?

Over the last 10–15 years, digital or ‘smart’ city programmes in the UK have largely been comprised of small-scale, time limited pilot projects focused on proving the technical feasibility of solutions. These projects are rarely continued past their initial funding period and therefore have not delivered lasting change to local businesses and communities. This Programme represents a step-change in approach.

As demonstrated in the text above, digital now plays a crucial role in the economic, social, and environmental functioning of a city. This Programme recognises that digital affects every layer of life in Birmingham, from the underlying connectivity required to attract businesses and enable access to digital services, to providing people with the skills required to successfully participate in a digital economy. From enabling businesses to adopt digital solutions to improve productivity, to making the transport, energy and water infrastructure that supports us to work more efficiently and resiliently. This is what we mean by a ‘Digital City’.

**This Programme will seek to deliver a future-proofed, sustainably resourced range of digital connectivity, technology, and data foundations to enable every business and citizen to thrive. This Programme will ensure Birmingham is ideally placed to capitalise on the opportunities presented by ‘digital’ and will serve as a key enabler to the city’s wider Inclusive Growth and Route to Zero programmes.**

## 1.3 The Call to Action

Despite the challenges facing the city, Birmingham boasts an impressive range of strengths. Birmingham is the greenest city in the UK, with over 15% of its total area being green space.<sup>11</sup> It is the youngest and most diverse city in Europe, with over 40% of its population aged under 25 years old.<sup>12</sup> It enjoys the highest levels of FDI and new start-up launches outside of London and the South East.<sup>13</sup> This all provides a solid platform on which to build.

From engaging with stakeholders across the public, private, academic, voluntary and community sectors, we have seen conviction, demand, energy, and enthusiasm to drive Birmingham forward on this transformational journey. This is reflected in the large numbers of existing activities and initiatives currently taking place across the city. We have heard that there is a need to coordinate these activities to ensure they deliver maximum impact, and this is where the Council will play a crucial leadership and convening role.

However, it is clear that the Council cannot do this alone. Strong collaboration is required across the city and this report sets out the governance structures to achieve this, whilst also ensuring that all of Birmingham’s communities are represented.

Birmingham was one of the first cities to recognise the opportunities that digital technologies could offer and set up the Digital Birmingham Partnership in 2008. This team was disbanded in 2018 due to insufficient funding. In the meantime, other cities such as London and Manchester have taken great leaps forward.

Birmingham’s population and business ecosystem lack the digital expertise and infrastructures they need to be successful. The same pockets of deprivation that existed in the 1970s still exist today and they will continue to endure unless action is taken. As a whole, Birmingham’s SMEs are not exploiting digital technology to drive growth and improve productivity. There is a real risk that without action, those who are already in the most need will be further left behind. Birmingham must act now to channel investment into the right sectors, and one of those must be digital. **It is critical that Birmingham acts now to put this programme in place to ensure the city’s future prosperity. Birmingham City Council is committed to act, and we encourage you all to join the Council in these efforts.**

<sup>11</sup> <https://www.jurysinns.com/blog/posts/uk-greenest-cities>

<sup>12</sup> <https://www.wmca.org.uk/news/youth-inclusive-decision-making-is-about-more-than-being-in-the-room/>

<sup>13</sup> <https://www.business-live.co.uk/economic-development/west-midlands-uk-hotspot-foreign-20893622>



# 02

## Scope of Work and Approach



## 02 SCOPE OF WORK AND APPROACH

### 2.1 Scope of Work

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- 03 Programme Roadmap & Business Cases:** Using the output of the maturity assessment and insights from stakeholder interviews, we have gathered a long list of candidate projects for the Digital City Programme. Using a robust multi-criteria prioritisation process, we have identified five Digital City projects that best deliver on the Digital City programmes aims and ambitions. We have created high-level business cases for each of these five projects, detailing: why the projects are needed, what the specific intervention will be, the benefits expected to be generated, the costs involved, and potential delivery pathways.
- 04 Governance:** To drive the successful delivery of the Digital City Programme, we have proposed an appropriate governance structure, including recommendations around roles, responsibilities, and key contributors. These recommendations have been synthesised into a draft Terms of Reference (ToR) for members of the Digital City Programme governance structure.

### 2.2 Approach

To deliver real value to the communities and businesses of Birmingham, it is critical that any projects taken forward by the Digital City programme directly address the city's most pressing challenges and seek to improve any weaknesses identified through the maturity assessment. Our approach has maintained a direct chain of logic from city challenge or weakness, through to the projects that have been taken forward for development.

We have taken insights gathered from our stakeholder engagement and maturity assessment activities, augmented this through a review of key strategic documentation, and synthesised findings into prominent focus areas. By looking across these focus areas, we have proposed an overarching

aspiration statement for the Digital City programme which clearly communicates the aims and ambitions of the programme to citizens, businesses, and city leadership. We have also gathered a set of guiding principles which have informed how the programme will be delivered.

For each focus area, we have used our engagement and assessment exercises to identify candidate project ideas which directly address the original challenge area or weakness. These projects have then been prioritised using a transparent and robust multi-criteria assessment approach to leave five candidate projects that have been progressed into business case development

Lastly, we have taken learnings from governance structures used by cities around the world, along with an understanding of Birmingham's existing governance arrangements, to propose a suitable combination of structures for the Birmingham Digital City programme. The resultant structure seeks

to balance top-down control and oversight, with bottom-up delivery, to create a flexible, effective and locally impactful Programme.

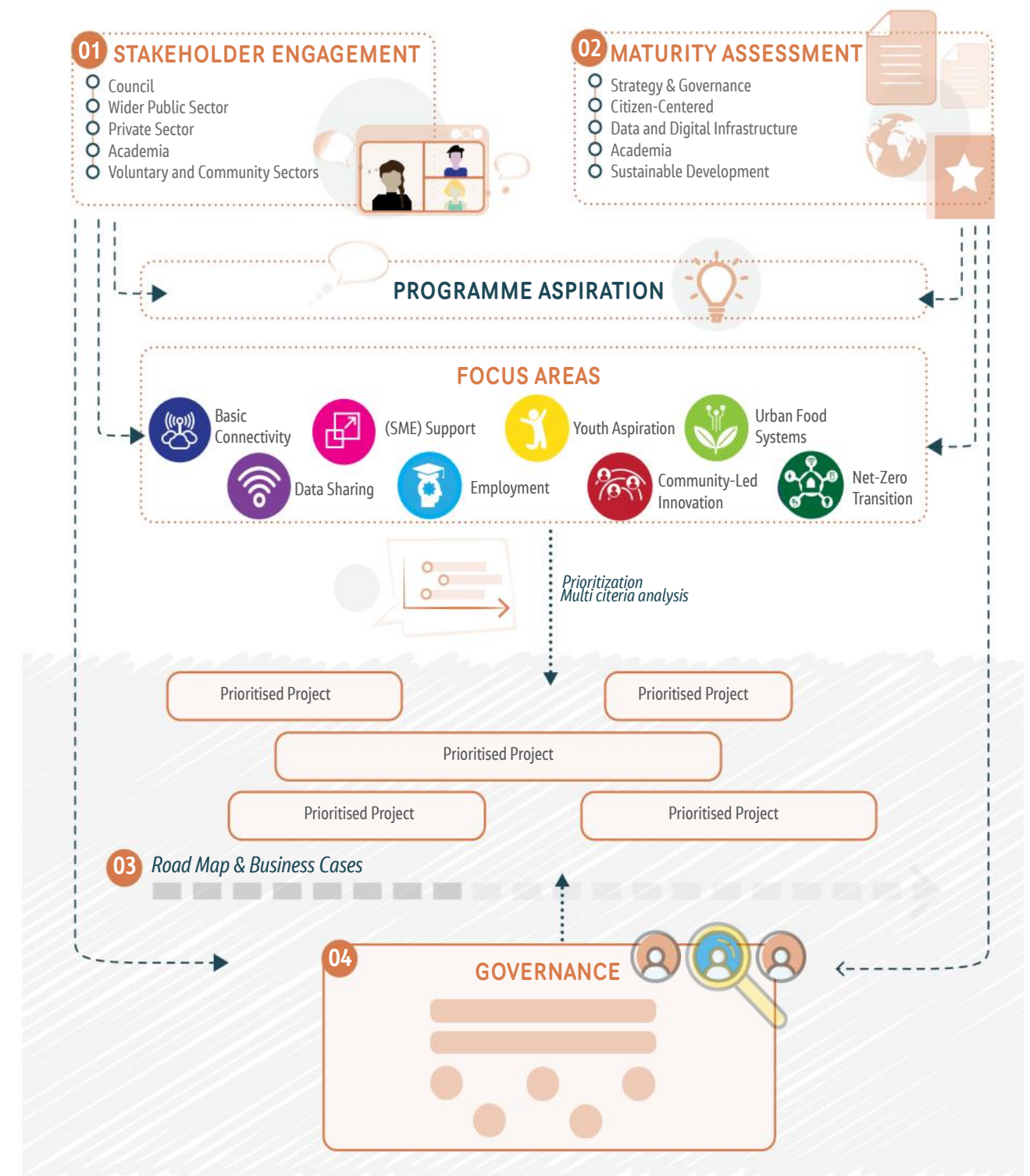


Figure 2: Digital City Roadmap Approach





**03**

Programme  
Aspiration

## 03 PROGRAMME ASPIRATION

As mentioned in the introduction, digital technology is changing every facet of our lives, from the way work and learn, to how we live, socialise, and enjoy ourselves. If cities do not help their communities to adapt and embrace this ongoing revolution, they will be left behind economically, socially, and environmentally.

Therefore, the core ambition of the Digital City Programme is to provide opportunity for all of Birmingham's residents and communities against this backdrop of a rapidly changing world.

Digital will contribute to and augment Birmingham's aspirations, working to add to existing and new complimentary initiatives across the city.

**03 WORK:** With the rise of digitisation, the impending impact of automation on many of Birmingham's core industries, and the transition to a green economy, it is clear that the city's job landscape will change considerably in the coming years. Birmingham was at the forefront of the last industrial revolution and it is imperative that Birmingham takes a similarly leading role in the upcoming transitions to ensure ongoing prosperity

**The Digital City Programme will ensure that Birmingham leads the transition towards a digital and green economy, creating new high-skilled jobs and ensuring local people are able to access them.**

**01 LIVE:** The climate crisis, lack of affordable housing in our cities, and rapidly rising energy bills are all challenges that we see in the news on a daily basis. Failing to address these issues risks creating a city that lacks resilience and cohesion, whilst also widening the gap between the rich and poor.

**The Digital City Programme aims to utilise digital connectivity and technologies to create a sustainable environment and a high-quality, affordable housing stock that will ensure Birmingham contributes to the fight against climate change and delivers an inclusive city for all residents.**

**02 LEARN:** Birmingham is the youngest city in Europe, which presents huge opportunities for innovation, vibrancy, and future economic growth. The city also has some of the highest rates of job vacancies in the country, illustrating its thriving economy. However, Birmingham currently has some of the worst figures for educational attainment and unemployment in the country.

**The Digital City Programme will aim to raise the aspirations of Birmingham's residents by providing access to tailored education and training opportunities at every stage of life.**

**04 GROW:** Life is rarely a linear process, and as we progress through our life stages our circumstances, aspirations and priorities may change. It is imperative that Birmingham's residents are supported to make the changes they desire so that they can ultimately live happy and fulfilled lives

**The Digital City Programme will ensure Birmingham's residents are supported throughout their life stages by providing streamlined and tailored citizen services and targeted early support when times get tough .**

**05 ENJOY:** Birmingham is one of the most diverse cities in Europe, being home to dozens of unique and distinct communities. Together these communities have built the city's reputation as a cultural melting-pot and internationally renowned culinary leader. We appreciate that the needs of each of these communities varies considerably and that it is often those within the community, rather than the city's centralised institutions, that are best placed to understand and cater to these needs

**The Digital City Programme will provide Birmingham's communities with the platforms, infrastructure and support they need to deliver the activities and initiatives required to create happy, inclusive, and engaged communities.**



Figure 3: Programme Aspiration



**04**

Stakeholder  
Engagement  
Findings

## 04 STAKEHOLDER ENGAGEMENT FINDINGS

### 4.1 Stakeholder Engagement Overview

Jacobs and the Connected Places Catapult undertook an extensive programme of stakeholder engagement, conducting over 35 interviews with internal Council and external city stakeholders. These stakeholders were strategically selected, in collaboration with the Council, from across the public, private, academic, voluntary and community sectors to ensure a wide and diverse representation of viewpoints. Further opinions were collected through the distribution of an online questionnaire to over 70 further city stakeholders. A full list of stakeholders that have been engaged can be found in Appendix A.

The aim of this programme of engagement was fourfold:

- **To understand Birmingham's current challenges and uncover potential opportunities for digital intervention**
- **To provide the information required to accurately benchmark Birmingham in the maturity assessment**
- **To identify potential Digital City project ideas and existing complimentary initiatives that could deliver the aims and ambitions of the programme.**
- **To define a suitable governance arrangement and identify potential participants to ensure that the programme is driven forward and delivers lasting benefits over the coming years.**

The findings from the stakeholder engagement exercise have been synthesised into 8 key focus areas. These are:

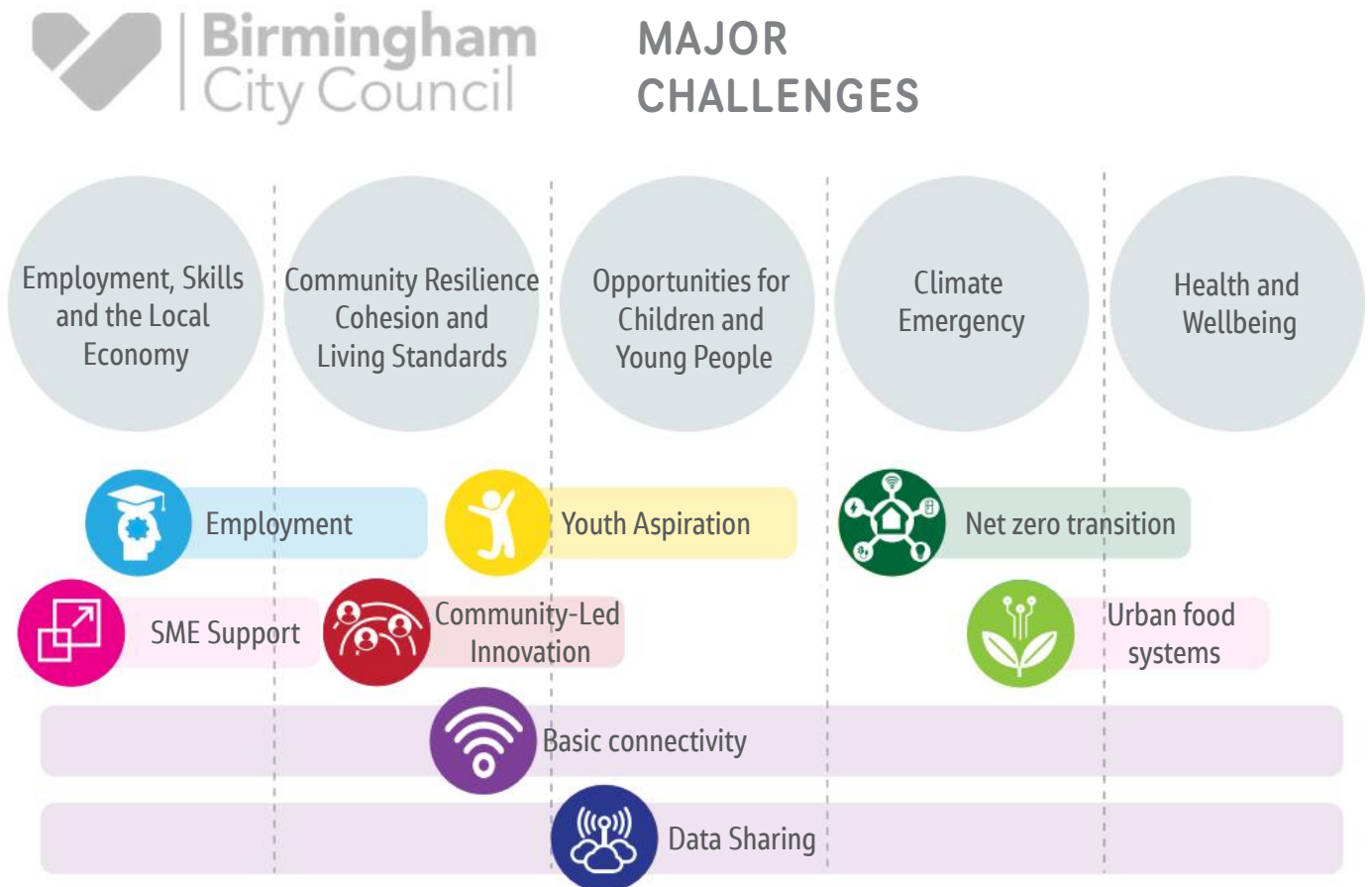


Figure 4: Identified focus areas in relation to Birmingham's major challenges

At the point of conducting this engagement exercise, the Council's 'Grand Challenges' had not yet been published. A retrospective comparison of the focus areas identified through the Digital City Programme and the Council's major Challenges has revealed a good level of alignment between the two. This has given us confidence that our stakeholder

engagement activities have been of sufficient scale and depth to accurately identify the city's most pressing challenges.

The remainder of this section summarises the insights gathered from our stakeholder engagement activities.



## 4.2 General Programme Delivery Insights During our engagement exercise stakeholders highlighted several wider recommendations that they feel will be critical to the successful delivery of any Digital City Programme.



01

### Localised Delivery

Given the importance placed in inclusive growth and social inclusion, stakeholders were keen to highlight that large-scale generic programmes are rarely successful in delivering the required outcomes in these areas. Instead, they highlighted a need for a large number of hyper-localised, targeted initiatives, which collectively deliver a big impact. Therefore, they recommend that this programme such aim to create an environment that enables these initiatives to flourish and scale. This proposed approach draws on the 'massive small' principle pioneered by the respected urbanist Kelvin Campbell, which seamlessly marries a combination of top down environment-making and enablement with distributed bottom-up delivery.



02

### Trust

Stakeholders identified a perceived lack of trust between prominent city institutions and disenfranchised and marginalised communities. This lack of trust has the potential to undermine and reduce the effectiveness of projects delivered under this programme, so must be acknowledged and remedied where possible. Stakeholders felt that, in some cases, it may make more sense for partner organisations with better community relationships to deliver the project, with the council or other formal city institution providing behind the scenes support and governance.



03

### Coordination

Across many of the thematic focus areas identified, stakeholders were able to list a large number of existing initiatives, many which are often uncoordinated, overlapping and hard to navigate for end users. Stakeholders emphasised that this programme should not seek to duplicate or replicate anything that is ongoing. Instead, it should aim to better coordinate existing initiatives, facilitate streamlined end user access and if required, lead the development of additional programmes to plug any gaps in service or support provision.



04

### Shift of Focus to Prevention:

Both internal and external city stakeholders stated that historically, the use of city services have been triggered by the occurrence of events and incidents. Stakeholders were advocates of a transition in approach, away from reactive action and moving towards prevention and prediction. Digital technology and data were seen as key enablers to this transition, and the Digital City Roadmap should seek to lay the foundations to this change in approach.



05

### Attitude to Failure

90% of innovation projects fail, therefore stakeholders were keen to highlight that a degree of failure much be accepted. They stated that the city needs to look a success and failure across a portfolio, rather than on a per-project basis. Providing on average that projects across the portfolio succeed, it should be perfectly permissible from some – even many – individual projects to fail. Innovation does not take place without failure. They were keen to make clear that just because one innovation project does not meet all of its objectives, does not mean that the programme as a whole is a failure. It is key that learnings from all projects are noted and taken forward into future projects.



06

### Leadership

Stakeholders highlighted the importance of having a strong cross-city digital leadership under one strategic vision. Birmingham currently has individual groups or areas focussing on small digital agendas, rather than gaining from a collective focus



07

### Inclusive Growth

Stakeholders highlighted the contrast between growth in the city centre and pockets of poverty a mile away. This is cemented by the 10-year life expectancy gap between Birmingham's richest and poorest residents.



08

### Identity and Reputation

Stakeholders focussed on the reputation of the city, with the UK's second city failing to live up to this title in many aspects. Stakeholders felt the city struggles to promote its reputation nationally and internationally.



## 4.3 Key Themes and Findings

In addition to making some general delivery recommendations, stakeholders also identified a number of specific thematic areas that the programme should focus on.



### Basic Connectivity

Poor fixed digital connectivity across multiple areas of Birmingham was highlighted as a major challenge by multiple stakeholders.

The city centre was identified as having particularly poor fixed connectivity, despite stakeholders such as the Colmore Row Business Improvement District trying to aggregate demand vouchers to fund improved connectivity. If left unresolved, stakeholders expect that poor connectivity will limit the productivity and growth of existing businesses and fail to attract and retain new businesses in the area.

Stakeholders also noted a correlation between areas of high deprivation and poor levels of digital connectivity. Stakeholders stated that this imbalance requires immediate action to avoid continued digital exclusion within these communities and to increase their ability to access online council, education, and health services. Stakeholders were keen to highlight that the underlying digital connectivity was not the only contributing factor to digital exclusion and that cost-effective access to data, devices and digital skills training must also be addressed to have the desired impact.

A number of potential opportunity areas were identified in response to this challenge:

- **Support regional initiatives:** The GBSLEP is currently working on a business case for region-wide full fibre connectivity. Stakeholders felt that is important for the city to support and influence this initiative. To do this, it is critical that the city has a clear idea of which areas require improved connectivity and an understanding of the levels of demand that are currently present. To this end, stakeholders felt that Birmingham requires its own fixed and wireless connectivity strategy to guide and coordinate all subsequent connectivity improvement efforts.

- **Public-sector anchor tenancy model:** Linked to the above opportunity, stakeholders felt the Digital City programme should investigate the extent to which the public sector can leverage its own assets to generate demand and improve connectivity, particularly in less commercially viable areas. We understand that Birmingham City Council has recently released a tender to the market to understand potential routes to achieving city-wide fibre connectivity coverage.
- **Investment by large property developments:** Stakeholders suggested that the city should leverage the significant investments being made by large property developers to improve connectivity. A clear planning policy for digital connectivity to ensure that every building in the city has great fixed and wireless connectivity was suggested by public sector stakeholders and several developers were supportive of this approach.
- **Leveraging existing connectivity infrastructure:** Opportunities were also identified to utilise connectivity infrastructure being deployed by transport operators, such as the fibre being laid as part of the tram network, to improve city-wide connectivity via the creation of a neutral host network.



### Data Sharing

Stakeholders identified improved data sharing as a critical enabler for Birmingham's Digital City ambitions and stated that currently Birmingham is a 'data poor' city. They universally agreed that data sharing has the potential to give organisations a more holistic and nuanced understanding of community and business needs, therefore enabling better decision making, better targeting of interventions and ultimately, better outcomes.

Based on learnings from data sharing initiatives in other cities, stakeholders were keen to emphasise that any data sharing programme in Birmingham must have a clear purpose and must be focused on a range of clear use-cases that are meaningful for the public, private and academic sectors, as well as citizens themselves. Stakeholders stated that simply placing any available datasets into an open data portal and seeing what happens is often ineffective. Lastly, stakeholders also expressed their hopes that data sharing efforts should focus on improving the quality of services delivered and communicating more effectively with disenfranchised communities, rather than aiming to solely deliver cost savings.

Several data sharing initiatives are already being progressed by stakeholders across Birmingham. Examples include the council's City Observatory platform, WMCA's regional data store and Lendlease's planned Podium data platform deployment for the Smithfield development. Stakeholders did not feel it was necessary to bring these initiatives together into one consolidated platform, however stressed that is imperative that they are coordinated in terms of signposting and data standards to allow the easy aggregation and layering of data sets.

A number of potential opportunity areas were identified in response to this challenge:

- **Formation of a city data charter:** Drawing inspiration from the Data Charter recently launched by London, stakeholders felt that data sharing in the city should be guided by a set of principles which transparently communicate how data will and will not be used. City organisations would be invited to become signatories to this charter, thereby creating a community of data experts and data owners who will contribute to Birmingham's data ecosystem, while also promoting accountability around data use and protecting the rights of people and communities.
- **Establishment of a data sharing coordination group:** To ensure data sharing is centered around clear and meaningful use-cases, stakeholders proposed the establishment of a data sharing coordination group. Comprised of representatives from a range of organisations across Birmingham's public, private, academic, voluntary and community sectors, this group would identify viable use-cases and work together to share the relevant datasets required for delivery. Several stakeholders identified some data sharing partnerships they would like to establish including Lendlease wanting to access transport data so they could understand where people were travelling from to reach Smithfield, and Western Power Distribution (WPD) wanting to share their energy data to support the council identify vulnerable households.
- **Creation of a federated digital twin for Birmingham:** By coordinating and aligning the multiple data sharing initiatives and then driving the opening of further datasets through the coordination group, stakeholders stated that the Digital City programme should aim to create a 'Digital Twin' for Birmingham. This hugely ambitious aspiration would not only see Birmingham leading the way in terms of city data sharing nationally but would also provide a platform to attract high profile businesses requiring data to drive their innovation agenda.



## Community-Led Innovation to Deliver Social Inclusion Outcomes

Social inclusion was identified as the most important objective for the Digital City programme and stakeholders highlighted a number of statistics to illustrate why this must be the case.

**Birmingham is the 7th most deprived city out of 200 cities across the UK**

**Birmingham has the highest rates of child mortality in the UK**

**There is a 10-year life expectancy gap between the richest and poorest residents.**

**37% of Birmingham's children are currently living in poverty.**<sup>14</sup>

**Birmingham has the highest share of people with no qualifications of any UK city.**<sup>15</sup>

Stakeholders emphasised that the hotspots of deprivation and exclusion are the same now as they were in the 1970s and stated that previous 'broad brush' attempts at tackling social inclusion have not worked in Birmingham. Stakeholders also observed that the council and other more formal city institutions struggle to successfully connect with disengaged communities, stating that voluntary and community organisations were far more effective in securing the trust and cooperation of these groups.

With the above in mind, stakeholders recommended that this programme focuses on driving community-led innovation and delivering significant impact through the enablement of a large number of highly localised projects. They stated that this Programme should focus on creating the environment and delivering the underpinning infrastructure and platforms to allow local, grassroot organisations to deliver highly tailored and trusted community interventions.

A number of potential opportunity areas were identified in response to this challenge:

- **Community engagement characterisation:** In order to better engage with communities across Birmingham, it is important to have a firm understanding of their characteristics and their preferred engagement methods. There is an ongoing piece of community characterisation work taking place around the Tyseley area and stakeholders felt that it would be useful to expand this piece of work across Birmingham to provide a comprehensive view of the challenges facing various communities and the forms of engagement that are most likely to be effective.
- **Access to alternate funding streams:** Stakeholders highlighted that many of the funding streams for community-delivered social inclusion initiatives are due to end in the next 2-3 years, leaving a considerable funding gap. They highlighted the need to direct alternate funding sources towards these initiatives. Corporate social responsibility (CSR) budgets from large corporates moving into Birmingham was identified as one potential funding target, while the government's Levelling Up funds were identified as another option.
- **Open civic engagement initiatives:** Stakeholders also spoke about the need to empower local communities to deliver their own inclusion and innovation initiatives. Civic crowdfunding approaches were mentioned as a potential method to support communities identify, fund, and deliver projects that would enhance local life and make a real difference.



## Net-Zero Transition

The council is committed to making Birmingham carbon neutral by 2030 and has committed to taking a leading role in tackling climate change. All stakeholders we spoke to were thoroughly supportive of this ambition and two key areas for intervention were identified:

- **Housing:** Heating domestic properties accounts for 34% of the city's emissions.<sup>16</sup> Stakeholders highlighted the criticality of making the housing stock as efficient as possible if the city is to achieve its carbon reduction targets. While traditional retrofit approaches such as insulation will play a big role in this, stakeholders were keen to highlight the role digital could play in reducing energy usage and driving behaviour change.
- **Wider Property Sector:** Looking at the property sector more widely, the developer and university stakeholders we have engaged with expressed a clear desire to deliver net zero buildings and also spoke of their support for new buildings to support the integration of renewable energy sources (particularly solar) and include load balancing technology to support the increasing demands of electric vehicles.
- **Transport:** Multiple stakeholders highlighted the continued car-centric nature of the city, despite many recent efforts to reduce private car usage. Stakeholders expressed a desire for a more tightly integrated public transport system, improved infrastructure for cycling and micro-mobility measures, and a clear strategy for the electric vehicle transition. It was highlighted that these alternatives are not always inclusive, due to accessibility, security, and crime issues, and that these areas should be addressed in parallel with any efforts to minimise private vehicle usage.

A number of potential opportunity areas were identified in response to this challenge:

- **Demonstrating the role of digital in achieving sustainability outcomes:** Stakeholders spoke about a desire to create a pilot area for digital sustainability solutions. Such a pilot area could integrate smart appliances, granular in-home environmental condition sensors, electric vehicles and battery storage technologies to demonstrate the full potential of digital connectivity and technology in minimising energy usage in communities. This could be aligned with the council's existing retrofit programmes to deliver significant improvements in domestic property energy consumption and reduce the prevalence of fuel poverty.
- **Enhanced management of council property assets:** Internal council stakeholders were keen to understand how IoT and sensing technology could generate the data required to operate their assets more sustainably. They highlighted that this could generate additional benefits in terms of reduced asset management costs through the ability to identify problems early and conduct preventative maintenance activities.
- **Expansion of existing green and smart transport initiatives:** A number of stakeholders across the city are conducting trials and early-stage deployments of future transport initiatives. From Tyseley Energy Park's hydrogen refuelling station, to TFWM decarbonisation agenda and WM5G's road management trials, there is an opportunity for the Digital City Programme to support the expansion of these initiatives into new areas of the city and extend the suite of technologies they are testing.

<sup>14</sup> <https://www.endchildpoverty.org.uk/child-poverty-is-on-the-rise-and-concentrated-in-the-places-the-governments-policies-will-hurt/>

<sup>15</sup> <https://www.centreforcities.org/reader/train-attract-retain-increasing-birminghams-skilled-workforce/birminghams-skills-profile/>





## Urban Food Systems

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## Small and Medium Enterprise (SME) Support

97% of Birmingham's businesses are SMEs, representing a huge proportion of the city's economic output. Stakeholder identified two distinct challenges facing Birmingham's SME community.

Firstly, stakeholders identified a massive digital skills gap in many SMEs. This was deemed to be particularly acute in the manufacturing sector where 95% of the output is generated by SMEs. These organisations typically have no online presence (website, social media, etc), no digitised payment systems and no digitised back-office functions (HR, finance, etc). This significantly impacts productivity and growth potential.

There are a large number of existing programmes across the city, such as those being run by Birmingham City University, WM5G and the Digital Skills Partnership, that aim to support SMEs adopt digital technologies, however many of these programmes are funded by European sources that expire in the next couple of years. Stakeholders highlighted the importance of continuing these programmes by leveraging alternate funding sources.

The second challenge area identified by stakeholders centered around Birmingham's start-up investment ecosystem. Although 7.4% of the UK's highest growth businesses are located in the West Midlands, the sub-region raises only 2.6% of the UK's equity funding and less than 1% of investment firms and practitioners are located in the city.<sup>17</sup> Stakeholders stated that Birmingham's venture capital scene feels 'hobbyist' compared to London's professional ecosystem and stated that Birmingham needs to be better at identifying and preparing its high potential start-ups. This would create a more sustained deal flow that would be more likely to secure the long-term interest of investors.

A number of potential opportunity areas were identified in response to this challenge:

- **Coordinate existing sector-specific digital adoption programmes and create programmes to fill any gaps:** As mentioned above, there are a number of programmes supporting SMEs in various sectors to adopt digital technologies. Stakeholders stated that this landscape is complex and is currently difficult to navigate. They suggested that a mapping exercise would be useful to understand each programme's offer, target audience and duration. This would allow any current or future gaps to be identified and new programmes to be created to address the market need.
- **Joint public/private investment fund:** To kick-start Birmingham's investment ecosystem, stakeholders suggested the creation of a joint investment fund which could support businesses with high growth potential which also deliver in the public interest.
- **Provision of a back-office digitalization platform:** To further support SMEs with digitalization, stakeholders suggested that that programme could provide a software-as-a-service (SaaS) based platform that could be used to deliver back-office functions such as HR and finance. By hosting multiple organisations on one cloud-based platform, costs of adoption would be reduced and effective support could be provided.



## Employment

43% of businesses in Birmingham have stated that staff shortages and unfilled vacancies are their biggest business problem (LEP). Conversely, Birmingham has some of the highest rates of unemployment in the country. Stakeholder discussion centered around how to close this gap by linking people with suitable jobs and giving them the support they need to access available opportunities.

A lack of digital skills was identified by stakeholders as the key barrier stopping people from accessing these job opportunities. 56% of the population of the West Midlands do not currently have the essential digital skills required for work<sup>18</sup>, and within the next two decades, 90% of jobs will require some form of digital skills.<sup>19</sup> Therefore it is becoming increasingly critical to address this skills gap to set the region up for future socio-economic success.

Stakeholders identified numerous programmes across Birmingham that aim to either connect people with employment opportunities, equip them with digital skills or provide them with the skills required to start their own business. These include Bruntwood SciTech's SERENDIP programme, Digital Innov8tors, School of Code and SCC's Digital Academy. Stakeholders stated that due to the sheer number of initiatives, the landscape is complex and difficult to navigate for those looking for support. Furthermore, many of the corporate-led initiatives often struggle to find and connect with the communities most in need. Stakeholders identified a role for this programme to more effectively connect those needing skill development and employment support with relevant support programmes.

A number of potential opportunity areas were identified in response to this challenge:

- **Mapping and alignment of employment support and skill development initiatives:** To enable easier navigation of the city's multiple existing initiatives, stakeholders recommended that the Digital City Programme conduct a mapping exercise of the ecosystem and seek to align and coordinate the current offerings being delivered.
- **Digitalisation of existing support initiatives:** Many of the current initiatives, such as the Bruntwood SciTech's SERENDIP programme, is delivered face to face, which places limitations on the number of people they support. For some programmes, there may be opportunities to digitalise certain aspects, therefore allowing them to scale to support more people. While this is not something the council would deliver directly, they could support these organisations by connecting them with the communities in need of the programme.

A second lens to Birmingham's employment challenge involves the student population. The university stakeholders we engaged with highlighted that a lack of high value graduate jobs was inhibiting the retention of students after they graduate. Many are forced to move to other cities to secure the jobs they desire. Several of the SME support opportunities identified on the previous page would also increase the prevalence and availability of high value graduate jobs, therefore improving the city's retention of highly skilled young workers.



## Youth Aspiration

Birmingham is the youngest city in Europe, presenting huge opportunities for innovation, vibrancy, and future economic growth. However, Birmingham currently has some of the worst figures for educational attainment in the country. Stakeholders also stated that there is a documented 'pessimism bias' amongst young people in Birmingham regarding their life course.<sup>20</sup> A need to raise aspirations amongst Birmingham's young people was highlighted as a potential focus area for the Digital City Programme. Research has shown that a child receiving three aspirational experience before leaving primary school is enough to significantly raise their life aspirations and self-belief.<sup>21</sup>

Stakeholders brought our attention to the 'education paradox'. This states that the older a person becomes, the more funding becomes available for education and the more prestige there is attached to the qualifications they gain. For example, there is far more funding available for an individual PhD student than a whole class of GCSE students. However, the older a person becomes, the harder it is to impact their life course. Essentially, while aspirations are formed during primary school, there is the lowest amount of funding available to shape these aspirations at this life stage. Given Birmingham's youthful population, stakeholders wanted to explore whether the city could become a pioneer in early years development and aspiration setting. This was deemed to reinforce the 'Be Bold, Be Birmingham' branding currently being led by the council.

A number of potential opportunity areas were identified in response to this challenge:

- **Innovation in early years development:** Stakeholders suggested that the Digital City programme could launch an initiative to set and increase the aspirations of children and young people by providing them with the required education, training, career advice and guidance. Stakeholders highlighted the importance to applying this programme to Birmingham's multi-cultural and marginalised communities to unlock their full potential.
- **Creation of a flexible school innovation fund:** Stakeholders stated that the needs of schools in different areas that serve different communities vary significantly, therefore a broad-brush approach to aspiration raising is unlikely to be successful. Stakeholders suggested setting up a fund which would allow schools to design and deliver aspiration-raising programmes tailored to their communities.
- **Expansion of existing future skills and aspiration raising programmes within schools:** Our engagement revealed a huge appetite from community groups and businesses to support schools in their educational efforts. The Titan Partnership and National Centre for Computing Education (NCCE) are just two examples of organisations supporting the raising of aspirations and development of digital skills amongst school children. Stakeholders felt that this Programme could support the expansion of these initiatives by coordinating their offerings and targeting at schools in areas most in need.



**05**

Maturity  
Assessment  
Findings



## 05 MATURITY ASSESSMENT FINDINGS

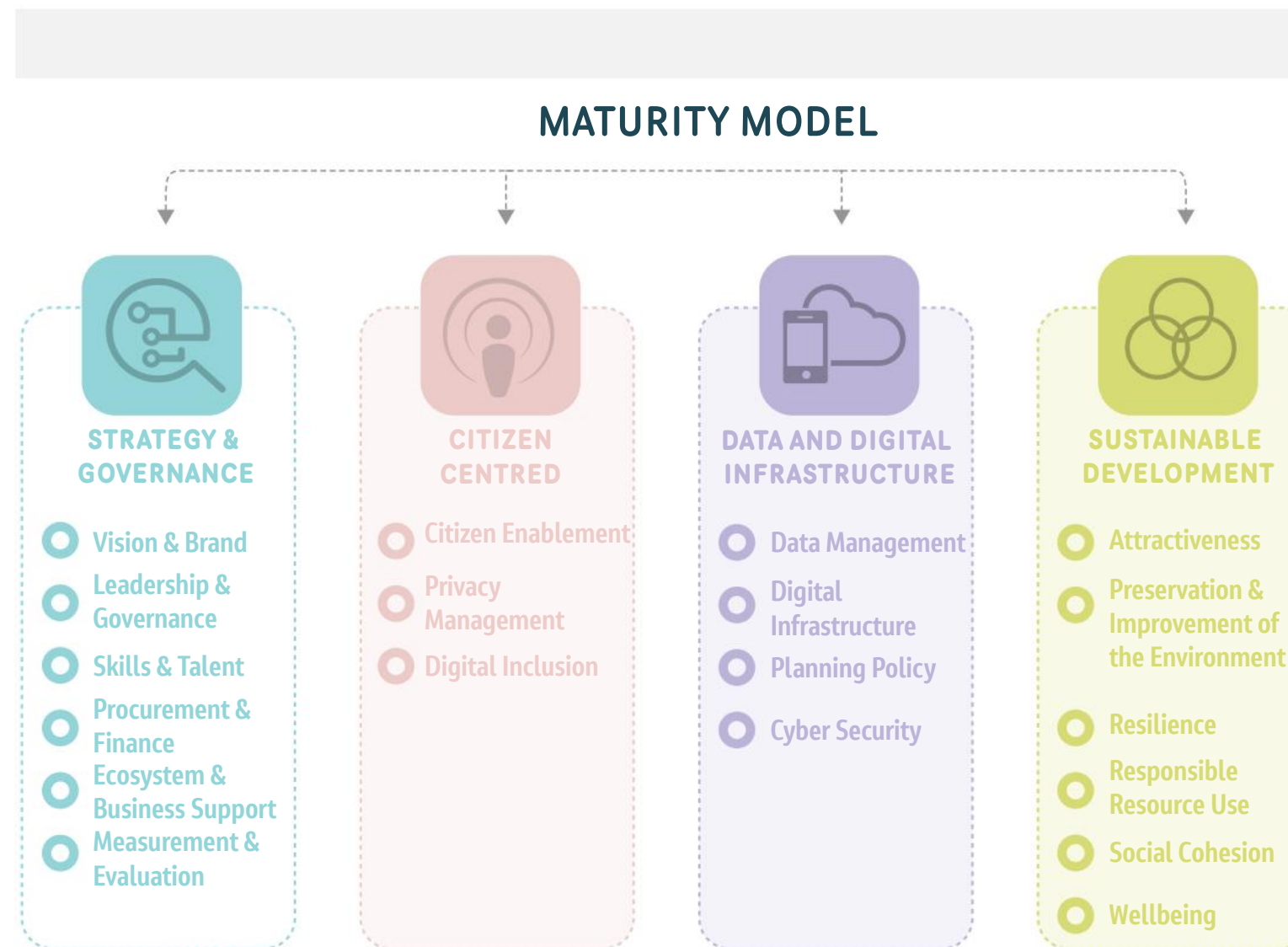
### 5.1 Overview

A key part in developing the Digital Cities roadmap has been assessing the city's current digital maturity, to provide an evidence base that informs the direction of the roadmap based on stakeholder needs.

Through a series of more than 35 stakeholder interviews with City Council teams and wider external stakeholders (see section 3 stakeholder engagement), insights were captured to inform a view of Birmingham's city-wide digital maturity. The model is based on experience from Connected Places Catapult's work supporting place-based digital innovation and is aligned with globally agreed best practice, namely ISO 37107: Maturity model for smart sustainable communities.

The assessment is a holistic approach covering a broad set of capabilities that are needed to maximise the opportunities that digital provides to deliver city-wide outcomes, whilst recognising that the success of these outcomes can only be realised where citizens, businesses and other interested stakeholders have a key role to play in designing that future. There are four core dimensions of the Connected Places Catapult maturity model:

- **Strategy and Governance:** explores strategy, leadership, governance structures and capabilities that are in place to support the delivery of the city's digital vision. This includes the processes and structures that exist to drive the digital economy such as support for digital skills and ecosystem development.
- **Citizen-Enabled Delivery:** explores the ability to drive citizen led innovation and service delivery, ensuring that citizens are at the centre of digital city initiatives, including actions to support digital inclusion.
- **Data and Digital Infrastructure:** explores current data and digital infrastructure in the city to form the backbone of a digital city and the opportunity this creates for inclusive digital growth.
- **Sustainable Development:** explores the city's focus in using digital to deliver sustainable development outcomes for the city, and not adopting technology for technology's sake.



For each dimension, the maturity model is used to provide an overall qualitative indicator of relative progress against each of these areas, with scoring provided as follows.

- 01 Strategies to address this either do not exist or are fragmented and managed on an ad hoc basis
- 02 Some emerging strategies/progress is evident
- 03 Coherent strategy/plans are in place, with clear leadership commitment and resources
- 04 Evidence of delivery of these strategies/plans and impacts are being measured
- 05 Sustained impact with delivery plans updating to meet evolving needs

Figure 5: Digital City Maturity Model

5.2 Comparator Cities

5.2.1 Introduction

Birmingham is not alone in its digital city ambitions, with many cities across the world looking at how data and digital innovations can tackle some of the grand challenges that are common to many cities, alongside developing growth in the tech and digital sector. Whilst geographic, social, economic and political environments vary significantly from city to city, many other cities in the world are addressing shared challenges such as delivering net zero and inclusive economic growth.

Learning from other cities that are tackling common challenges can provide valuable insights for Birmingham, allowing the city to look at solutions that have already been proven and tested elsewhere, and that can be adapted to deliver similar outcomes in Birmingham.

As part of this work, we have looked at a set of five cities, comprising both regional peers and global leaders, to compare their progress as a digital city with Birmingham, to allow us to identify such opportunities.

5.2.2 City selection criteria

As part of the analysis, we first defined a set of characteristics that cities needed to meet to be part of the benchmarking process. This was defined through early discussions with Birmingham City Council and the key characteristics identified included:

- Diversity:** Birmingham is one of the most culturally diverse cities in the world. As part of the inclusive growth strategy, it was important for Birmingham to consider cities that have similar levels of diversity.
- Population and Density:** to provide a more like-for-like comparison, it was decided that population and density were important characteristics to ensure we have compared against cities of a similar scale.
- Leading cities/ Regional Peers:** it was important for Birmingham to learn from both regional peer cities and global exemplars.
- Governance Structure:** having a similar political structure was identified as important, to reflect the level of influence that can be made over issue such as democracy, regulations, and finance, where some cities might have political structures that are starkly different to Birmingham

We firstly undertook analysis using the Connected Places Catapult City Typologies tool which brings together data using 65 indicators and 175,000 data points, from 500 cities around the world to give an understanding of what cities look like on their innovation journey. It does this by analysing the physical characteristics that these places possess, their ability to grow and scale businesses, and the strategic impetus they have to adopt and embrace innovation.

From this list we then undertook further analysis using specific data points from the city typology tool that support the above selection criteria to provide an overall score, as detailed below. Those scoring '2' are where there are significant similarities to Birmingham, '1' where there are some similarities and '0' where there are significant differences. It should be noted that whilst Singapore was identified having significant differences (population, density, governance), it was decided to include Singapore due to it being a global exemplar, providing a reference point for Birmingham. However, the other cities selected including Manchester, Vienna, Montreal, and Amsterdam, shared many characteristics with Birmingham.

5.2.3 City summaries

Manchester:

Manchester is ranked 17th in Smart City Index 2020. It acts as a peer city for Birmingham due to its size and population count, high cultural diversity, geographic proximity, shared historic traits, and similar political governance within a UK city and region.

The Greater Manchester Digital Blueprint 'Doing Digital Differently' sets out a three-year plan and is an update to the Digital Strategy published in January 2020. It aims to 'place the city region's people more firmly at the heart of its plans.

The city's Mayor, Andy Burnham, recently re-affirmed the ambitions for the Greater Manchester to become one of the first 100% digitally enabled city-regions. Digital inclusion, digital infrastructure and digitisation of early years are currently key areas of focus. Part of its recent success in this is owed to securing significant funding through the Department for Digital, Culture, Media and Sport's (DCMS) Local Full Fibre Networks Funding (LLFN), which has helped it deliver this ambition.

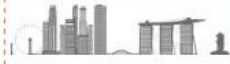




CITY	GEOGRAPHY	POPULATION	DENSITY	DIVERSITY	GOVERNANCE STRUCTURE	SMART CITY RANKING	SMART CITY / DIGITAL STRATEGY	OVERALL SCORE
 SINGAPORE	01	0	0	02	01	02	02	08
 AMSTERDAM	01	0	01	02	02	02	02	11
 MANCHESTER	02	02	01	02	02	01	02	14
 MONTREAL	02	01	02	02	02	01	01	13
 VIENNA	02	01	02	02	01	02	02	14

Figure 6: Scoring of cities against selection criteria

Amsterdam:

Amsterdam ranks 9th and 8th smartest city in the IMD and IESE indices. It is also in the top 10 most diverse cities in the world, where 51% of people are non-Dutch speaking. It has a 62-mile canal system which acts as a comparable spatial benchmark to Birmingham's 35-mile network.

Amsterdam has a world-renowned smart city 'urban open innovation platform' (Amsterdam Smart City), driven by the Economic Board. It strives for a smart, green and healthy Amsterdam Metropolitan Area by working on the major transitions in the field of energy, circular economy, mobility and digitisation at the street, neighbourhood, city and regional level.

Singapore:

Singapore is a globally recognized Smart City as a result of its 'Smart Nation' programme which focuses on the Economy, Government and Society with three Smart Nation pillars including the: 'Digital Economy Framework', 'Digital Government Blueprint' and the 'Digital Readiness Blueprint for a Smart Society'.

Singapore consistently ranks as one of the smartest cities in the world, ranking highly for liveability in Asia, whilst holding the top spot as a location of choice for Asian expatriates for fifteen consecutive years. It also ranks highly for 'ease of doing business', where it has had a strong focus on removing barriers for business such as streamlining licensing and regulatory processes.

Montreal:

Montreal ranks 21st in the IMD Smart City Index 2020. The city is renowned for its strong cultural scene and activities.

It has an established Smart City strategy, launched in 2014 – Montreal Smart and Digital City. Its focus areas are: 'Urban Mobility, Direct Services to Citizens, Way of Life, Democratic Life, and Economic Development.'

Vienna:

Vienna has been ranked as the world's most liveable city for 10 years in a row and has a long-term strategy, the 'Smart Wien framework 2019 – 2050'. A large factor in Vienna's success is the way that this framework is closely integrated with other city policies including the urban development framework, children and youth strategy etc. It is also aligned to the UN 2030 Agenda for Sustainable Development, adopted in 2015, defining 17 Sustainable Development Goals (SDGs).



### 5.2.4 Approaches to digital city programmes

One of the notable insights from the city benchmarking was the widely different approaches that each city has taken to their digital / smart city programmes. Note that the terms “Smart City” and “Digital City” are broad and lack a single agreed definition. For each city we have adopted the phrase used by that city. A short summary of these varying definitions is listed below:

- **Vienna:** has centred its approach around sustainability and liveable cities, its smart city strategy is also closely integrated with its urban development framework, youth and young people strategy and other strategies.
- **Manchester:** has a very focused strategy to provide digital capabilities across the city as part of its digital city blueprint. It has also reflected a greater need to have a more people-centred approach, branding its digital cities programme as ‘doing digital differently’, to provide a strong identity to Manchester’s digital brand.
- **Amsterdam:** has adopted a ‘platform approach’ to its smart city strategy, which is driven by the economic board. Many initiatives are focused on supporting the local economy and a bottom-up approach to civic innovation. The city has invested in the Amsterdam Smart City Platform as a key part of this, which provides a place to convene city stakeholders in solving challenges.
- **Singapore:** take a ‘smart society’ approach, focused on the ease of doing business and digitisation across all government services. The smart nation programme is overseen by the Prime Minister’s Office and takes a very top-down approach. Singapore, whilst positioned as global leaders have achieved much of this by being fast followers, frequently scanning global innovation opportunities that can be applied locally. It also has a unique governance structure, providing a mandate that makes it easier to do deliver on the strategy.
- **Montreal:** has a more traditional smart city approach, focusing on open data and pilots in areas such as smart mobility.

Further insights regarding these cities are provided on the following pages, along with examples of notable initiatives.



Figure 7: Comparator cities: Approaches to digital city programmes



5.3 Key Findings – Birmingham’s Digital City

The key findings in our review are structured under the following headings, Strategy & Governance, Citizen Enablement, Data & Digital Infrastructure, and Sustainable Development. These encompass some of the insights that fall under the subcategories as well, as shown in Figure 8 .

The below (Figure 8) provides an overview of Birmingham's maturity relative to other cities, highlighting Birmingham's relatively low level of maturity which is further explored in the following section of the report.

CITY	STRATEGY & GOVERNANCE	CITIZEN CENTRED	DATA AND DIGITAL INFRASTRUCTURE	SUSTAINABLE DEVELOPMENT
SINGAPORE	04	04	04	04
AMSTERDAM	05	04	04	04
MANCHESTER	03	03	04	02
MONTREAL	02	02	02	02
VIENNA	04	03	02	03
BIRMINGHAM	02	02	02	02

Figure 8: Digital Maturity assessment

5.3.1 Strategy & Governance

Strategy and Governance cover the key aspects of digital city planning and decision-making that need to be managed at a whole-of-city level. This does not mean a top-down centrally managed approach, but it does include the need to develop an integrated vision, strategy, benefits realization plan and governance model that balances the need for city-wide management alongside an organic approach to local innovation. This includes the business processes, capacity and leadership structures that can create and grow sustained improvements over time.

Key findings:

There are several strategic priorities for the city, reflected in the many projects and teams established to develop appropriate solutions to set and meet Net Zero and Inclusive Growth targets. Recently launched strategies and programmes demonstrate the city is gathering its key stakeholders and preparing for substantial change around these themes, however we did also hear concerns that these multiple initiatives are not always well connected, with uncoordinated priorities

There are large long-term programmes like The Enterprise Zone and Tyseley Energy Park that are well positioned to lead some of the challenges the city has identified. These might expand to include associated specific challenges such as decarbonising

domestic retrofitting and roll out of 5G and fibre networks.

Critically the city needs to recognise that digital technologies and transformation sit at the heart of each of these themes. The many challenges, targets and projects require a more cohesive approach to ensure they collectively achieve desired results. Digital technologies and processes can sit at the heart of creating new value in defining and solving the many challenges of Net Zero, Inclusive Growth and wider city prosperity.

There are groups and networks such as The City Board who are able to convene senior leaders from across the city but there is a need to provide more delivery resource such as an 'active technical' group who will be able to better support the digital ambition and the delivery of digital projects and programmes of work. We have seen that providing such resource is a key ingredient for success in many other cities such as in Vienna and Amsterdam who have established dedicated delivery units. There is a need to be agile in ambition and actions. As such, recommended governance structures need to reflect a potentially changing future landscape, priorities and policies.

**Strengths:**

The City Board offers a platform to enhance digital capability and focus. It has already engaged senior leaders across the city and can be supported to offer digital leadership and delivery capability. Working with organisations like GBSLEP who have identified key challenge areas like Prop-Tech, an enhanced and digitally focused City Board can act as a 'lightning rod' for the many challenges facing the city, and to ensure that digital approaches and technologies sit at the heart of the proposed solutions. There is a deep well of local digital expertise within the Birmingham ecosystem and these people, skills and experiences can be better captured for the benefit of the city as a whole.

The Enterprise Zone has a business model that can offer a long-term competitive advantage, supporting businesses, skills and a city-wide strategy. The Council has teams and plans in place across departments and key stakeholder groups to define and meet challenging targets focused on the key themes of Net Zero and Inclusive Growth.

Finally, stakeholders were consistently positive in the hope that a digital structure and vision can be

developed for the city that can accurately reflect its role in national growth and regeneration. With 7.6% of UK high growth companies situated in the region, and with more new technology jobs generated than any other city outside of London, Birmingham could be seen as underselling itself as a digital powerhouse of the UK

**Weaknesses:**

Not enough of senior leaders across the city landscape are 'digitally native' or have a digital city vision. This is more notable when compared with the comparator cities, many of whom employ and empower visible digital leaders such as a 'Digital Tsar' or 'Chief Digital Officer'. Consequently, digital is not deeply embedded into innovation or forward planning. This is reflected in the lack of digital co-ordination and strategic use of digital technologies to understand complex challenges across the city, and in understanding how digital technologies can be used to enable new and better service provision.

City organisations are siloed in their operations and in their thinking, and more needs to be done to support collaboration spanning data and communities. There is a need for more connected leadership able to 'get things done' through collaboration across the city. There is a need to convene groups of stakeholders to better discover challenges, define problems, develop ideas and deliver solutions. There is a lack of co-ordination on the many projects and programmes across the city and wider region, limiting their collective impact.

Finally, many city organisations and council departments are operating in 'survival' mode and not 'growth' mode, limiting the ability for innovation strategies to make an operational impact.



**“The City Board is established but there is no digital focus, program or city-wide strategic outcomes it is looking to deliver.”**

Anonymous stakeholder quote

### Scoring:

Birmingham is working towards a revised governance and leadership structure across the city, reflecting and recognising the challenge of engaging with a multitude of adjacent stakeholders and their innovation challenges spanning digital transformation, inclusive growth and net zero. Specifically, there is a need to develop digital capability and co-ordination across key programmes to ensure city stakeholder and delivery teams achieve multiple complex goals.

Birmingham Score:

2/5

### Recommendations:



There is a need to empower and enable a new Digital Board to enhance and support the existing City Board. The Digital Board will act as digital change makers in the city and have oversight of specific and agreed programmes of work. The Digital City Board should hold to account the organisations that commit to deliver projects within the Digital Roadmap. The Digital City Board is also responsible for ensuring the Digital Roadmap achieves its objectives and to make sure where projects fail or progress in delivering the roadmap is stalled, for taking responsibility to ensure alternative projects are identified or developing tactics for how the goals of the roadmap can still be delivered.

The Digital City Board should also be supported by an overall Governance structure that is focused around both long term goals whilst also being able to demonstrate early success (see Governance section). To enable this the Digital City Board will need to be supported by a project development office with a commercial focus that can develop new opportunities and bring these to fruition, alongside a Digital Project Delivery Group that can enable the delivery of these opportunities, in collaboration with interested stakeholders.

Over time, their work will allow a senior digital leader to oversee teams and have accountability for the delivery of digital change and transformation, help bring in investment and who can collaborate to prioritise and deliver on the many projects and programmes underway and planned. There is an opportunity for the council to convene leaders, innovators and local communities on agreed challenges to ensure they collectively meet the city

### City case studies: strategy and governance

**Vienna:** Vienna has a city-wide strategy that articulates its vision for what the future of the city should look like, developed with wide input from citizens. This is part of a joined-up brand around 'quality of life' and 'liveable cities' that has gained international acclaim through a number of independent indices. However, there is no evidence that this is yet having sustained impact and is adapting to support evolving city challenges/opportunities.

Vienna has developed a methodology for mapping and tracking the impacts of the smart city vision, including a set of headline goals. For example, Vienna has already obtained its 2030 CO2 reduction target. This includes a monitoring exercise with public reporting of progress against actions identified in its strategy, including evidence that these measures are being obtained. However, whilst recent updates are provided on the website, the full report has not been updated since 2017.

Vienna Score:

4/5

**Manchester:** Greater Manchester Combined Authorities Digital Blueprint is underpinned by a clear set of quantitatively measurable objectives with which to measure themselves against relating to the actions identified in the strategy. The set of 4 core measurable objectives from the Digital Blueprint, over a 3-year period, are:

- Increasing the number of adults who have all five 'basic digital skills' from 78% to 80%
- Achieving average download speeds of 100MPS compared to 34MPS by 2023
- Securing an additional 10,000 employees in the digital and creative industries by 2023
- Achieving £0.5 billion in overall economic growth by 2025 and £1.5 billion by 2029

However, it is not clear how progress will be tracked and how this will be monitored and updated as progress is made.

Manchester Score:

3/5

**Amsterdam:** Amsterdam Smart City (ASC) was founded in 2009 as an independent urban innovation platform. It currently has 19 partners from government, private organisation and knowledge institutions working together to create a more liveable and sustainable city.

The ASC project and platform focus on two main roles in the implementation of the program: the facilitation of the process of creating new ecosystems and providing the access point and network for those organizations and stakeholders that want to add value to the city and its challenges. Part of the broader strategic governance of the city includes the Amsterdam Circular Strategy 2020-2025 (ACS) and the Amsterdam City Doughnut (ACD).

The Amsterdam Circular Strategy aims to significantly reduce the use of new raw materials. In the coming years, the city will map out various material flows, from entry to processing, in order to preserve valuable raw materials. The aim is to halve the use of new raw materials by 2030 and to achieve a fully circular city by 2050. The city is focused on the three value chains of: food and organic waste streams, consumer goods, and the built environment

The ACD model reveals the impact of Amsterdam's economy on the environment and society and the 'Monitor' (a measurement tool which charts the extent to which Amsterdam's economy has become circular and identifies areas in which more needs to be done) builds on this model. Where the City Doughnut provides a snapshot of the city, the Monitor provides continuous insight into the ecological ceiling and the social foundations of Amsterdam's economy.

Amsterdam Score:

5/5



**Singapore:** The strategy for Singapore has been focused around the 'Smart Nation' programme, focusing on three core topics of 'Digital Society', 'Digital Economy', and 'Digital Government'. The programme is overseen by the Prime Minister's Office, providing a coordinated, cross-agency national approach. For example, the ICT strategy is at a national level to provide cross agency digital platforms through the government agency 'GovTech'. Digital led policy making is also a key theme with The Smart Nation National Platform is collecting data to enable evidence-based policy and regulatory decisions and 'anticipatory governance'.

A large part of Singapore's success is that Singapore has capitalised on its image as a safe, well regulated, highly liveable city to work and play in, with superior infrastructure, low pollution, and home to large expatriate communities.

### 5.3.2 Citizen Enablement

This area of focus considers both citizen-centred delivery and citizen enablement, with the former considering the way in which the digital city programme is planned and delivered to citizens, and the latter is about the creation of an environment where citizens can flourish on their own terms, through the co-creation of services that respond to local conditions and needs.

The increasing digitization of city services and of city assets also presents a huge opportunity to make the city more open to externally driven innovation. Digital City programmes should seek to accelerate this by facilitating and incentivizing the development of community driven digital innovation for the city, within which city systems are opened to SMEs, social entrepreneurs and individual citizens to design and deliver city services themselves, utilise city data and create new sorts of public value. The local authority itself (together with other major service deliverers in the city) also has a responsibility to drive improvements to its own services through the application of data and more citizen-centric ways of working.

Ease of doing business is a key driver in Singapore with the city ranked as one of the easiest places to do business in the world (ranked second in the world by the World Bank). Enterprise Singapore provides a holistic support programme for SME's and Start-ups. The nation is also considered to be the global centre for 'RegTech' (regulations technology) - a new market spawned out of FinTech to reduce the burden of regulatory compliance in the financial services sector. Regulations are deployed as a strategic tool to become a Smart Nation

**Singapore Score:**

4/5

#### Key findings:

The youthful and diverse communities and citizens that populate the city are both an opportunity and a challenge, 37% of Birmingham's children are currently living in poverty<sup>22</sup> and some of the lowest educational attainment in the country a stark reminder of the need for inclusive growth.

There are real challenges in serving a diverse population, with many communities requiring unique or specific support. For some communities there is a self-reliance that distances the Council and other city organisations from their lives.

Birmingham creates more SMEs per capita than many other cities in the UK; however, its uptake of digital technologies is relatively low. This active, but digitally immature cohort of entrepreneurs can be supported for the betterment for all, and examples like the SCC Academy demonstrate the commitment of local digital entrepreneurs and the potential impact they can make to citizens.

#### Strengths:

The city is the youngest, most diverse city in the UK with nearly 40% of the population under 25 and 42% of residents from a black, Asian, or minority ethnic origin. There are community led organisations like Neighbourhood Networks that deliver positive

outcomes and impact at a micro scale. Supporting these physical activities are digitally focused programmes like 'Birmingham Connect to Support' that enable and enhance the digital presence of local projects.<sup>23</sup> This localised approach has been most notable during the pandemic, where hyper local activity was funded and delivered benefit to specific communities during a critical time, with the opportunity now to maintain these community groups and give them a role going forward. Examples such as Civic Square demonstrate existing communities and programmes are in place and seeking to create a better future.

#### Weaknesses:

Birmingham is ranked as the 7th most deprived authority in England, and the third most deprived core city in the UK after Manchester and Liverpool<sup>24</sup>. For some communities and citizens having a secure home is the critical priority, limiting the ability for the city to support their wider needs, or meet the city's' wider goals like Net Zero. The diversity of citizens means that there are wide ranging challenges of skills, access and culture that will need local understanding and engagement to determine priorities and effective approaches on the ground. Digital poverty is an issue for some, but digital technologies can also enable a much richer opportunity to engage with citizens.



**"COVID showed us we can adapt and engage when we need to. We created a clunky spreadsheet outside of the system, but we were able to deliver."**

Anonymous stakeholder quote

#### Scoring:

The scoring here reflects the many challenges the city faces in engaging diverse communities who have a range of challenges to overcome, with some wary or mistrustful of city organisations.

**Birmingham Score:**

1/5



#### Recommendations:

There is a need to connect communities, organisations and the Council with action groups and hyper local activity to enable a more inclusive city in the future. There are many projects worthy of support that span digital, net zero and inclusive growth challenges, but these need better co-ordination. The council is not alone in needing to better connect with people, be they citizens, residents, customers, or users, and it can play a central role in convening groups of people to help develop (digital) channels of communication and communities around key thematic city challenges.

<sup>22</sup> <https://www.endchildpoverty.org.uk/child-poverty-is-on-the-rise-and-concentrated-in-the-places-the-governments-policies-will-hurt/>

<sup>23</sup> <https://birmingham.connecttosupport.org/>  
<sup>24</sup> [https://www.birmingham.gov.uk/download/downloads/id/2533/index\\_of\\_deprivation\\_2019.pdf](https://www.birmingham.gov.uk/download/downloads/id/2533/index_of_deprivation_2019.pdf)



### City case studies: strategy and governance

**Vienna:** Vienna Smart City focuses on social rather than technological innovation. Civic innovation and citizen-led design has been developed through its work on 'Smarter Together', empowering citizens to design and take ownership of solutions.

An example of this is the city's €1m investment into projects by and for children and young people, where everyone aged between 5–20 can submit ideas. The development of ideas is aided by a free card game and the city authority, together with the children's and youth parliament, assess the viability of projects and agree on a list of projects for a further vote. Children between 5 – 20 will then be able to vote for the winning projects which will be delivered.

Vienna Score:

4/5

**Manchester:** Manchester is taking a strong focus on putting people more central to its development of services. One example of this is its work to digitise the paper-based assessments currently used to review a child's development up to the age of 2.5 years. With many issues identified at this age likely to impact a child for the rest of its life, early identification and management can have wider social and economic benefits.

Early Years digitisation will see streamlined systems connect hundreds of Greater Manchester professionals such as health visitors and school health services with parents and carers, enabling them to work together to better support families. Benefits include:

- Increasing the capacity of health visitors (approx. 30% based on pilot)
- Providing professionals with accessible mobile data
- Providing better commissioning, through the availability of underlying historical demand data
- Making data richer and more shareable
- Giving citizens more control over their own data
- Reducing costs - approximately £5,000 per locality in addition to the increased efficiencies
- Providing better identification of support, facilitating automated sharing of data with relevant professionals

Manchester Score:

3/5

**Amsterdam:** Amsterdam Smart City works as a facilitator, where it connects relevant parties, defines common goals, monitors processes and results. It is an open platform in the form of an independent organization, which can connect citizens, businesses, government and knowledge institutes. It offers a living lab to test solutions in a real setting and the city's residents have been given a central role in all projects and initiatives, so that ideas and solutions for the city are co-created.

TechConnect is a notable programme, where it introduces multiple initiatives (such as TekkieWorden and TechGrounds) to help 50,000 people from underrepresented groups get into the tech labour market over four years. It is an initiative led by the Amsterdam Economic Board, Booking.com, Rabobank, TomTom and CA-ICT. The goal is to increase equity in the tech labour market and make tech education and jobs accessible to everyone. In practice, this means that thousands of women, people from socially disadvantaged neighbourhoods, and homegrown SMEs are all trained to become programmers, data analysts, 'growth hackers', UX designer or tech administrator.

TekkieWorden is an initiative which acts as a guide for students in higher education who want to study and work in tech. TechGrounds is another which hosts tech hubs in disadvantaged neighbourhoods that stimulate tech entrepreneurship and digital skills. TechConnect plays the role of incubator.

Another example of citizen enablement from Amsterdam is House of skills, which is a public-private partnership in the Amsterdam Metropolitan Area part of the Amsterdam Economic Board. The business community, sector organisations, employee and employer organisations, knowledge institutions, education and administrators from the region are working closely together to gear the current labour market more towards skills development.

House of Skills develops skills products and services for employers, workers and job seekers in the Amsterdam Metropolitan Area. It seeks to creating a platform where job seekers and employers can find each other more easily, based on skills.

Amsterdam Score:

4/5

**Singapore:** A notable of citizen enabled delivery in Singapore is the use of GovTech service design standards (equivalent to UK GDS), which apply to all digital projects that requires the design of services around the needs of users, including inclusivity requirements.

Another example is REACH (reaching for everyone for active citizens@home), which serves as the leading agency responsible for facilitating whole of government efforts to engage with both public and private stakeholders.

There are many examples of policy co-creation tools in Singapore where businesses and citizens can interact with the state. For example, 'IDEAS' is

a cross-agency idea crowdsourcing platform where civic challenges are published and where any city stakeholder can submit their ideas e.g. the Singapore Energy Grand Challenge.

Build On, Singapore 2019 Hackathon involved colleges and universities to build real world solutions for real world problems using AWS products and services in collaboration with GovTech.

Singapore Score:

4/5

### 5.3.3 Data & Digital Infrastructure

Digital Infrastructure provides the 'backbone' across a city around which to develop a multiple range of digital services and applications to residents, business and visitors. Such assets can be described in broad terms as being of two forms; fixed assets which focus on fibre and mobile assets which include those relating to WiFi and 4G/5G.

Cities use a range of mechanisms for investment and deploying this infrastructure, the ability to do so will be critical in supporting business growth as well as giving citizens vital access to services. Increasingly, digital infrastructure needs to be seen in the same light as other infrastructure assets such as energy and water when considering; deployment, operations and maintenance.

The rapid proliferation of data presents cities with a profound transformation that will remain dynamic for many years to come. Data can come from private, public, societal as well as commercial sources, offering very significant potential. The ability to generate value at scale remains untapped. Cities need to accelerate from the current experimentation stage towards the value adding stage. In doing so, it is vital to develop clarity and understanding around;

- how to effectively manage the large volumes of data;
- mechanisms to incentive data owners to make relevant data available to third parties;

- how we might work with varying data quality and what formats will best support data inter-operability;
- the development of the requisite skills and capability amongst citizens and personnel so that the data can be used effectively;
- how we manage perceived and real privacy issues;
- how we offer customers a choice in data usage; and where relevant what regulations and policies must change.

#### Key findings:

There are ambitious plans to create a city observatory that might allow radical insights and operational benefits but there are real current challenges in sharing data within organisations and service providers across the city. There is also perhaps a lack of appreciation of the value and opportunities related to data at the top levels of city organisations. Investment and interest around 5G demonstrate the broad commitment to these technologies but perhaps without a clear sense of how this interacts and enhances other programmes. There are also ambitions to clearly define and express the right digital offer to attract investment and provide greater digital connectivity, enabled through urban development.

**Data:** There are several data platforms across the city focused on specific sectors or verticals with little focus or co-ordination around data sharing and wider utilisation. Many of these data platforms are currently limited in their potential use, for example the Birmingham Open Data Factory hosts only 100 data sets but many are restrictive requiring a commercial license for their use. There are plans to build a city observatory, and references within the Future City plan to develop a city data dashboard to address urban challenges and improve public services. Street furniture assets are able to produce data, but no one uses the data in any meaningful way. Any data centric projects need to address the challenges in sharing data inside and across different organisations in the city.

There is real value to the city and the council in using data to better understand issues and opportunities. By understanding risks, protecting IP and generating value through data sharing, stakeholders across the city will be able to offer more efficient services and opportunities to innovate. There is a desire to create a federated digital twin of the city, and this will require substantial organisational preparation and investment to enable data sharing and for the generation of new insights and services.

There are real and current challenges of sharing data, but many of these challenges are organisational. There is a clear role to convene all stakeholders, including citizens, to ensure that all have reason to engage and benefit from such sharing.



**“The organization needs to fall in love with its data, to take care of it, make it reusable, so that it’s secure, look after for the resident, as well as making it go further to solve problems in different ways”**

Anonymous stakeholder quote

**Digital Infrastructure:** The digital infrastructure of the city is patchy, with some of the more deprived wards in the city centre still yet to access broadband networks. There are ambitious plans and commitments in partnership with organisations such as WM5G to develop digital infrastructure across the region. However, this will need to inform and be informed by an inclusive digital infrastructure strategy to allow all citizens of the city to benefit equitably.

There are major development plans across the city, such as Perry Bar twenty-year masterplan to develop more than 5,000 new homes. The Future City Plan aims to build new ‘innovative, smart and digitally connected’ clusters to support job growth in emerging industries. This includes supporting provision of world class digital infrastructure throughout the Central Birmingham area supporting digital access for homes, schools and businesses.

Whilst Birmingham has an aspiration to deliver high levels of digital connectivity, there are no digital connectivity standards, no clear objective of what constitutes ‘good’ digital connectivity, and no way of ensuring it is delivered inclusively in current development plans.

#### Strengths:

Data & Transformation teams are in place to collaborate with delivery teams to help them in their digital transformation. The data insights team are looking to drive data sharing within the city authority by defining data architecture and ethical standards to allow collaboration.

There are specific 5G plans in place that can provide advanced connectivity across the region, and there are existing datasets that the city might use to improve operational efficiency.

#### Weaknesses:

Approximately 45% of Birmingham has full fibre access, but there are wards in central Birmingham that do not have broadband connection, with approximately 200 tower blocks having no access to broadband networks. However, it is not just accessing bandwidth, but the costs of access (data poverty) and the quality of the environment in which they access the content, with many large households in East Birmingham limiting the ability to access digital content in a suitable environment.

Where digital infrastructure is in place, the resulting data generated isn’t used to optimise services, and several stakeholders mentioned the challenges of sharing data across city organisations and council departments. This approach to data sharing limits current and future digital opportunities and also reflects the digital maturity of the organisations involved.

#### Scoring:

The score here reflects the disconnection between strategy and operations. There are new people and strategies that are beginning to establish focus and traction such as Digital Transformation and Procurement Innovation teams. However, their ability to make an impact is limited by operational teams operating at over capacity. For example, Adult and Social care have seen a sustained 40% rise in demand over the last 12 months. In parallel, there is a need to provision digital infrastructure inclusively across the city to meet its’ inclusive digital transformation goals.

Birmingham Score:

2/5



#### Recommendations:

There is a need to address basic connectivity requirements, by leveraging opportunities that new development opportunities can provide in supporting investments in connectivity. At the same time, the city needs to ensure that it is an attractive location for connectivity providers to invest in.

There is also a critical need to establish data sharing practices and protocols across key city stakeholders. By sharing data, teams and organisations will be able to identify issues and collaborate more easily. At the core of the digital strategy is a need to utilise data more frequently and in more meaningful ways, and so the need to utilise data in new ways is of primary importance. Data sharing should be coordinated and aligned to ensure stakeholders can engage with initiatives and be cooperative with sharing further data for the benefit of the city as a whole. Underpinning this recommendation is the need for the council to play a role in convening digital stakeholders, and in defining data standards that enable inclusive, sustainable and citizen centric growth that will underpin any future Digital Twin programmes



## City case studies: strategy and governance

**Vienna:** Vienna has long been a pioneer on the use of open data to enable innovation and wider city change, with over 550 data sets, resulting in more than 200 applications that have been developed off the back of this initiative. Vienna has also invested significantly in public digital infrastructure to allow connectivity across the city. However, the city has identified a challenge with the roll out of 5G connectivity, as a result of high prices associated with mobile masts rentals, as well as a lack of state incentives.

The following are some of the other notable projects/ actions that have been taken in this domain:

- More than 400 free-to-access WLAN hotspots are available across the city
- Vienna has the VeroCity Platform (<https://smartdata.wien>). Its data aggregation and analysis capabilities are based on the European Commission's Context Broker building block, which can sort through data of all sorts and sources from across the city, providing the minimum interoperability for cross city data sharing
- The Context Broker allows the platform to offer real-time information through visual dashboards that cater to the needs of all stakeholders from residents to city officials and software developers. The platform can facilitate day-to-day activities, such as urban mobility, environmental monitoring, urban infrastructure, energy efficiency and more. In addition to the web services offered by the platform, the city's open data and open interfaces have led to remarkable innovation, as more than 200 new apps have been developed by third-party software engineers.

Vienna Score:

3/5

**Manchester:** Greater Manchester is accelerating investment in connectivity across the city region by:

- Allocating £23.8M funding for Local Full Fibre Networks Programme to connect more than 1,500 public sites across the city-region.
- Providing a Full Fibre Network Prospectus of how GM will support industry investment in full fibre.
- Making public buildings and other assets available for infrastructure to support 5G roll out
- Tendering for GM One Network - a single active network infrastructure across a significant number of Greater Manchester's public sector organisations to enable network services across the region to be provided more efficiently, securely, and flexibly.

Manchester Score:

4/5

**Amsterdam: Code the Streets:** This project is part of the research agenda of the Innovation Centre for Mobility of Amsterdam, where the city is exploring the possibilities that smart solutions offer to better manage urban mobility. Its objectives are to foster a more sustainable way of driving and make the streets of Amsterdam safer and less crowded. The city wants to communicate information and values on the desired use of public space with service providers and end-users (residents, visitors) and stimulate them to take more 'social routes'.

Together with project partners TomTom and Mercedes-Benz, Amsterdam is working on an open Application Interface (API) that includes the city's rules for the desired use of the public space on street level.

As part of this, the city provided the partners with information regarding streets with safety concerns, such as school zones, small side streets, fragile infrastructures, congestion and pollution. These were incorporated into the navigation software of TomTom and Mercedes-Benz, which now give users the standard route and an alternative, more 'social' route. This social route avoids school zones and nudges users towards a preferred, socially responsible choice, such as staying on the main road as much as possible

or applying maximum applicable speed limits within the zone.

At the moment, the project focuses on rerouting car drivers, but it has other use cases, for instance, by rerouting heavy vehicles away from vulnerable infrastructure or creating dynamic loading and unloading zones based on vehicle types and loads.

The project is a useful consideration for Birmingham, as it too has initiatives in place to lower congestion and increase sustainability on the roads. Notably, these are part of Birmingham's 'Places for People' initiative, in which Low Traffic Neighbourhoods (LTNs) have been implemented in strategic parts of the city.

Digitalisation offers the opportunity to provide real-time information on how to best navigate and use the public space at any moment in time in line with city values such as liveability, sustainability, safety and accessibility.

Amsterdam Score:

3/5

**Montreal:** Innovation Lab - The city has an Urban Innovation Lab, created in 2018, to foster and support the creation of innovative solutions in which Montréalers, businesses, municipal employees and partners are invited to co-create a more people-focused, creative, open and efficient city.

Its 2021 objectives are focused on implementing projects related to mobility and access to food, digital inclusion, and open data sharing.

Open Data - A new Open Data Policy was adopted in December 2015, along with a directive on data governance.

Also adopted by the Montréal agglomeration in 2016, this policy's governing principle is the opening of data by default. Indeed, apart from certain exceptions which limit publication, the city has committed to release all data under its purview. Montréal's open data platform contains more than 300 raw and royalty-free datasets.

The Lab is currently in the process of adopting a new open data action plan to guide its interventions and increasingly mobilise the community. The pursuit of Open-by-default and the publication of the city's data inventory remain pillars of an approach that considers privacy protection and the ethical use of data.

Montreal Score:

3/5

**Singapore:** Virtual Singapore - Singapore's Digital Blueprint has shifted the city towards a digital first approach, with 90% of services delivered digitally and integrated across multiple agencies. An example of this is the use of data and analytics to support urban planning through 'virtual Singapore'. However digital connectivity is still evolving, whilst 5G trials have been rolled out in blocks, implementation across the city is not as wide as other comparator cities e.g., South Korea.

Singapore fundamentally integrates digital infrastructure and policy into its urban planning framework. The Urban Redevelopment Authority is responsible for spatial planning in the city - data analytics and geospatial technologies are used to gain deeper insights and make more informed decisions in planning for land use, amenities and infrastructure.

This includes Virtual Singapore, Singapore's Digital Twin

There is an opportunity for Birmingham to go beyond this, through adopting the UK approach to digital twins as developed through CDBB in the development of an ecosystem of connected digital twins, that is not a top-down approach but provides digital infrastructure that the tech community can innovate with.

Singapore Score:

4/5



### 5.3.4 Sustainable Development

Any Digital City should have a set of outcomes and purposes that it strives to achieve. Whilst each city has its unique challenges, the six purposes of sustainable development (defined by ISO37101) encompass the core issues that embody the economic, social and environmental outcomes that are common to any one city.

- **Attractiveness:** Appeal to citizens and other interested parties, e.g., investors; belonging; culture; place; sense of identity.
- **Preservation of the environment:** Improved environmental performance, including reducing greenhouse gas emissions; protection, restoration and enhancement of biological diversity and ecosystem services, including protection of ecosystems, plant and animal diversity and migration as well as genetic diversity; reduced health hazard
- **Resilience:** Anticipation; climate change mitigation and/or adaptation; economic shocks and stresses preparedness, social evolution.
- **Responsible resource use:** Consumption; distribution; improved land management; reducing, reusing and recycling of materials; respect for scarcity of all types of resources (natural, human, financial); sustainable production, storage and transport.
- **Social cohesion:** Accessibility; culture; dialogue with external parties not limited by boundaries, diversity; equity; heritage; inclusiveness; inequalities reduction; rootedness; sense of belonging and social mobility
- **Wellbeing:** Access to opportunities; creativity, education; happiness; healthy environment; human capital improvement; liveable city; prosperity; quality of life; security; self-confidence; welfare.

#### Key findings:

The council is committed to making Birmingham carbon neutral by 2030 and is taking a leading role in tackling climate change. Birmingham also has identified the opportunity to position itself as a centre for green technology. This is evident with work on low carbon retrofit schemes such as the proposed plans for a 300-home whole house retrofit pilot with EnergieSprong along with plans to establish east Birmingham as a Low Carbon Heating Innovation Zone and creation of a Net Zero Neighbourhood.

There are communities who are self-reliant, but this reflects their current level of engagement with the wider city than their resilience, or their ability to adapt to challenges. The city has identified inclusive growth and net zero challenges, but these need to appeal directly to all citizens to achieve their goals. For many the challenge of keeping a roof over their head come before any thoughts on sustainability.

The need to build and retrofit tens of thousands of homes to meet uncertain emissions-based goals without defined standards to achieve them is an immediate challenge. There is a need for the city to gather key stakeholders to develop solutions through tests and prototypes at a local level. This iterative sustainable approach is already evidenced by concepts such as the advanced 'urban farming' project at Tyseley Energy Park and the Birmingham Circular Economy Club<sup>25</sup>.

#### Strengths:

As greenest city in England, with over 15% of the city defined as green space, there is much that Birmingham can be proud of.<sup>26</sup> The city has wide tree lined boulevards, and active communities focused on ecological regeneration such as Trees For Life. These demonstrate an abundance of natural assets and citizens who wish to support a greener city. However, attractiveness struggles to compete with other long-standing narratives of the city and current strategic imperatives, such as social cohesion. There are real challenges relating to the diverse, young and poor communities spread across the city, but there are examples of 'bottom up' community centred approaches bringing benefit to some disenfranchised communities.

Finally, there was an unexpected but insightful response focused on food and its relationship to inclusion, health and even net zero targets. Birmingham has a very strong economy relating to the food industry, with many major companies (e.g. Kraft) and the 'Balti Triangle' is estimated to add £4 billion to the city economy a year. Whilst food isn't a directly 'digital' domain, the research responses suggest it can have a role to play in engaging local communities around which they can undertake collective action and outcomes.

#### Weaknesses:

The nature of the many communities in the city is that they are resilient within themselves, and this can sometimes make them feel that the council is invisible to them (despite the bins, roads and other teams constantly managing the environment). Birmingham is one of the youngest cities in the UK but is also a city with 37% of children growing up in poverty. There is an opportunity to improve the aspirations and capabilities of the diverse youth of the city



"Depending on where you live in in the city, your life expectancy can vary by as much as ten years."

Anonymous stakeholder quote

#### Scoring:

The score here reflects the challenge Birmingham has in meeting environmental sustainability and inclusive growth targets with a diverse population. Whilst aggressive emissions targets have been defined by the city council, there is still much to do

Birmingham Score:

2/5



#### Recommendations:

There are real sustainability challenges that will need to be faced collectively by the city, and there is a clear need for a convening role to bring key stakeholders, organisations and citizens together to develop new inclusive and sustainable solutions. The scope and scale of the challenges mean the city council cannot meet these ambitions on its own, and there is a need to convene and lead collective action. There is an opportunity to develop a digital 'backbone' to help understand and meet Net Zero and Inclusive Growth ambitions, this will include digital infrastructure and community engagement.

Specifically, there is a need to develop clear actionable plans to incorporate digital into existing plans to retrofit and build homes for citizens that can provide a high quality of life and meet future Net Zero requirements.

## City case studies: sustainable development

**Vienna:** With the Smart City Framework Strategy, the Child and Youth Strategy and the Urban Development Plan 2025, Vienna is pursuing the goal of being a liveable and socially inclusive city with green and open spaces close to home for all, committed residents and strong communities. 96% of citizens say they enjoy living in Vienna or enjoy it very much.

Vienna has been taking specific actions to enable this through focusing on urban greening, children and youth, diversity and equality. The Parklets scheme allows residents to apply to the city's 'pop up parks' initiative to transform their street into a social node, supporting social cohesion and urban greening <https://citymaking.wien/en/>. Some of these have Wi-Fi integrated, providing a place to connect in the community.

Vienna Score:

4/5

**Amsterdam:** Amsterdam has set ambitious environmental targets for the coming years. It aims to reduce CO2 emissions by 55% in 2030 and 95% in 2050. It also aims to be natural gas-free by 2040 and aims to have emission-free transport by road and water by 2030. By 2050, Amsterdam's vision is to be a circular city, where everything produced and consumed is reusable.

The city published its strategy for climate change in February 2020 with the aim of coping well with the effects of climate change, such as flooding, increasing periods of drought and heat, and changing biodiversity.

A noteworthy sustainability project is the city's The Great Bubble Barrier system, which uses bubbles to trap and remove plastics from waterways. The city actively supports smart and clean logistics projects such as these to ensure the region's continuing economic vitality and appeal. For example, Green Deal ZES (Green Deal for Zero Emission City Logistics) was signed in 2019 and 2020 by more than 60 parties, spearheaded by the Amsterdam Economic Board. It is considered to be a highly significant move in the transition to smart and clean city logistics.

Signatories to the Green Deal ZES aim to contribute to a smart, green and healthy region: they are sharing their logistics data, switching to zero-emission vehicles and working on a clean-living environment.

Its goals for 2021 are to:

- Secure 25 new parties to join the Green Deal ZES
- Facilitate more collaboration and dialogue between parties – governments, universities and research centres to enter into dialogue with the business community
- Create insights on the potential impact of the Green Deal ZES, for example in the contribution to CO2 reduction

Amsterdam Score:

4/5

**Montreal:** The city has a Food Policy Council (Conseil du système alimentaire montréalais), following in the footsteps of Toronto and Vancouver. These efforts are being made to improve the operation of the food system and align it to the UN's Sustainable Development Goals (SDGs).

It focuses on four key policy areas:

- Food security for all
- Urban agriculture
- The procurement of healthy food through institutional and alternative channels
- Food waste management

Montreal Score:

4/5

**Singapore:** Due to Singapore's finite resources, vulnerability to climate change and high density; conservation of resources and sustainable development has been a core focus of Singapore and a key driver for the Smart Nation programme. Singapore has assessed its status against 17 sustainable development goals (SDGs), to assess current progress, challenges, and opportunities.

For example, with SDG 3 (Ensure Healthy Lives and Promote Well-being for All at All Ages) Singapore have declared 'a war on diabetes' to use data analytics for early prevention, detection and intervention. It has also worked with academics, the World Health Organisation (WHO) and has organised a global conference on diabetes care to lead best practice in this area.

Singapore has both measured its current baseline and set long term goals across the UN Sustainable development goals, which have been endorsed by the prime minister's office, along with demonstrating global leadership in this area. However, whilst Singapore has demonstrated strong strategy and is delivering on its actions, it still faces challenges in fully realising many of these ambitions.

Singapore Score:

4/5



**06**

Project Selection  
& Roadmap  
Development











06 PROJECT SELECTION & ROADMAP DEVELOPMENT

6.1 Roadmap Basis and Candidate Project Identification

The objective of Birmingham's Digital City Roadmap is to identify a small number of initial projects that are viable in the short term and that will deliver tangible benefits for the city in the next one to three years. To support this objective, we have identified projects that are already in some form of development in the city, with strong stakeholder support, rather than projects that would need to be developed from scratch. The Council's influence, assets and resources can support these projects, accelerate their delivery, and increase their impact by realizing synergies between them. The projects have been selected based on background research, stakeholder engagement, and the maturity assessment.

These short-term projects are complimented by a number of further projects that will be delivered across a longer time horizon (3 years +). It is envisaged that this portfolio of projects will be continually augmented as part of an ongoing Digital City Programme as described in the Governance section of this report.

Using this approach, we compiled a list of c.40 candidate projects spanning the following focus areas:

FOCUS AREA	NUMBER OF PROJECTS IDENTIFIED
 <b>DIGITAL CONNECTIVITY FOUNDATIONS</b>	<b>05</b>
 <b>DATA SHARING</b>	<b>10</b>
 <b>ZERO TRANSITION (DIGITAL SUSTAINABILITY)</b>	<b>03</b>
 <b>COMMUNITY-LED INNOVATION TO DELIVER SOCIAL INCLUSION</b>	<b>06</b>
 <b>URBAN FOOD SYSTEMS</b>	<b>02</b>
 <b>SME SUPPORT</b>	<b>06</b>
 <b>EMPLOYMENT</b>	<b>02</b>
 <b>ASPIRATION</b>	<b>03</b>

A full list of candidate projects and associated descriptions can be found in Appendix B.

6.2 Project Prioritisation Approach

We used a multi-criteria analysis to select the projects that will best deliver the desired benefits and outcomes of the Digital City Programme. Each of the projects was assessed against the five consideration areas listed below:



Figure 9: Five consideration areas used a multi-criteria analysis

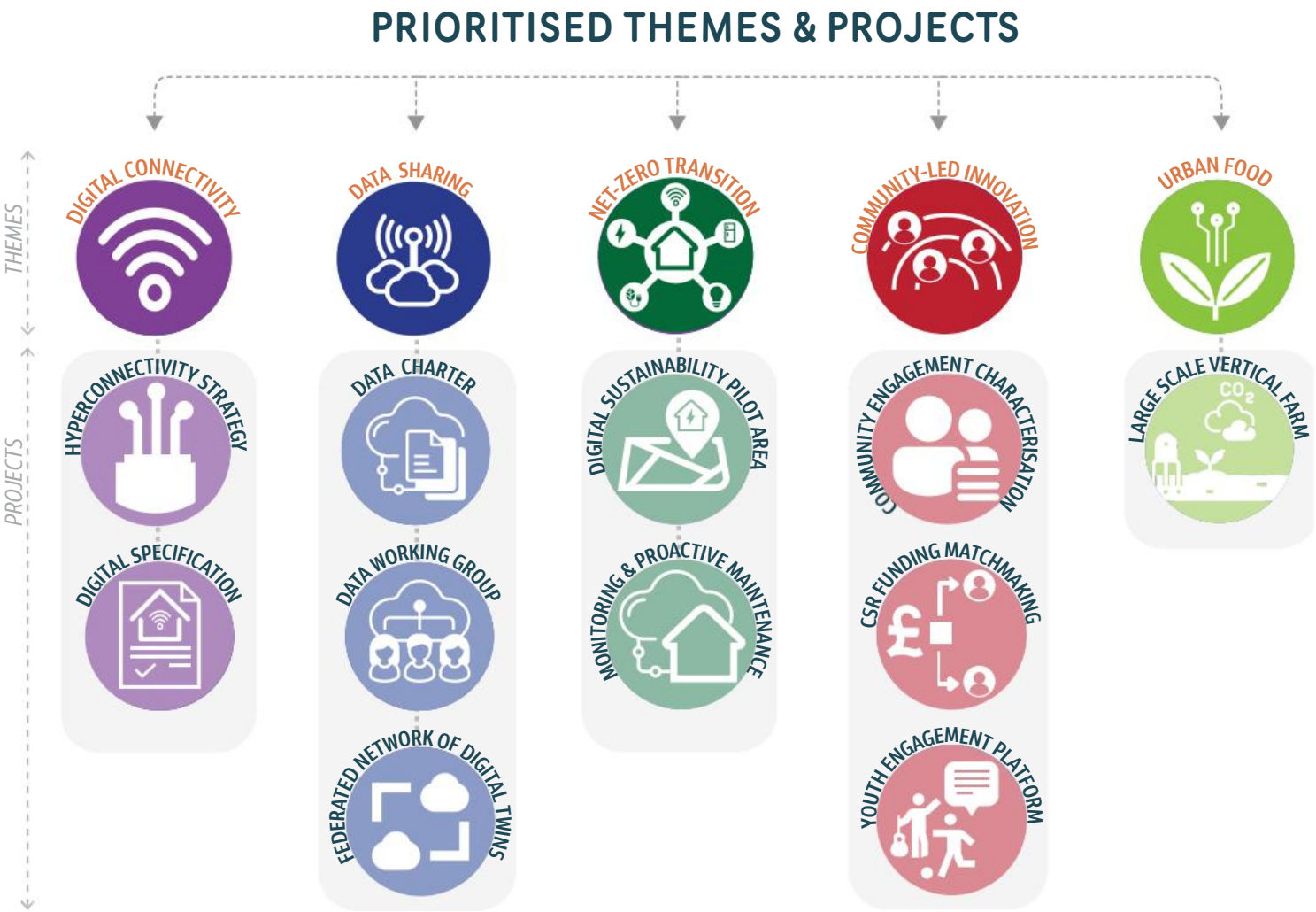
For each candidate project, a qualitative commentary was provided for each consideration area, which in turn informed a quantitative grading score on a scale of 1 to 5. The scores were then combined to give a total, and the highest scoring projects were prioritised for further development. Please see Appendix B

for full visibility into candidate project scoring., with the final decision on prioritisation taken following a review with the Council using both the quantitative scores and qualitative commentary.

CATEGORY	WEIGHTING	01	02	03	04	05
ALIGNMENT TO STRATEGIC CONTEXT	20%	Project does not align with strategic objectives or an identified focus area from maturity assessment				Project aligns with city and regional objectives and a key focus area from the maturity assessment
STAKEHOLDER SUPPORT & DELIVERABILITY	20%	Project does not have strong stakeholder support and stakeholders are unlikely to have capabilities to deliver				Project has strong stakeholder support and stakeholders have capability to deliver
TECHNOLOGY AND INFRASTRUCTURE	20%	Limited need for digital and assets/infrastructure difficult to access				Digital is integral to delivery and assets are accessible/available. Opportunities for reuse
BENEFITS REALISATION	20%	Limited benefit generation and Doesn't lay foundations for future projects				Strong benefit generation and lays foundation for future projects
FUNDING, FINANCING & VIABILITY	20%	No clear funding source. High level of risk. Costs misaligned with level of benefits generated				Clear funding source, manageable level of risk, costs aligned with benefits

Figure 10: Quantitative grading score on a scale of 1 to 5 for project prioritisation

### 6.3 Prioritised themes and projects

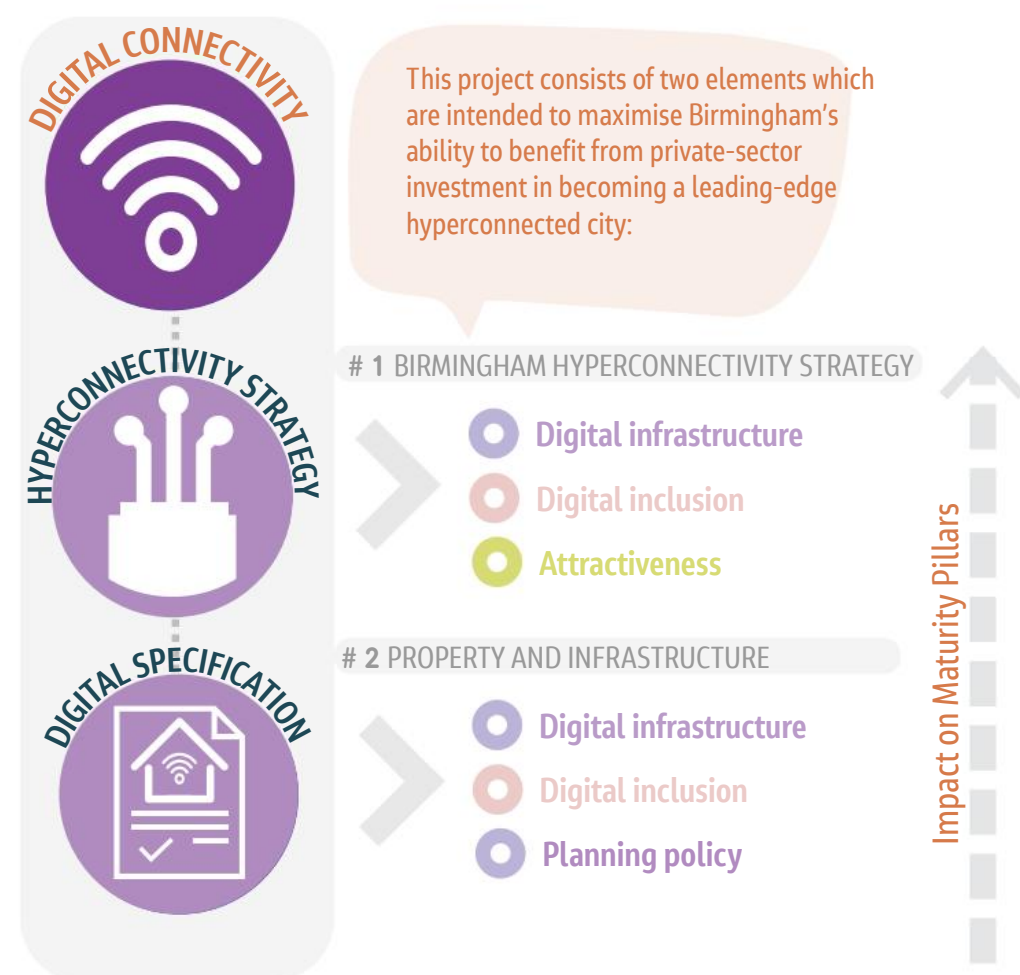




### 6.3.1 Digital Connectivity Foundations

There are two projects under this theme which are intended to maximise Birmingham's ability to benefit from private-sector investment in becoming a leading-edge hyperconnected city:

- Birmingham Hyperconnectivity Strategy
- Digital Specification for Property and Infrastructure



#### 1. Birmingham Hyperconnectivity Strategy:

Currently, Birmingham does not have a unified and comprehensive digital connectivity strategy. This has led to areas of city having extremely poor connectivity. In the city centre, private sector businesses have had to secure their own connectivity provision at great costs. There is also a correlation between areas of high deprivation and poor connectivity, resulting in the sustained digital exclusion of these communities. While the WMCA are currently developing a business case for region-wide full fibre connectivity, it is likely that trade-offs have had to be made to secure the best provision for all areas of the West Midlands. This may continue to leave areas of Birmingham behind.

At the time of writing, Birmingham City Council are in the process of launching two tenders to market. One will appoint a consultant to support a demand-side market engagement exercise, the creation of a business case and the definition of a procurement approach for a city-wide full fibre roll-out. The other tender will launch a soft market testing exercise to understand what the market is able to provide in terms of full fibre connectivity in Birmingham. Together, Birmingham City Council feel that this will give them a solid full fibre connectivity strategy.

With this in mind, this project will focus on addressing the two remaining gaps in Birmingham's wider connectivity strategy:

- Firstly, it will focus on identifying pathways to accelerating the roll-out of other connectivity technologies such as 5G and LPWA. It will also explore the use-cases that can be enabled and delivered once these have been deployed and the benefits these will deliver for businesses and communities.
- Secondly, the project will drive the transformation of the council's policies which influence the ease at which private sector companies can deploy connectivity. Examples of policies that may be reviewed and implemented include 'dig once', fast permitting and the streamlining of wayleaves to public sector properties. These measures would enable the city to benefit more rapidly and cost-effectively from the procurements now underway.

**Selection Rationale:** The project contributes to inclusive growth objectives by addressing digital exclusion and laying the foundations required to support business growth and future public service delivery models. It has strong support from both public and private sector stakeholders, delivers clear benefits and the funding requirement is primarily resource time in the first instance. In terms of alignment to the maturity assessment framework, this project would lead to direct improvements to the digital infrastructure, digital inclusion, and attractiveness pillars.

#### 2. Digital Specification for Property and Infrastructure:

Huge amounts of investment are currently being poured into Birmingham's property portfolio. Such investments include over £700m in the Paradise scheme, £1.6bn in the Smithfield redevelopment and £500m in the Tyseley Energy Park scheme. Presently, none of these schemes have any obligation to invest in digital infrastructure, either within their site boundaries, or further afield into surrounding communities. While many large schemes are investing in digital connectivity and technology to support their own commercial aspirations, these efforts are often disparate and do not contribute to the development of a seamless and resilient city-wide digital infrastructure.

This project proposes to develop a digital specification for property and infrastructure to ensure that in the future, major investments and

interventions that reshape Birmingham, invest in digital infrastructure and services in a way that balances benefits for developments with benefits for the wider city. Initially this specification would be flexible and subjective in nature, focusing on gauging the market's capability to invest. Over time, this specification could evolve to become more firmly embedded in the planning process, in a similar manner to other developer-led social and community infrastructure contributions.

Using Smithfield and/or Paradise Circus as pilot sites, the project proposes to create an initial high-level specification that focuses on various aspects of digital and data infrastructure:

- **Connectivity:** the provision of fibre, wi-fi, 5G, and Internet of Things connectivity, and future-proofing for 6G connectivity.
- **Infrastructure and assets:** the exploitation of digital technology to enable intelligent operation of infrastructure and buildings.
- **Data:** the management and distribution of data generated by intelligent infrastructure and assets, and its use to promote efficiency, sustainability, innovation, and user experience.
- **End-user services;** apps and services that provide value to citizens, communities and businesses.
- **Digital enablement:** support services, facilities and activities that ensure everyone has the skills and resources to benefit from improved digital connectivity and services.

The specification will also take into account industry benchmarks such as WiredScore's certification criteria and the ITU U4SSC standards. When implemented, this project should ensure a stream of private sector investment is directed to improve the city's digital connectivity, infrastructure, data, services, and skills

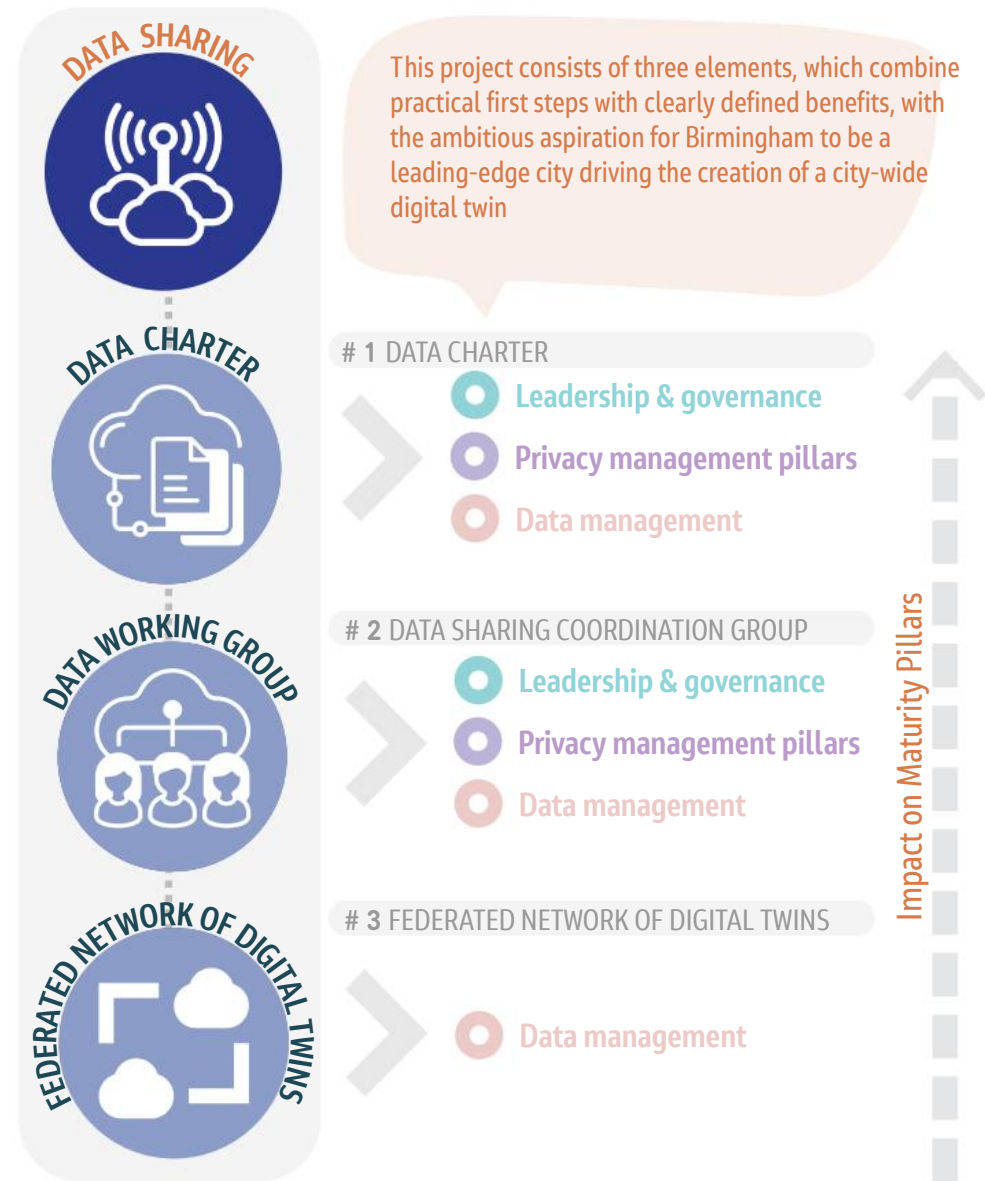
**Selection Rationale:** Again, this project is highly aligned to the strategic context by improving city-wide digital infrastructure foundations and contributing to the reduction in digital exclusion. It will deliver clear benefits whilst requiring little to no capital investment from the council. It has strong stakeholder support with several developers offering to pilot the specification alongside the council. This project will improve the digital infrastructure, planning policy and digital inclusion pillars of the maturity assessment framework.



6.3.2 Data Sharing

There are three projects under this theme, which combine practical first steps with clearly defined benefits, with the ambitious aspiration for Birmingham to take be a leading-edge city driving the creation of a city-wide digital twin.

- Data Charter
- Data Working Group
- Federated Network of Digital Twins for Birmingham



It should be noted that these projects are not focused on creating additional data platforms. They are about agreeing and embedding the principles that allow organisations to share data together and identifying key use-cases that will deliver value. Participants in any data-sharing initiative would be free to choose the most appropriate platform, within the principles expressed in the Data Charter.

1. Data Charter

Stakeholders agreed that enhanced data sharing has the potential to give Birmingham's organisations a more holistic and nuanced understanding of community and business needs, therefore enabling better decision making, better targeting of interventions and ultimately, better outcomes. However, data-sharing is new to many organisations and their leaders, so a Data Charter is a powerful tool for explaining why data-sharing creates

social, economic, and environmental benefits, for encouraging businesses and institutions to commit to it, and for creating transparency and trust in how that data will and will not be used, particularly data about people.

This project proposes to create a Data Charter; a publicly facing document which communicates why data sharing is important to Birmingham, and how the city's institutions will ethically use data together to deliver benefits to citizens and businesses. City organisations would be invited to become signatories to this charter, thereby creating a community of data owners who will contribute to Birmingham's data ecosystem, while also promoting accountability around data use and protecting the rights of people and communities. The Charter will not propose the creation of any new data sharing platform, nor refer to a preferred one; however, by encouraging collaboration, re-use and the development of resilient, sustainable solutions, and by highlighting the availability of existing data sharing platforms, would promote aggregation rather than proliferation of platforms. This would mirror a similar charter recently launched in London and would also draw on the Gemini Principles produced by the National Digital Built Britain initiative <sup>27</sup>.

2. Data Sharing Coordination Group:

The establishment of a Data Charter alone will not directly make meaningful data sharing happen across the city's institutions. Similarly, simply creating a data platform, such as the city observatory or the WM datastore, and asking organisations to contribute a selection of datasets also does not create value in an efficient, structured and outcomes-focused way.

This project proposes the creation of a data sharing coordination group to drive cross-organisational data sharing. This group of prominent data experts from data owners from across the city would meet, prioritise use-cases and then work towards generating the data and analytics required to fulfil them. This model has worked successfully in London where the Data for London working group drive data sharing efforts.

**Selection Rationale:** Both of the above projects are strongly aligned to the strategic context. Data sharing is a key enabler to gaining a better understanding and addressing many city challenges. Potential benefits include the better targeting of services and interventions, better monitoring of progress towards sustainability targets and service delivery cost savings. These projects had the strongest stakeholder support and require limited funding to design, implement and operate. These projects lay the foundations for a data-driven future and have a low risk – high reward profile. These projects will lead to improvement in the data management, leadership & governance, and privacy management pillars of the maturity assessment framework.

## 2. Digital Specification for Property and Infrastructure:

In the longer term, as more and more datasets are made available, it will be necessary to ensure that they conform to a consistent set of data standards and are stored in a known location. Given the number of existing initiatives by both public and private sector organisations, such as Birmingham City Council's City Observatory, the WMCA's WM Datastore and Lendlease's proposed Podium data platform for the Smithfield development, stakeholders acknowledged that it was unrealistic and impractical to aim to have one single city data platform.

Instead, this project proposes to create a federated network of city data platforms. Data within these platforms would conform to the same set of standards and would be signposted to by a master directory. Together these platforms can be developed into a comprehensive digital twin for Birmingham.

This hugely ambitious aspiration would not only see Birmingham leading the way in terms of city data-sharing nationally, delivering direct benefits for the city, but would also provide a platform to attract high profile businesses requiring data to drive their innovation agenda

**Selection Rationale:** The alignment to the strategic context and benefits delivered are similar to the first two data sharing projects, however the complexity of bringing together multiple disparate initiatives means that benefits are likely to be delivered over a longer time period. This project unifies a range of existing initiatives and will make them contribute value that is greater than the sum of their individual parts. It will greatly improve Birmingham's performance on the data management pillar of the maturity assessment, making Birmingham a genuine national leader in terms of city data sharing. This project will require a moderate amount of both upfront capital funding and ongoing operational funding to cover continual data generation, cleaning, updating and general infrastructure maintenance activities.

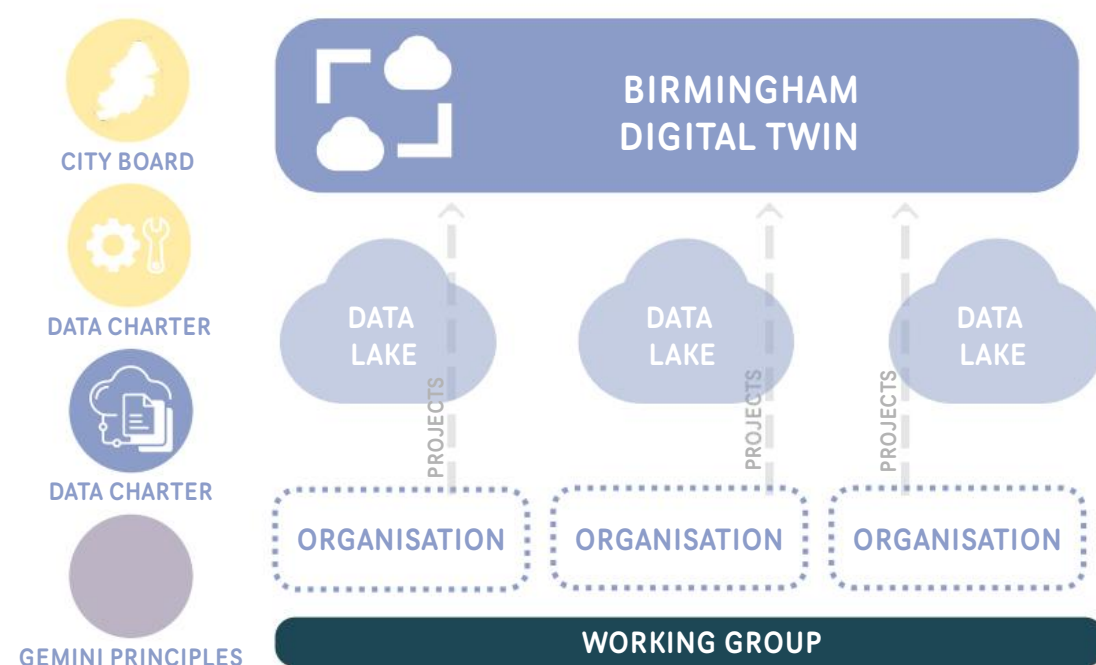
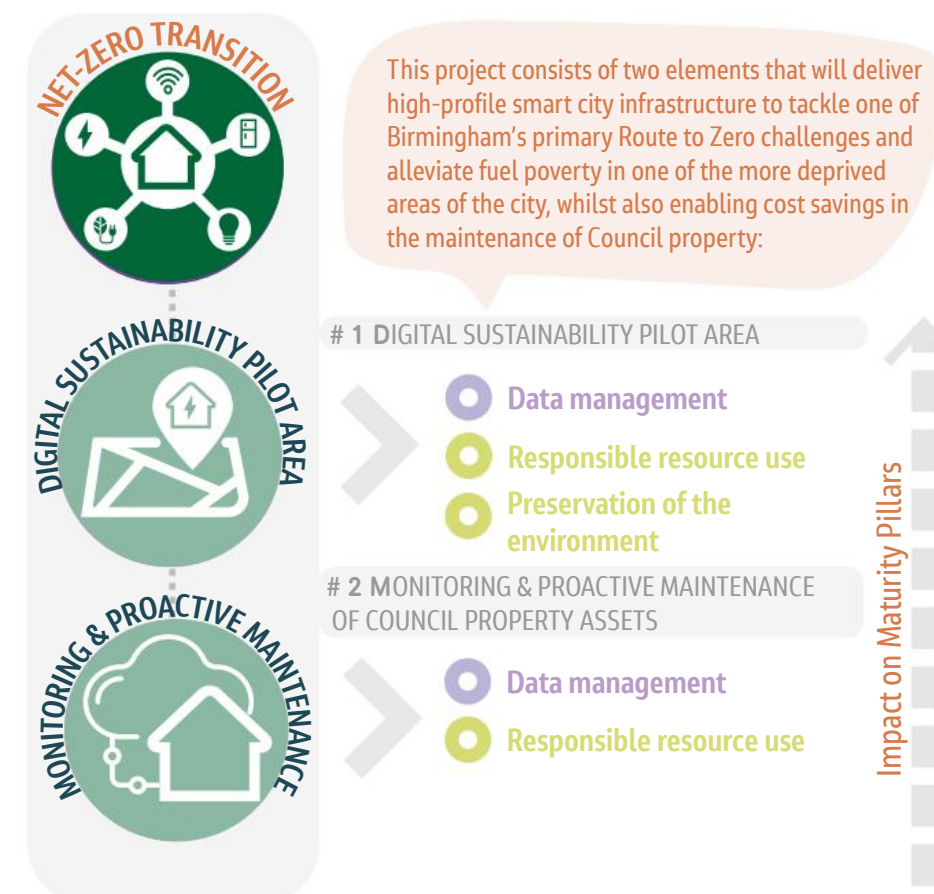


Figure 11: Federated Network of Digital Twins for Birmingham

## 6.3.3 Route to Zero Transition (Digital Sustainability)

There are two projects under this theme that will deliver high-profile smart city infrastructure to tackle one of Birmingham's primary Route to Zero challenges and alleviate fuel poverty in one of the more deprived areas of the city, whilst also enabling cost savings in the maintenance of Council property:

- Digital Sustainability Pilot Area
- Monitoring and Proactive Maintenance of Council Property Assets



### Digital Sustainability Pilot Area

Heating residential buildings accounts for 34% of Birmingham's yearly carbon emissions and therefore has been identified as a priority sector for immediate intervention. The Route to Zero programme is developing a large-scale domestic property retrofit programme in either Perry Barr or Druids Heath. Stakeholders have expressed an interest in augmenting the exist plans with digital technology to reduce emissions, change energy use behaviours and reduce residential energy bills.

This project proposes co-locating a digital sustainability pilot area alongside the domestic property retrofit programme. This would see between 600 and 1000 homes equipped with the following interventions:

- Environmental sensing equipment, such as heat, light and damp sensors
- Smart appliances including boilers, washing machines, dish washers, and fridges
- Battery storage technologies
- Area-wide EV charging and transport options.

Furthermore, residents will be encouraged to use behaviour change apps that incentivise behaviours that decrease domestic energy use by offering rewards.

Not only will this project deliver immediate benefits in terms of reduced energy usage in domestic homes, it also lays the foundations for a future-proofed domestic energy system. The presence of instrumented homes, smart appliances, and battery



storage technology will allow the area to transition into a full smart grid in the future, seamlessly balancing loads on the electricity grid and capturing the benefits of renewable energy and variable energy pricing to deliver cheaper, cleaner energy supplies to residents.

Furthermore, residents will be encouraged to use behaviour change apps that incentivise behaviours that decrease domestic energy use by offering rewards.

Not only will this project deliver immediate benefits in terms of reduced energy usage in domestic homes, it also lays the foundations for a future-proofed domestic energy system. The presence of instrumented homes, smart appliances, and battery storage technology will allow the area to transition into a full smart grid in the future, seamlessly balancing loads on the electricity grid and capturing the benefits of renewable energy and variable energy pricing to deliver cheaper, cleaner energy supplies to residents.

★ **Selection Rationale:** This project is well aligned with both the sustainability and inclusive growth agendas. It has strong support from both internal and required external stakeholders and digital technology is critical to its delivery. The project would generate demonstrable sustainability benefits and could then serve as a model for extension and replication across other areas of Birmingham. Moderate funding will be required, however with sustainability fast rising up the national and regional agendas, there is confidence that a suitable funding source can be found. The project will improve Birmingham's performance on the responsible resource use, preservation of the environment, and data management pillars of the maturity assessment.

The sensing infrastructure that is being put in place as part of the above project will also enable a secondary project to be delivered with the intention of delivering up to £0.5m of annual cost savings to Birmingham City Council through the proactive management and maintenance of social housing.

Using the data generated by smart infrastructure from the previous project, this project proposes developing a set of analytic tools which will enable a more proactive approach to asset maintenance. Examples of potential use-cases include:

- **Enabling Early intervention:** By detecting issues early, the council will be able to intervene quickly, minimising damage and associated costs.
- **Facilitating bulk buying of capital items:** The data will also enable predictive analytics which will give the council better visibility over large capital expenditure items such as replacement cycles, allowing them to make better decisions. For example, if the council have confidence that 60% of boilers will need replacing in the next 5 years, they can place a bulk order, securing a significantly cheaper price per unit and saving substantial amounts
- **Identifying vulnerable residents:** This data can be combined with other data sources to identify potentially vulnerable and struggling residents based on their lack of energy usage, or erratic usage. Early intervention will stop these residents reaching crisis point and allow the right support to be offered.

★ **Selection Rationale:** This project is aligned with the inclusive growth agenda through its contribution to better living conditions for social housing residents and the sustainability agenda but providing more granular data on the performance of social housing buildings and assets. It also has the potential to generate consideration costs savings for the council and is inherently digital. There is a clear business case for this intervention, meaning that traditional funding sources will be accessible, or the project could be funded from future cost savings. It will lead to an improvement in the data management and responsible resource consumption pillars of the maturity assessment

### 6.3.4 Community-Led Innovation to Deliver Social Inclusion Outcomes

There are three projects under this theme, exploiting digital technology to better connect Birmingham's communities to Council- and third-party services and resources of benefit to them, helping the city in tackling it's inequality and exclusion challenges:

- Community Engagement Characterisation
- Corporate Social Responsibility (CSR) Funding Matchmaking Platform
- Youth Engagement Platform



#### Community Engagement Characterisation

Birmingham has some of the UK's most significant, extensive and entrenched social challenges. Extensive research has shown that large-scale, citywide measures are ineffective in addressing them, and that a large number of small-scale, localised initiatives specific to individual areas and communities are more effective. In order to better engage with communities across Birmingham, it is important to

have a firm understanding of their characteristics and their preferred engagement methods. There is an ongoing piece of community characterisation work taking place gathering data about communities around the Tyseley area.





This project proposes expanding this characterisation work across Birmingham to provide a comprehensive view of the diverse challenges facing various communities, the resources available to them and the forms of engagement that are most likely to be effective. This project will result in the production of numerous data sets about communities that can be fed into the proposed data sharing project. It will also act as a critical enabler for the following projects in this area.

### Corporate Social Responsibility (CSR) Funding Matchmaking Platform

Stakeholders were agreed that the projects that deliver the best social inclusion outcomes, are those that are highly targeted, highly localised and delivered by trusted institutions such as social enterprises, community, or voluntary organisations. There was also a concern in Birmingham that many of these projects are currently funded by European sources that the UK are no longer eligible for, meaning that there is likely to be a significant funding gap in the future.


This project proposes creating a platform which allows charities, social enterprises and private sector companies with CSR budgets and resources to browse and fund social-purpose initiatives put forward by community organisations. This will not only channel much needed funds towards social purpose initiatives, but will also help corporates quickly identify projects that are aligned to their designated impact target areas and direct their funds and resources into projects that will deliver real value to communities. Lastly, it will provide the council with a clear pipeline of projects which can be used to target other public sector funding opportunities such as government's 'levelling up' funds.

 **Selection Rationale:** Ineffective engagement with communities is undermining inclusive growth efforts. This project directly addresses this issue. It has strong stakeholder support and is an extension of an existing initiative, therefore we have a clear understanding of outputs, levels of effort involved and both direct and indirect benefits that are likely to be delivered. The data generated will act as a valuable foundation for a huge range of other initiatives, and, with appropriate protection of sensitive data, will contribute to related projects promoting data sharing and the creation of a Digital Twin. It involves moderate amount of funding, primarily comprised of resource costs. It will lead to an improvement in the social cohesion, digital inclusion, and citizen enablement pillars of the maturity assessment framework.

 **Selection Rationale:** Inclusive growth is best delivered by a large number of highly targeted interventions which this project will enable. It is supported by multiple stakeholders and the Birmingham Voluntary Services Council has an appetite to be an integral delivery partner. The project is enabled by a digital platform and will generate valuable data on what projects are being put forward, which ones are being funded, and which ones deliver the best outcomes. It has a strong long-term economic benefits case and requires limited funding. Existing platforms are available, and they typically recover costs by taking a small percentage of contributions that are made through the platform. This project will lead to an improvement in the citizen enablement, ecosystem and business support and social cohesion pillars of the maturity assessment.

### Youth Engagement Platform

Birmingham is the youngest city in Europe, and it is imperative to engage these young people in the development and future shaping of the city. Borrowing from Vienna's successful youth engagement initiative, this project proposes to create a youth engagement platform. This would allow children and teenagers aged 5 to 18 years old, and school classes, to submit project ideas, vote for their favourites and receive funding, either from community crowdfunding, corporate donations, or grants.

 **Selection Rationale:** This project contributes to the inclusive growth agenda by engaging young people in civic affairs and encouraging them to make a difference in their communities. While the project was not directly suggested by stakeholders, instead being proposed following analysis of Vienna in the maturity assessment, it received reasonable levels of support from stakeholders, particularly when tested with those that represented Birmingham's young population. Birmingham has successfully run crowdfunding initiatives before, therefore confidence in deliverability is high. It has the potential to generate a wide range of largely non-monetisable benefits, such as better engagement with young people, higher levels of aspiration amongst Birmingham's young population, improved social cohesion and increased levels of civic pride. As with the previous project, provision of such platforms is inexpensive, likely only requiring some resource time to coordinate and promote the programme rather than any large amounts of upfront capital investment.

6.3.5 Urban Food Systems

This project will create a vertical farm as a prominent smart city flagship facility for Birmingham, making a significant contribution to the city's Route to Zero contribution by providing a more sustainable source of food.

Large-Scale, Net Zero Vertical Farm:

Like the majority of cities in developed countries, Birmingham grows a very small proportion of its food within its city boundaries. More broadly the UK imports 50% of its food and this percentage is increasing. Brexit and the pandemic have revealed striking fragilities in our food supply chains, and this lack of resilience is only likely to continue deteriorating as climate change disrupts food production around the globe.

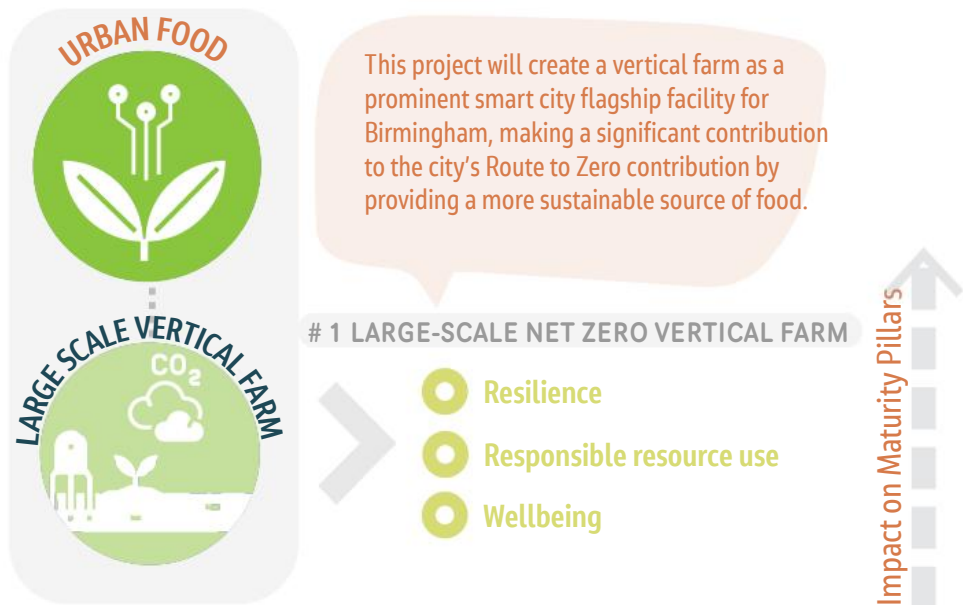
The project proposes to support the deployment of a large-scale, net zero vertical farm in the Tyseley area, in conjunction with the Energy Park. The farm will focus on growing vegetables and herbs that the UK typically imports from faraway places, such as the Indian subcontinent and East Asia, which will result in a significant reduction in food miles and associated carbon emissions. This new source of food supply is well matched with local demand as many of Birmingham's food manufacturers and distributors serve markets for Asian food.

In terms of digital requirements, the farm will be highly automated and completely instrumented to

allow granular control of the growing environment. It is also proposed that the farm is collocated with a local energy sources. Tyseley is home to a large anaerobic digestion plant which generates large quantities of CO2. The farm requires CO2 to provide the right growing conditions for the plant, therefore would somewhat neutralise the emissions being produced by the plant.

Lastly, the farm would run a structured programme of community engagement initiatives to educate local school children and residents on the benefits of healthy diets and sustainable food production

**Selection Rationale:** The project has strong alignment to both the net zero and health and wellbeing agendas. The stakeholders involved its conception, including the vertical farming startup Harvest who are leading the initiative, are engaged and have a firm understanding of how the project would be delivered. There is a strong digital component, and the project has the potential to deliver a huge range of benefits including: improved resilience of the food system, a lower carbon footprint, the promotion of healthier diets and the generation of high value employment opportunities in the green economy. It would also be a huge differentiator for Birmingham as would lead to an improvement in the resilience, responsible resource use and wellbeing pillars of the maturity assessment.



6.4 Indicative Roadmap for the Digital City Programme

The following graphic provides a high-level view of how the projects above link together, and how we propose they are delivered over time.

As proposed in the introduction to this section, the roadmap comprises a number of immediate, short-term projects which can be mobilised quickly, deliver immediate value, and require minimal amounts of capital funding. These projects typically pave the way

for larger, more capital-intensive projects which can be delivered over longer timeframes, and have the potential to deliver bigger and more transformational impacts. Together, these two types of project strike a balance between quick mobilisation, immediate

benefits realisation and long-term sustained impact. Further details regarding inter-project linkages and delivery arrangements will be defined in the business case documents contained in subsequent sections within this document.

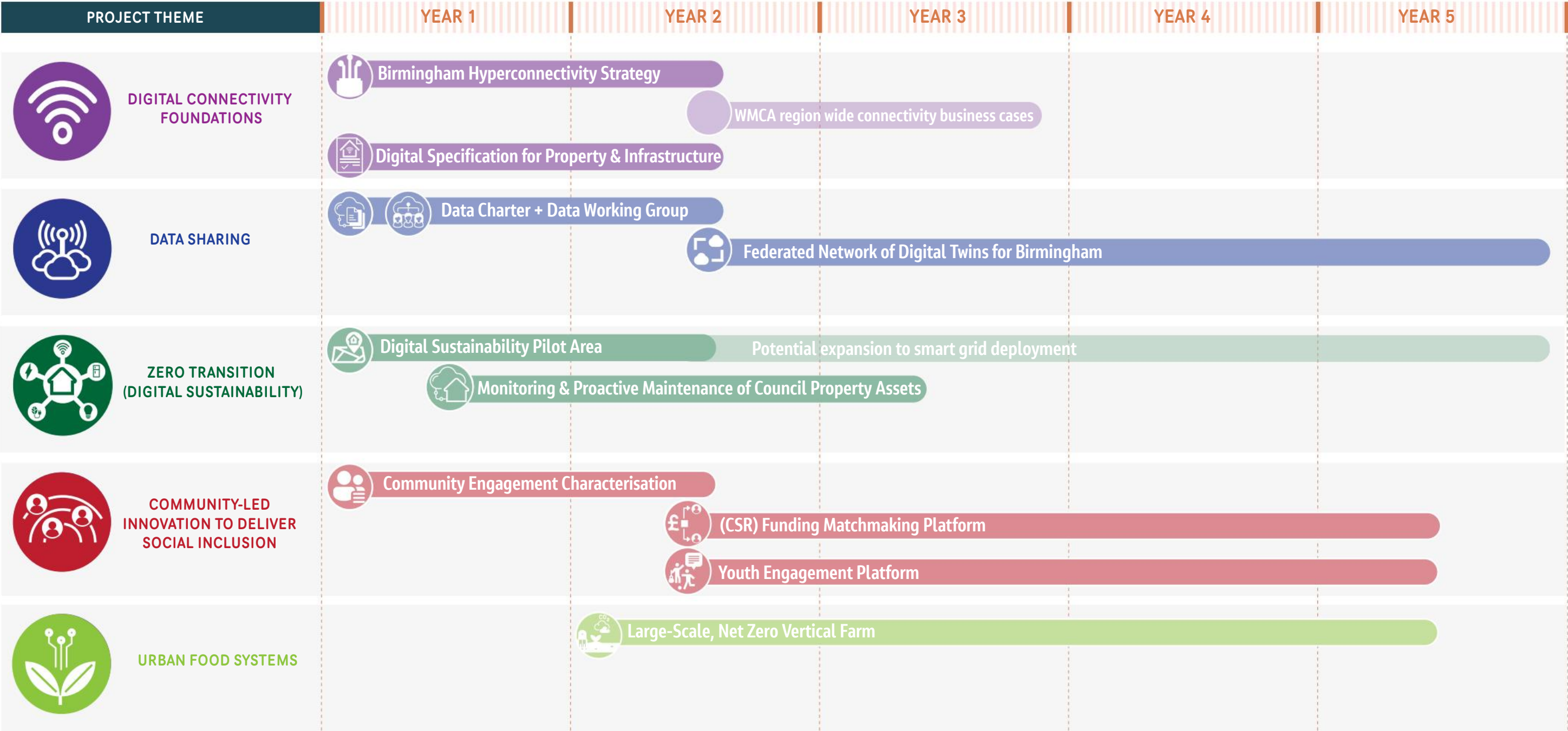


Figure 12: Indicative Roadmap for the Digital City Programme



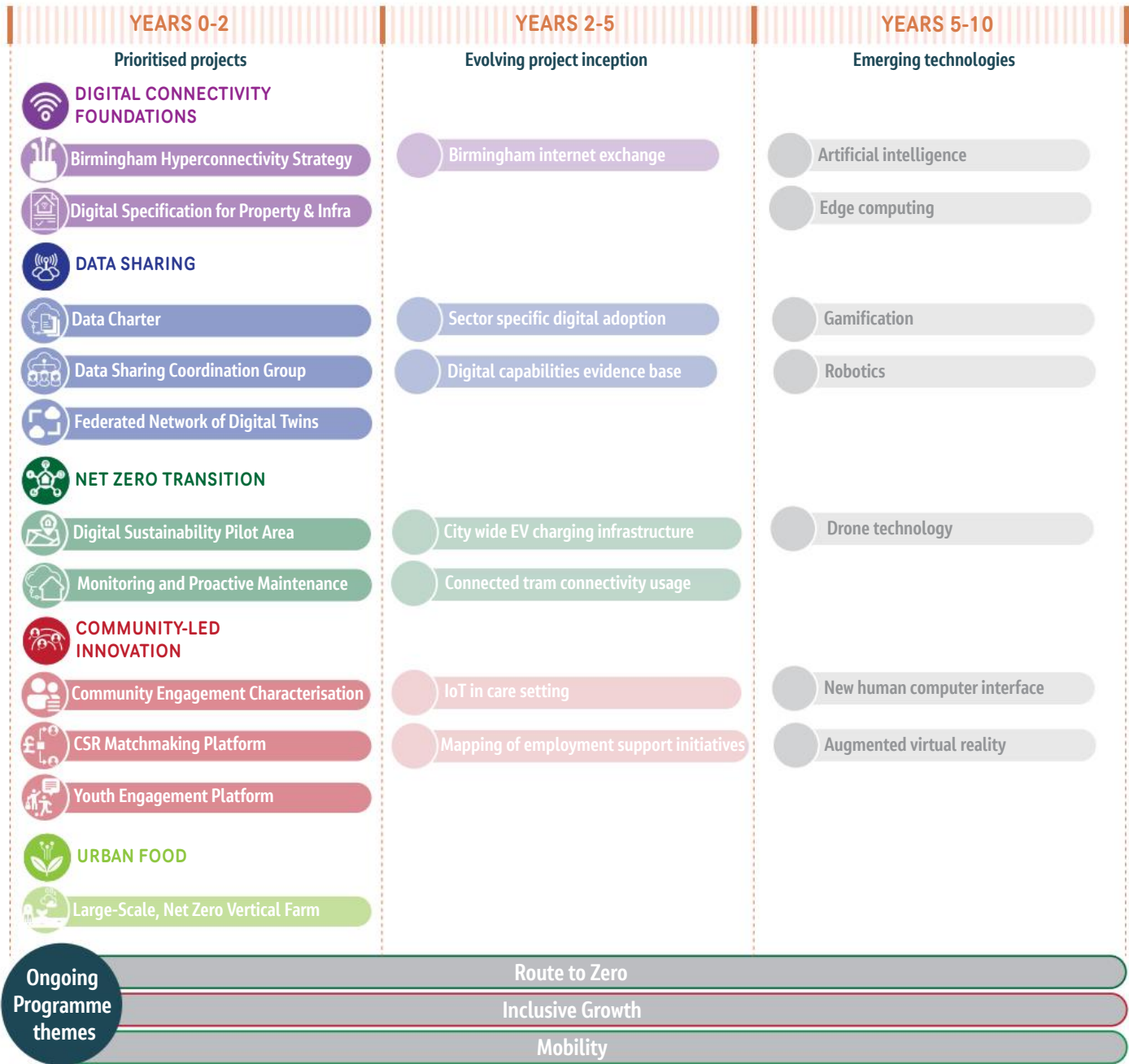
6.4.1 Medium-term Roadmap for the Digital City Programme

The objective of Birmingham's Digital City Roadmap is both to initially identify a small number of projects that are viable in the short term and that will deliver tangible benefits for the city in the first few years, and to outline a longer-term ongoing Programme. This highlights an indicative view of the future projects, priorities, and emerging technology areas, although these will evolve along with Birmingham's priorities.

The following graphic provides a high-level view of the medium-term Roadmap for the Digital City programme, highlighting the potential for on-going project development in Birmingham over the next 10 years:

The medium-term Roadmap shows a set of additional candidate projects to be developed in years 2-5. These include high-scoring projects taken from the initial c.40 long list (see Appendix B), as well as potential new interventions highlighted to us through engagement with wider city stakeholders. Priority theme areas, such as Route to Zero, Inclusive Growth and mobility have also been highlighted, as a guide for evolving project interventions that could be included within the Roadmap as the programme develops.

The Roadmap also shows emerging technologies to support interventions that could be deployed in years 5-10. Actual interventions in that timeframe will depend on the evolution of Birmingham's priorities, but we have highlighted emerging technologies that are likely to have a significant impact in cities and communities.



6.4.2 The Role of the Governance and Delivery Model

The recommended city-wide Governance and Delivery Model described in section 8 to oversee delivery of the Digital City Programme enables ongoing evolution and expansion of the Programme in line with the city's objectives. The Governance and Delivery Model enables new projects and initiatives to be constantly identified and driven forward and provides collaborative groups of stakeholders with a clear mandate to develop an on-going "live" Roadmap.

Driven by the Governance and Delivery Model, in the medium-term timeframe, candidate projects will be considered that were ruled out for immediate delivery but that are still viable; and new projects and interventions will be proposed and assessed. The Model will ensure all new interventions are in line with the Digital City Programme and wider city objectives, and that new and emerging technologies are considered. This will ensure the momentum of the Digital City Programme is not lost and is continuously refreshed. The current medium-term timeframe is indicative, but the structures recommended mean this can remain flexible and aligned to priorities as the programme evolves. The proposed delivery and governance model is based around the most efficient use of internal Birmingham City Council resource contributions and wider city stakeholder inclusion where appropriate and economically efficient.

Figure 13: High-level view of the medium-term Roadmap for the Digital City programme

6.4.3 Impact on Maturity Assessment Performance

The following graph shows how Birmingham's maturity assessment performance could improve if the roadmap projects listed above are successfully implemented. The grey columns show Birmingham's current performance against the maturity assessment pillars (the baseline), and the coloured additions give an indication of the potential uplift in scores from the various projects. The roadmap projects have the potential to increase Birmingham's average score across all pillars from 2.1 to 2.97 with the

most notable improvements being seen in the data management and digital infrastructure. The selected projects should also deliver significant improvements to Birmingham's performance across the citizen enablement, digital inclusion, responsible resource use and social cohesion pillars, increasing scores by approximately 1.5 points.

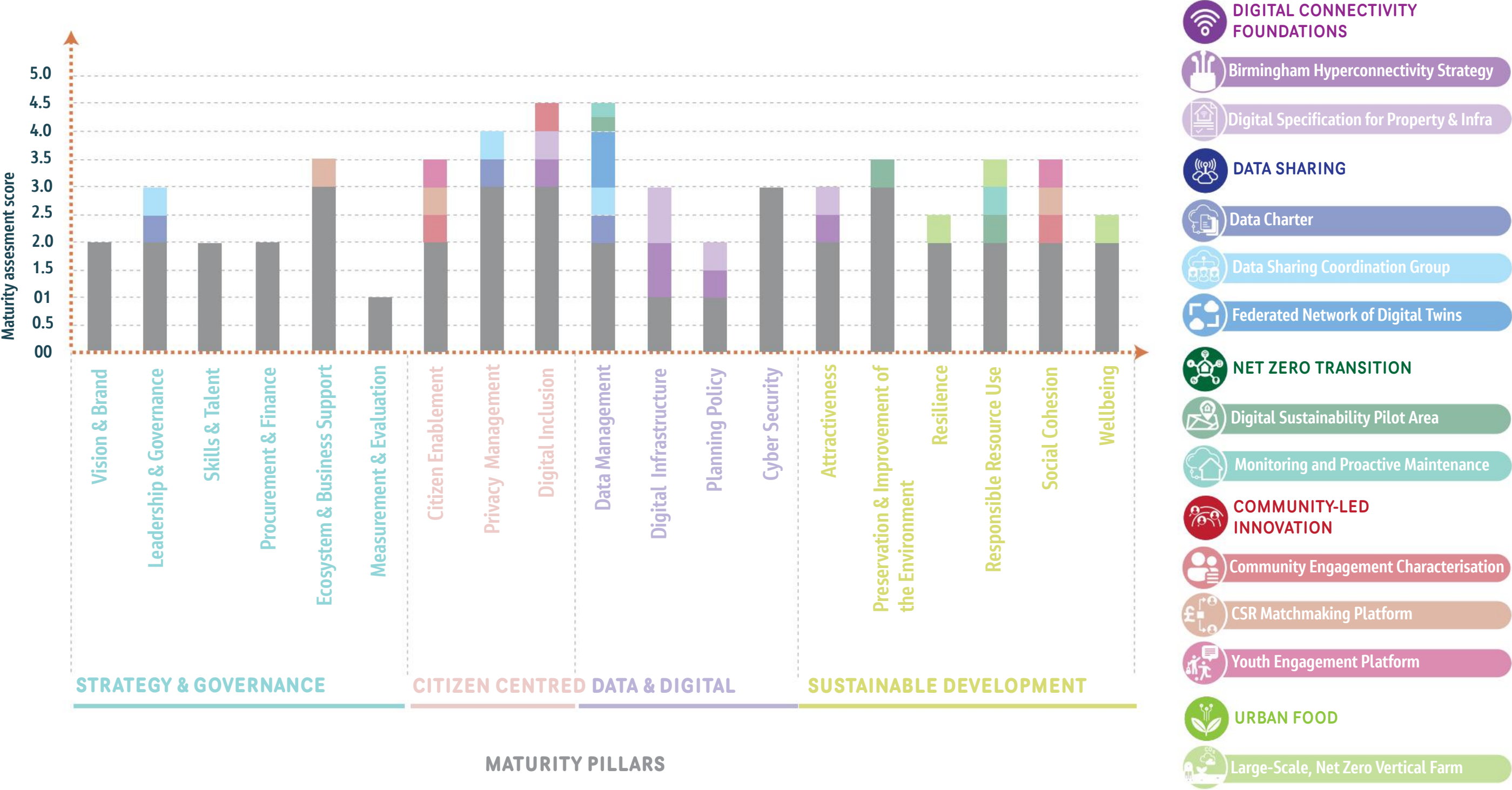


Figure 14: Indicative Impact of Roadmap Projects on Birmingham's Maturity Assessment Performance



**07**

Business Cases



## 07 BUSINESS CASES

This section includes the executive summaries of the business cases that have been created for the 5 project areas. Full business cases for each of the projects can be found in the appendices of this document.

### 7.1 Digital Connectivity Foundations

**“5G offers significant benefits to citizens and businesses in Birmingham. It will drive the economic growth of the city, offer new innovative ways of working and new business models that will improve public service.”**

Dr Peter Bishop, Director for Digital & Customer Services, Birmingham City Council, Nov 2020 <sup>28</sup>

#### 7.1.1 Proposed Project Overview



Birmingham's current fixed connectivity levels are poor, both in the city centre and in outlying districts, and whilst 5G connectivity is growing, there are certain areas of the city that will not achieve required fixed and mobile connectivity levels with current private investment methods. Emerging forms of connectivity, such as LoRaWAN and wider uptake of 5G, collectively referred to as 'Hyperconnected Technologies' will be crucial in driving the next

generation of intelligent infrastructure to support sustainable growth, such as the city's 'Route to Zero' (R20) programme.

Birmingham City Council (BCC) has already taken steps to reduce the levels of digital exclusion in the city through the Digital Inclusion Strategy and Action Plan. BCC is currently engaging with the market to address gaps in the city's full fibre coverage, however this does not represent a holistic connectivity strategy for the city. It will not address the need for widespread deployments of 5G or IoT network connectivity to support future technology use-cases, nor will it modernise the city's existing policy environment that influences the ease, cost and speed of connectivity deployments. The proposed project consists of two sub-projects:

- **Birmingham Digital Connectivity Strategy:** This project will focus on developing a strategy to accelerate the roll-out of connectivity technologies such as 5G and Low Power Wide Area (LPWA) networks which are critical to enabling future services and applications across the manufacturing, transport, energy and health and social care sectors. This project will also drive the transformation of the council's policies which influence the ease at which private sector companies can deploy connectivity. Examples of policies that may be reviewed and implemented include 'dig once', fast permitting and the streamlining of wayleaves to public sector properties.
- **Digital Specification for Property and Infrastructure:** This project proposes the development of a digital specification for property and infrastructure to ensure that in the future, major investments and interventions that reshape Birmingham, invest in digital infrastructure and services in a way that balances benefits for developments with benefits for the wider city. Initially this specification would be flexible and subjective in nature, focusing on gauging the market's capability to invest. Over time, this specification could evolve to become more firmly embedded in the planning process.

#### 7.1.2 Economic Impact Summary



The proposed project has the potential to generate over £760m of gross monetary value in the form of increased productivity across the business and consumer sectors.

In addition to productivity benefits, the project has the potential to generate further impacts in the following areas:

- Increasing levels of inward investment due to the city becoming more attractive to businesses with intensive digital requirements
- Creating additional direct jobs in digital infrastructure delivery
- Providing better access to education services and employment opportunities.
- Delivering various benefits to the public sector through enabling the delivery of more services digitally.

#### 7.1.3 Delivery Approach Overview



We propose the Digital Connectivity Strategy sub-project is delivered between April 2022 and July 2023. We propose that this sub-project is delivered using existing council resources wherever possible, however foresee a potential need for external resources to support on the deeply technical aspects. We forecast the expected cost of this sub-project would be approximately £100k comprised of internal and external resource time.

Regarding the Digital Property Specification sub-project, we recommend BCC target a launch date in Q2 2023. This will allow for the collaborative development of the specification with a property developer who is familiar with the city. Several developers, including Argent and Lendlease, have offered to co-develop this specification with the Council and they have stated they would not expect reimbursement for their time. As with the Connectivity Strategy discussed above, we envisage that the specification would be developed by internal

council resources from the Digital City and Planning teams are far as possible, however there may be a need for external technical resources to provide specialist digital infrastructure contributions. Taking into account the internal resource costs, in addition to potential external support and a small promotion budget for the specification launch, we expect the cost of this sub-project to be approximately £92.5k. It should be noted that the GBSLEP has expressed an interest in this sub-project and may be willing to commit up to £40k towards the total costs.

#### 7.1.4 Immediate Next Steps



The immediate next steps for this project include:

- Engage with the BCC full fibre team and internal stakeholders closely involved with the BCC Digital Inclusion Strategy and Action Plan.
- Engage with an external property developer (Argent) to agree the co-development of the Digital Property Specification.
- Hold initial internal sessions between the BCC Digital City team and wider BCC departments to understand current levels of 5G and Low-Power Wide Area (LPWA) connectivity in the city and the current state of the council's digital infrastructure deployment policies.
- BCC Digital City team to engage with the GBSLEP to secure funding for the Digital Property Specification.

## 7.2 Data Sharing

### 7.2.1 Proposed Project Overview



By embracing data and the benefits it brings, cities have a tangible opportunity to improve society and grow their economies. The McKinsey Global Institute (MGI) estimates that the increased use of data and digital intelligence systems in cities improves key quality of life indicators by 10 to 30%, translating directly into lives saved, fewer crime incidents, shorter commutes, a reduced health burden and carbon emissions averted.<sup>29</sup> Birmingham's city data landscape is currently very fragmented, with the city's public institutions and private sector organisations each progressing with their own initiatives. Without

fast coordination there is a risk that Birmingham will be left with a host of disparate data platforms, containing unstandardised data, making extracting any value extremely difficult and costly. While the Council have recently launched an internal insights programme which will enable better data sharing between the council's directorates, there remains a need for intervention at a wider city scale. This business case proposes the delivery of the following three component projects:

- **Birmingham Data Charter:** The creation of a publicly facing document which communicates how the city's institutions will ethically use data to deliver benefits to citizens and businesses. City organisations would be invited to become signatories to this charter, thereby creating a community of data owners who will contribute to Birmingham's data ecosystem.
- **Data Sharing Coordination Group:** The establishment of a group to drive cross-organisational data sharing. This group of prominent data owners from across the city would meet, prioritise use-cases and then work towards generating the data and analytics required to fulfil them. This model has worked successfully in London where the Data for London working group drive data sharing efforts. Organisations that have expressed an interest in being founding members of this Group include Transport for West Midlands (TfWM), Western Power Distribution, Lendlease, West Midlands Police and Birmingham City University.
- **Federated Network of Digital Twins:** As more and more datasets are made available, it will be necessary to ensure that they conform to a consistent set of data standards and are stored in a known location to facilitate interoperability and easy aggregation to give a holistic view of city challenges. This project proposes to create a federated network of city data platforms. Data within these platforms would conform to the same set of standards and would be signposted to by a master directory. Together these platforms can be developed into a comprehensive digital twin for Birmingham. This hugely ambitious aspiration would not only see Birmingham leading the way in terms of city data sharing nationally, delivering benefits for its citizens and city organisations, while also providing a platform to attract high profile businesses requiring data to drive their innovation agendas

### 7.2.2 Economic Impact Summary



The proposed projects have the potential to increase gross domestic product (GDP) by approximately £145m-436m over the project period by improving access to, and availability of, data in the city. Further impacts expected to be realised include:

- Increased public trust in big data and analytics through institutional commitments to ethical use, transparency, and accountability.
- Delivery of cost savings for the Council and other public service providers through streamlined data management and better targeting of interventions based on data-driven insights.
- Enablement of predictive analytics to inform better decision making around future events and investments.
- Increased attractiveness of the city for inward investment, start-ups, and innovation activities due to the increased availability of data.

### 7.2.3 Delivery Approach Overview



We propose that this project is delivered in two phases. The first phase, starting in April 2022, should involve the creation of the Data Charter and the establishment of the Data Sharing Coordination Group. By the end of the first year (April 2023), the Data Charter should be launched and between 3 and 5 data sharing use-cases should have been successfully delivered by members of the Data Sharing Coordination Group. We expect that these two initiatives will require the creation of a secretariat role to coordinate and drive activities. This should be delivered by a resource from the Digital City Team. We anticipate that these two projects will require approximately £50k of internal Council resource time during the first year of delivery. The Greater Birmingham and Solihull Local Enterprise Partnership (GBSLEP) was particularly supportive of these activities and may be able to lend some financial support to fund delivery.

The second phase of the project, projected to start in April 2023, involves the creation of the Federated Network of Digital Twins. This project should be treated as a longer-term ambition, and its precise scope will become clearer as the previous two initiatives are delivered. At a minimum, we envisage that a technical design exercise will need to be completed to determine how the city's disparate data sources can be brought together under a central directory to appear as though they are unified. We also foresee that some organisations across the city will be willing to share data but may not have their own platform to do so. Therefore, we also expect there to be a piece of work to explore options around whether a suitable platform exists that can host this data, what changes or extensions need to be made to make this possible, or whether a new platform might be needed. Potential funding sources for these pieces of work include Innovate UK and UK Research and Innovation (UKRI), who are committing huge amounts of funding to digital twins, or the Government's Levelling Up fund.

### 7.2.4 Immediate Next Steps



In parallel with the establishment of the wider Digital City Programme governance structures, the Digital City team should convene relevant stakeholders to form the initial membership of the Data Sharing Coordination Group. These same members should also lead contributions to the first draft of the Data Charter.

The Digital City Team should also hold a knowledge transfer session with London First (the lead creators of the London Data Charter) to understand their process and lessons learned for producing and launching the document.



## 7.3 Route to Zero Transition (Digital Sustainability)



“This defining year for the UK’s climate credentials has been marred by uncertainty and delay to a host of new climate strategies. Those that have emerged have too often missed the mark. With every month of inaction, it is harder for the UK to get on track.”

Climate Change Committee (CCC), UK Independent Statutory Body, ‘2021 Progress Report to Parliament’, June 2021<sup>30</sup>

### 7.3.1 Proposed Project Overview



Birmingham City Council (BCC) declared a climate emergency in June 2019, and with it set the target for the city to become carbon net zero by 2030. The city-wide initiative ‘Route to Zero’ (R20) encompasses carbon reduction aims alongside further benefits and rewards via a commitment to reduce inequalities in communities. However, additional complementary initiatives are required to work alongside existing solutions in the city to meet the challenging carbon reduction targets.

The role of digital connectivity and technology in delivering sustainability outcomes is often overlooked, but they have an important part to play in helping Birmingham meet its emission reduction targets. For example, digital connectivity allows people to work from home thus reducing transport related emissions, while sensors and internet of things (IoT) devices allow more granular control of energy usage. The projects proposed in this business case will help Birmingham to understand the role of digital connectivity and technologies in achieving sustainability outcomes.

The proposed project consists of two sub-projects that will deliver high-profile smart city infrastructure to tackle one of Birmingham’s primary R20 challenges, reducing emissions from domestic homes, and alleviate fuel poverty in one of the more deprived areas of the city, whilst also enabling cost savings in the maintenance of Council property:

- **Digital Sustainability Pilot Area:** The R20 programme is developing a large-scale domestic retrofit programme for council-owned properties in Druids Heath. This project proposes co-locating a digital sustainability pilot area alongside the domestic property retrofit programme and proposes equipping a total of 1000 homes with a range of digital interventions, including environmental sensors, smart appliances, battery storage technology and behaviour incentivisation applications. These additions will further reduce carbon emissions, change energy usage behaviours, and reduce residential energy bills to alleviate fuel poverty.
- **Monitoring and Proactive Maintenance of Council Property Assets:** This will utilise the technology installed in the digital sustainability pilot to enable potential reduction in annual maintenance and management of social housing costs to BCC. This project will collect data and develop a set of analytical tools to enable a more proactive approach to asset maintenance. Use-cases include early detection and remediation of damage to council properties, better visibility for bulk purchasing and savings in the council supply chains, as well as early intervention to support vulnerable residents.

### 7.3.2 Economic Impact Summary



The proposed project has the potential to generate £11.7m of gross monetary value from the uplift in council property values. The project also has the potential to generate further benefits of between £1.5m and £1.8m per annum across the following impact areas:

- Reduced carbon emissions, helping to move Birmingham towards its net zero 2030 target.
- Reduced utility bills for residents of the pilot area, leading to lower levels of fuel poverty.
- Improved health and wellbeing outcomes due to an improved living environment, resulting in a reduced risk of premature death and the delivery of cost reductions for the NHS.
- This in turn has positive impacts on the health and wellbeing of residents.
- Reduced cost of property management and maintenance activities

### 7.3.3 Delivery Approach Overview



We propose the project is delivered in two distinct phases. Phase 1 would involve the designing the digital aspects of the pilot project. This will include integrating the design requirements of the Monitoring and Proactive Maintenance of Council Property Assets sub-project. We anticipate that this phase of work will be delivered between Q2 2022 and Q2 2023, however, this will need to be aligned with the wider retrofit programme timescales. Due to the deeply technical nature of designing IoT networks, we expect that external resources will need to be commissioned to lead the scheme design piece of work. The Digital City team would complement this technical design exercise by leading internal and external stakeholder engagement activities. We anticipate the cost of this phase of work will be approximately £230k. This could be funded by using a proportion of the Green Homes Grant already secured by the council or through engaging with the

Midlands Energy Hub Consortium who are bidding for funding from the government’s Sustainable Warmth Scheme.

Once complete, the project should move into Phase 2. This involves the deployment and operation of the digital pilot area. A more accurate cost will estimate for phase 2 will be available following the conclusion of the detailed scheme design. Without this being completed, it is difficult to provide an accurate bottom-up estimate of costs for deployment. However, using several benchmarks from completed projects and pilot implementations, we recommend that a budget of between £2m and £3.5m should be expected for the deployment phase of this project. The government has recently announced a £800m fund to support social housing reach net zero standards which could be a viable funding source for this stage of the project. There is an opportunity for long-term operating costs to be funded from the management and maintenance savings generated by the solution.

### 7.3.4 Immediate Next Steps



The immediate next steps for this project include:

- Engage closely with BCC R20 programme to align project scope and timelines with existing activities
- Engage with the BCC Data Housing and Data Insights team to refine the monitoring use-case and identify specific data sets required
- Hold knowledge transfer workshop with Jacobs to understand learnings from a similar digital property asset management project being design in another UK city. This will allow further detail to be added to the project scope.
- Investigate the funding opportunities listed above and if project approval is received, submit a funding application to the Green Homes Grant or Sustainable Warmth Scheme.



## 7.4 Community-Led Innovation



“Inclusive Growth is about all of our residents being able to touch, taste and feel the benefits of rising prosperity within the region. The West Midlands is on the rise again – but we know it will take a proactive, targeted approach to ensure that those communities currently left behind can play a full part.”

Deborah Cadman, CEO WMCA, September 2018

### 7.4.1 Proposed Project Overview



Birmingham is ranked as the 7th most deprived authority in England <sup>31</sup> and 37% of the city's children grow up in poverty. <sup>32</sup> Without action, there is very real risk that Birmingham will not improve these statistics or deliver on its wider inclusive growth

ambitions. Communities will continue to be excluded due to a lack of effective engagement, a lack of trust in the city's formal institutions and a lack of funding for the voluntary and community organisations (VCOs) that provide so many critical, localised support services. Whilst a significant initiative is already underway in the form of the Inclusive Growth programme, we believe that additional digitally-enabled measures will make a significant difference to the degree to which Birmingham's community challenges are met. The proposed project consists of three sub-projects exploiting digital technology to better connect Birmingham's communities to Council and third-party services, and resources of benefit to them, ultimately helping the city to tackle its inequality and exclusion challenges:

- **Community Engagement Characterisation:** The extension of an existing exercise completed in the Eastside area which aims to collect and layer various data sources on local communities to provide a comprehensive view of the diverse and nuanced challenges they face, the resources available to them, and the forms of engagement that are most likely to be effective.
- **Corporate Social Responsibility (CSR) Funding Matchmaking Platform:** The creation of a digital platform which allows charities, social enterprises and private sector companies with CSR budgets and resources to browse and fund social-purpose challenges or initiatives put forward by voluntary and community organisations (VCOs). This will channel much needed funds towards social purpose initiatives that are losing funding due to the loss of European funding sources.
- **Youth Engagement Platform:** The creation of a digital platform which allows children and teenagers aged 5 to 18 years old, and school classes, to submit project ideas, vote for their favourites, and receive funding, either from community crowdfunding, corporate donations, or grants. This will engage Birmingham's youth in the development and shaping of the city.

### 7.4.2 Economic Impact Summary



The proposed projects have the potential to generate approximately £45.84m of gross monetary value per annum for Birmingham across the following impact areas:

- Improved engagement with, and understanding of, local communities, particularly those in historically hard to reach areas.
- Increased trust between communities, particularly the young and the socially excluded, and public/private organisations in the city.
- Democratised access to a wider set of funding opportunities for third sector organisations delivering critical local support and enablement services.
- Increased direct outputs (donations, in-kind contributions, and beneficiaries) from CSR activities.
- Improved social outcomes in terms of reduced numbers of people not in education, employment, or training (NEETs), reduced levels of general unemployment and fewer residents in poor and very poor health.

### 7.4.3 Delivery Approach Overview



We propose that the Community Engagement Characterisation sub-project is delivered between April 2022 and April 2023 using existing resources from within the council's data insights, communities, and digital city teams. We forecast that the expected cost of this sub-project would be approximately £72k comprised entirely of internal resource time.

Regarding the delivery of the two digital platform projects, we recommend that the Council target a go-live date of April 2023. This will ensure that insights captured through the Community Engagement Characterisation project can be used to shape and target these initiatives. We recommend that the Council engages with existing providers on

the market, such as SpaceHive and WhatImpact, to launch platforms at minimal upfront cost, and works with delivery partners with good existing relationships with the respective target audiences to ensure maximum impact. We have engaged with the Birmingham Voluntary Services Council (BVSC) who have expressed an interest in supporting the delivery of the CSR Matchmaking Platform sub-project, and Beatfrecks (a local youth engagement organisation) who are well positioned to support the delivery of the Youth Engagement Platform.

We expect that these two sub-projects will cost between £300k and £500k. These costs are comprised of internal resource effort to oversee the projects, funding for delivery partners and, in the case of the Youth Engagement Platform, a budget for match funding highly voted project ideas. To fund these two sub-projects, we recommend that the Council targets the Government's upcoming Shared Prosperity Fund (UKSPF) which is due to open in April 2022. This fund has been created to replace the European funding sources that the UK is no longer eligible for, therefore is expected to have good alignment to these types of projects.

### 7.4.4 Immediate Next Steps



The immediate next steps for this project include:

- Engage with the Insights team and City-REDI to understand the potential to have their support in the delivery of the Community Engagement Characterisation project
- Engage with potential delivery partners (BVSC and Beatfrecks) to further define the platform projects
- Hold initial sessions with potential platform providers to understand functionality available on the market and business models.
- Submit a funding application to the UKSPF when it opens in April 2022.

<sup>31</sup> [https://www.birmingham.gov.uk/download/downloads/id/2533/index\\_of\\_deprivation\\_2019.pdf](https://www.birmingham.gov.uk/download/downloads/id/2533/index_of_deprivation_2019.pdf)

<sup>32</sup> <https://www.endchildpoverty.org.uk/child-poverty-is-on-the-rise-and-concentrated-in-the-places-the-governments-policies-will-hurt/>

## 7.5 Urban Food Systems

### 7.5.1 Proposed Project Overview



Global food systems are increasingly unhealthy and unsustainable. If left unchecked, our current approach to food production and consumption has the potential to cause huge economic, social, and environmental impacts at a local, regional, and national level.

Environmentally, food production is the single biggest contributor to biodiversity loss, deforestation, and drought. In the UK, the total carbon footprint of the food and drink that we consume is equivalent to 35% of total greenhouse gas emissions.<sup>33</sup>

Economically, the UK imports around 50% of the total food consumes.<sup>34</sup> The fragility of the UK's food system has been exposed by Brexit and the Covid-19 pandemic, where reports of food shortages have led to panic buying and price inflation. While these were short-term shocks, climate change is the major long-term threat to food security due to the danger of extreme weather events and catastrophic harvest failures. It is vital that the UK increases its levels of local food production to protect itself from these external stressors in the future.

Socially, the food we eat has a significant impact on our health. The UK is now the fattest country

in the G7, with approximately three in ten of the adult population being obese.<sup>35</sup> This is a direct consequence of a food system geared towards cheap, energy dense foods. There is also a social gradient to the UK's food system, with adults and children in the lowest income decile eating on average 42% less fruit and vegetables than recommended.<sup>36</sup> Birmingham's high levels of deprivation make it particularly vulnerable to these social outcomes. In some wards such as Handsworth, Hodge Hill and Washwood Heath almost half of children are either overweight or obese.<sup>37</sup>

Birmingham is uniquely positioned to lead the transformation of the UK's food system due to its existing sector strengths in food and drink manufacturing, nationally renowned restaurant scene and pressing health challenges.

This proposed project will create a vertical farm as a prominent smart city flagship facility for Birmingham, making a significant contribution to the city's Route to Zero (R20) contribution by providing a more sustainable source of food. The large-scale, net zero vertical farm will be based in the Tyseley area, in conjunction with the Energy Park and the vertical farming start-up organisation, Harvest. The farm will focus on growing vegetables and herbs that the UK typically imports from the Indian subcontinent and East Asia, which will result in a significant reduction in food miles and associated carbon emissions. This new source of food supply is well matched with local demand as many of Birmingham's food manufacturers and distributors serve markets for Asian food.

In terms of digital requirements, the farm will be highly automated and completely instrumented to allow granular control of the growing environment. It is also proposed that the farm is collocated with a local energy source. Tyseley is home to a large anaerobic digestion plant (Tyseley Energy Recovery Facility (TERF)) which generates large quantities of CO2. The farm requires CO2 to provide the right growing conditions for the plant, therefore would somewhat neutralise the emissions being produced by the plant.

Lastly, the farm would run a structured programme of community engagement initiatives to educate local school children and residents on the benefits of healthy diets and sustainable food production.

### 7.5.2 Economic Impact Summary



The proposed project has the potential to generate £1.7m of gross monetary value per annum from the creation of operational stage high value jobs in the Tyseley area. The project also has the potential to generate further benefits of c.£447k per annum across the following impact areas:

- £229k per annum in water bill savings compared to traditional farming methods
- £71k per annum in CO2 emissions saved by enabling the reforestation of farming land
- £27k per annum in reduced CO2 emissions by transitioning to vertical farming methods
- £50k per annum in reduced food miles.

Separate to these quantifiable impacts, the project also has the potential to generate a wider range of qualitative impacts for Birmingham. Locally, the project will improve food security, enable a circular carbon economy, and engage the community in food production methods. At a national level, being the first urban vertical farm of this scale in the UK, it will serve as a national exemplar for the future for food production.

### 7.5.3 Delivery Approach Overview



This project will be led by the vertical farming start-up Harvest. This business has significant private sector investor backing and has conducted initial discussions with the TERF regarding an integration with the anaerobic digestion plant and wider local energy infrastructure. We envisage that the council will act in a supporting and enabling role for this project, helping the farm to secure land, making connections with local food businesses that could provide demand for the farm's produce and supporting engagement efforts with local communities. The Council would incur minimal costs for providing this support, expected to be under £10k per year of internal resource time. We expect that any further time or resource requirements would be paid for by the investor backing the project.

### 7.5.4 Immediate Next Steps



Hold meeting with Harvest, Veolia and Tyseley Energy Park to understand how the Council can help move the project into delivery.

<sup>33</sup> [https://wrap.org.uk/sites/default/files/2021-10/WRAP-Pathway-2030-Delivering-a-50%25-reduction-in-the-GHG-footprint-of-UK-food-and-drink-summary-report\\_0.pdf](https://wrap.org.uk/sites/default/files/2021-10/WRAP-Pathway-2030-Delivering-a-50%25-reduction-in-the-GHG-footprint-of-UK-food-and-drink-summary-report_0.pdf)

<sup>34</sup> Exploring the resilience of the UK food system in a global context, Global Food Security, 2018

<sup>35</sup> <https://www.nationalfoodstrategy.org/>

<sup>36</sup> Sustainable Health Equity, Achieving a Net-Zero UK, Institute of Health Equity, 2020

<sup>37</sup> <https://foodfoundation.org.uk/sites/default/files/2021-10/Final-BCC-Report.pdf>



**08**

Recommended  
Governance  
Arrangements



## 08 RECOMMENDED GOVERNANCE ARRANGEMENTS

### 8.1 Recommended Governance Approach

In this chapter, we recommend a city-wide Governance and Delivery Model to draw stakeholders together to drive and oversee delivery of the Digital City Roadmap, and its ongoing evolution and expansion in line with the city's objectives. The Governance and Delivery Model is required to:

- Establish a coalition of stakeholders to drive Birmingham forward as a digital city
- Hold the Digital City Programme to account in delivering against the city's objectives
- Hold projects to account in delivering against their individual objectives
- Ensure that new projects aligned to the city's objectives are constantly identified and driven forward
- Ensure that the required resources are available to support the Programme

Critical to Governance and Delivery Model is the need to establish a city-wide responsibility for and commitment to the Digital City Programme. Birmingham City Council will play a crucial role in convening the Governance and Delivery Model bodies, and will lead or participate in many projects, but the Governance and Delivery Model bodies will report to the City Board, rather than to the Council, and may drive some projects that are independent of the Council.

The recommended model involves several different elements, each with a specific remit, characteristics and Terms of Reference. These have been designed following extensive stakeholder engagement in Birmingham, and are informed by international research and experience.

#### 8.1.1 Stakeholder engagement – Governance insights

Findings from stakeholder engagement, the previous Smart City Commission, and the experience of cities elsewhere

The recommended Governance and Delivery Model is informed by insights captured from the digital maturity assessment and case study cities presented in this report, and from the governance model previously applied to the Birmingham Smart City Commission, established in 2012.

Governance was identified as a top priority in the maturity assessment, with many city stakeholders highlighting it. Insights they shared included:

**01 Digital is not a focus of current governance structures:** The city's digital agenda is a focus for the City Council led by its Director for Digital and Customer Services. However, Digital is not a Cabinet remit, nor is it represented on the City Board, and the city does not have a dedicated Chief Digital Officer or equivalent. Many stakeholders stated that stronger city-wide digital leadership was needed.

**02 Leadership is not connected across the city:** Several stakeholder interviews identified the need for a more holistic understanding of the complex challenges the city faces. Moreover, these challenges are not solved by the teams or organisations that seek to deliver Net Zero and/or Inclusive Growth alone. There is a need to act in more cohesive, connected and considered manner to ensure new solutions do not merely create new problems. This 'connected' thinking needs to start at the very top of all organisations. We heard from senior leaders that this skillset is not always evident across city organisations.

**"We've still got a way to go to help articulate the interconnectivity between different agendas and that requires leadership which is able to think laterally in multiple dimensions"**

Anonymous stakeholder quote

**03 Governance structures should better reflect the citizens and users they serve:** Stakeholders identified the diversity and youth of the city as important strengths, and stressed that these should be reflected and harnessed in the digital development of the city. Specifically, their voices should shape the challenges to be addressed by digital interventions, and be a part of the projects and solutions to deliver them.

**04 The City Board should take responsibility for Birmingham's digitalisation:** The City Board should enhance its digital capability and expertise, reflecting the central role that digital technologies and services will play in the Grand Challenges it addresses on Birmingham's behalf. For the same reason, governance of the Digital City Programme should be a new responsibility for the City Board, so that the Programme is delivered on behalf of the city, rather than the City Council. Consequently, a Digital Board should be established that reports into the City Board and that is accountable for delivery of the Digital City Programme.

**"I'd like to see governance really broadened, and I'd like to see young people involved in it."**

Anonymous stakeholder quote

**05 Measurable outcomes should be defined for the Digital City Programme:** To understand progress and ensure development of the Digital City Programme, activity must be assessed against measurable outcomes. This will be vital in order that a body of evidence can be built to demonstrate the effectiveness of the Programme and to enable investment in its future growth.

### 8.1.2 Lessons Learned from the Birmingham Smart City Commission

Birmingham's Smart City Commission, established in 2012, was one of the earliest and most significant bodies created in the UK to drive a city-wide smart city agenda. However, it did not ultimately drive forward a delivery programme of the expected impact. A short review of the structure and activities of the Commission yielded the following insights:

INSIGHT	LESSON
The Commission had no real power, authority or responsibility for delivery	Give a Digital Board, reporting to the City Board, overall responsibility for the programme and for holding delivery teams to account
The Commission's agenda was more about what its member organisations wanted, rather than what the city needed	Focus Digital City Programme activity on defined city-wide challenges
Political disruption resulted in confusion and a loss of focus	Ensure governance of the Digital City Programme is independent and driven by city needs
The Commission's resulting strategy was too long term and delivery was inconsistent	Create clear delivery and oversight responsibilities with activities measured against outcomes; focus on shorter term deliverable wins
The sheer breadth of scale of the Commission's programme was too big, with 6 big challenges, 12 task and finish groups, and over 40 projects	Define a small number of concise challenges and projects, each addressing a unique and clearly defined city requirement
There was a disconnect between the Commission's leadership and what was happening on the ground	Ensure the value proposition of engagement with the Digital City Programme is clear; define a delivery process; and ensure strong channels of communication between the Digital City Board
The Commission listened, but did not generate new ideas	Convene a network of active agents as a creative force to bring forward new ideas and initiatives to the Digital Board and delivery teams

### 8.1.3 Birmingham Digital City Governance and Delivery Model

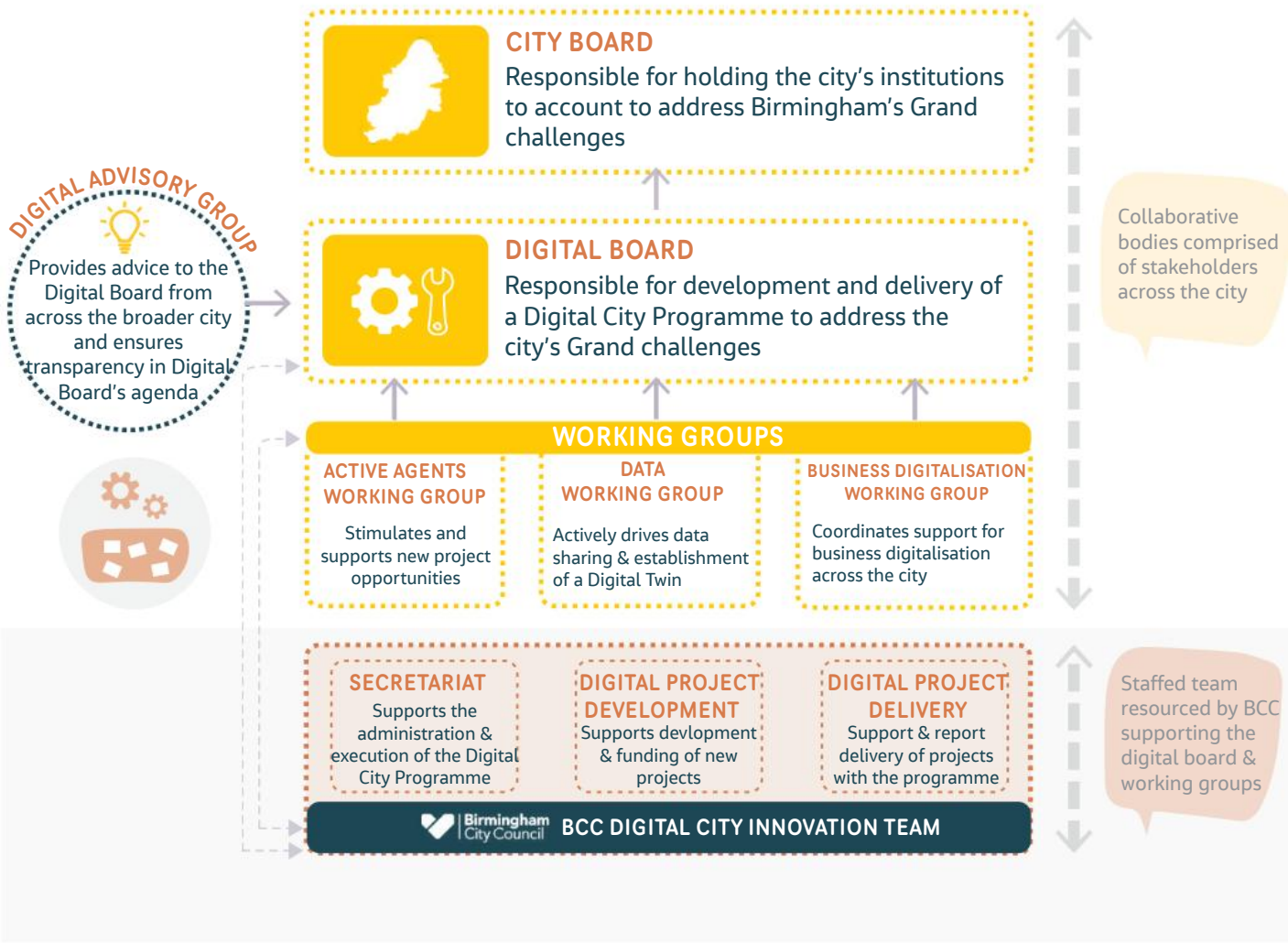


Figure 15: Birmingham Digital City Programme Governance and Delivery Model

Using insights gained through extensive stakeholder engagement in Birmingham, analysis of the comparator cities identified in this report, and the collective experience of the project team, the following recommendations are made to establish a Governance and Delivery Model for Birmingham's Digital City Programme. The recommended structure will both oversee delivery of the initial Digital City Roadmap presented in this report, and drive ongoing development and expansion of the Programme. It will establish a body able to set the approach for digital initiatives to address the Grand Challenges established by the City Board, and that is linked to groups with the ability to deliver them.

The Governance and Delivery Model contains several different bodies intended to work together in specific ways. Experience has shown that a single body cannot successfully set direction for, oversee, deliver and continuously drive expansion of a city-wide digital programme – there are simply too many activities and responsibilities for a single body to carry them out. Additionally, whilst overall governance and delivery is a collaborative responsibility, there are some crucial tasks, particularly in project development, that are typically difficult to complete without committed, staffed resources. The recommended model therefore includes a combination of a collaborative Board and Working Groups, with a staffed supporting team provided by Birmingham City Council.



### 8.1.4 City Board Recommendation

- Appoint an independent City Board member to provide digital leadership: The City Board should appoint a new member with deep digital expertise and a city-wide focus. They should have support from the City Council, but remain independent, limiting the possibility for short-term political issues to distract from longer-term goals. The new member should chair a new Digital Board, that operates in parallel with and reports into the City Board, as described below.

### 8.1.5 Digital Board Recommendations

- **Create a Digital Board that supports and informs the existing City Board:** The new Digital Board should inspire and facilitate digital initiatives and have overall accountability for delivery of the Digital City Programme, reporting to the City Board. It should consist of digital leaders from across the city and with an interest or stake in the role of digital in Birmingham's future growth. The Digital Board should be supported by the subsidiary groups identified below that can both act as generators of new initiatives, and support delivery of projects by partners. Board members will also be expected to champion individual projects and challenges.
- **Create a Digital Advisory Group to provide wider insight to the Digital Board:** In order to function effectively as a decision-making body, membership of the Digital Board will necessarily be limited to a relatively small number of individuals, and is therefore unlikely to be fully representative of Birmingham's diverse communities and interests. A broader Digital Advisory Group with rotating membership should be established to reflect this diversity, and to provide input and feedback to the Digital Board.
- **Develop a cross-sector Active Agents Working Group:** The Digital Board should be supported by a Working Group with entrepreneurial, creative, commercial and innovative expertise, to define challenges, find solutions, identify new initiatives emerging from Birmingham's communities and business ecosystem, and to identify sources of funding and investment. These people are likely to be 'Active Agents' who drive change in their own organisations, and should be skilled networkers, with the freedom to connect the dots between many different stakeholders to help bring forward new ideas and opportunities in the city.
- **Create a Data Working Group:** Stakeholder engagement has revealed widespread opportunities for organisations in Birmingham to share data in the interests of driving improvements in the city, providing it is done in a controlled and appropriate way. The role of the Data Working Group is to bring together those driving data use and sharing in their organisations to identify new opportunities to share data. The Group will also be tasked with creating a Data Charter for Birmingham, committing the city's institutions to working together towards the shared vision of a Digital Twin for the city.

### 8.1.6 Operating Recommendations

- **Create a Business Digitalisation Working Group:** There are a wide number of programmes and schemes active in Birmingham that seek to enhance the digital capability of the city's businesses, including its very large number of SMEs. However, there is no overall strategy between the various organisations responsible for them, and therefore insufficient understanding of any gaps, and poor signposting for individual businesses to the programmes most appropriate to them. The role of the Business Digitalisation Working Group is to drive greater communication and alignment amongst business digitalisation initiatives, so that they provide the growth platform Birmingham needs.
- **Create a Digital City Innovation Team within the City Council with Digital Project Development and Digital Project Delivery capability, and to act as a Secretariat:** The Digital Board and its Working Groups should be supported by a team provided by the Council with capability to assist with Digital Project Development and Digital Property Delivery, and to act as a secretariat. These resources could be part of the Council's innovation team. Digital Project Development capability is required as whilst many projects identified through the Digital City Governance and Delivery Model will be taken forward by organisations across the city, some will need assistance to be developed to the point where they are viable. A Digital Project Delivery capability will also be required, in some cases to provide skilled resources to manage complex projects on behalf of their delivery partners; in other cases simply to ensure that projects driven forward by partners themselves do so consistent with the overall Digital City programme. Finally, all of the groups in the Governance and Delivery Model will require administrative and logistical support.
- **Develop a clear value proposition for all key stakeholder groups:** The success of the Digital City Programme will be reliant on attracting digital influencers and leaders in the city to contribute to drive the programme forward. Members of the Digital Board and its sub-groups should have a clear interest or stake in Birmingham's digital progress.
- **Create governance processes that are open and transparent:** Transparency must be a core value of the governance and delivery of the Digital City Programme. This should include the membership, Terms of Reference, objectives and agenda of the Digital Board and the other elements of the Governance and Delivery Model. Transparency will be supported by the independent Digital Advisory Board.
- **Achieve fast progress:** The Digital City programme will need to demonstrate success quickly through the initial projects recommended in this report. This immediate impact should be followed by delivery of a longer-term programme.
- **Allow for adaptability:** The Digital City Programme, Roadmap and governance structures will need to reflect the changing needs of the city. They should be reviewed every two-years, including their structure, processes, membership and areas of focus.
- **Build a business case for a Chief Digital Officer (CDO):** Whilst not ubiquitous, many cities, such as London and Chicago, have demonstrated the value to a strong digital agenda of a single, city-wide digital leader, connected to institutions, industry and communities. In order to drive rapid improvements in Birmingham's maturity as a digital city, a business case should be built to employ a Chief Digital Officer for Birmingham. This role should be defined during the next 18 months of the Digital City Programme. Whilst Birmingham's CDO should clearly have a strong understanding of the role of digital in the city's future growth, this is primarily a position of organisational and political leadership, not technology expertise.



## 8.2 Draft Terms of Reference (ToR)

This section contains an initial Terms of Reference for each element of the recommended Governance and Delivery Model for the Birmingham Digital City Programme.

### 8.2.1 Digital Board ToR

#### Role:

The role of the Digital Board is to ensure that a Digital City Programme is driven forward in Birmingham in support of achieving the Grand Challenges set by the City Board. It should inspire and facilitate digital initiatives that contribute to the transformation of Birmingham, including the Inclusive Growth, and Route to Zero priorities.

The Digital Board's responsibilities are to:

- Advise and act on behalf of the City Board
- Set and champion Birmingham's ambition as a digital city
- Promote Digital Birmingham nationally and internationally, attracting investment and support from business and government
- Provide oversight and quality assurance of the Digital City Programme and projects within it
- Challenge the Active Agents Working Group and Data Working Group to continuously develop viable new digital initiatives in support of the City Board's Grand Challenges
- Approve projects submitted by partners and communities, supported by the Digital Project Development Team
- Champion the involvement of Board Members' own organisations and others in Birmingham's digital initiatives, and hold them to account to deliver their commitments
- Use the resources of Board Members and their institutions to support innovation from across Birmingham's communities and economy

#### Membership attributes:

To ensure the Digital City Programme is a success requires the commitment of city leaders and their respective organisations. The following attributes of Board Members will be required for the Board to be effective.

- **Translational Leaders:** Board members should have the ability to work across silos and to 'fill the gaps' between strategy and delivery, and between technology and outcomes. In particular, they should have the ability to create collaboration across wildly different stakeholders, from the smallest-scale, informal community activity to the City's largest institutions.
- **Digital Evangelists:** Board members should have a passion for Birmingham's future, an understanding of the role that digital technology will play in it, and be able to act as advocates for the city at a local, national and international level.
- **Diverse:** Board members should reflect the diversity of the city's communities and economy
- **Open and collaborative:** Board members should be natural collaborators and open to new ideas and digital ways of working.
- **Representative of Birmingham's anchor institutions:** Board members should include representatives of organisations that play a critical role in Birmingham's economy and communities and in delivering city services, and whose resources should be brought to bear to support the Digital City Programme
- **Influencers:** Board members should play a role influencing Birmingham's institutions, communities and businesses to engage with and support the Digital City Programme.
- **Socially Engaged:** Board members should have a good understanding of the social issues within Birmingham's communities, the role that technology can play in enabling change and supporting inclusive growth, and the challenges of inclusive engagement.

- **Results Oriented Strategic Thinkers:** Board members will be tasked with driving a programme that delivers against Birmingham's complex, long-term challenges and will be asked to think critically, challenge direction and focus on both short-term delivery and longer-term goals and investments.

To function effectively as a decision-making body whilst representing the breadth of the city, the Digital Board should ideally consist of ten to fifteen members. As this will limit the extent to which the Board's membership can reflect Birmingham's diversity, the Digital Advisory Group will be established with broader membership to reflect that.

#### Management and reporting:

The Digital Board shall meet on a quarterly basis, managed by the chair, with support from the secretariat. The agenda for meetings will evolve to reflect the Digital City Programme, but will initially include a focus on how to ensure success of the Digital City Roadmap presented in this report, building the Digital Birmingham brand, and agreeing objectives with the City Board.

Once established the Digital Board will oversee progress of its sub- groups such as the Data Working Group, Active Agents Working Group, and the Digital City Innovation Team , each of which will provide regular reports on progress against delivery of projects and development of new initiatives.

The Digital Board will report back to the City Board on progress made by digital initiatives in addressing the City's Grand Challenges, and will work with the City Board to ensure digital plays a central role in the addressing and evolving those the challenges. The Digital Board will also report to the Digital Advisory Group on a similar basis.

### 8.2.2 Working Groups ToR

Supporting the Digital Board will be Working Groups focused on existing and future challenges. These may evolve and change over time with the aim to provide coordination between activities across the Birmingham digital ecosystem. These Working Groups are collaborative, their members being drawn from organisations across the city. They do not have any dedicated staff.

### 8.2.3 Digital Advisory Group ToR:

#### Role and Responsibilities

The role of the Digital Advisory Group is to ensure that the work of the Digital Board, which will necessarily be limited in the number of its members, is transparent, and can be advised by broader stakeholders across the city.

#### Attributes

Membership of the Digital Advisory Group should be taken broadly from across Birmingham's ecosystem, economy and communities. It should truly reflect the diversity of the city. As the Digital Advisory Group is not a decision-making body and has no standing agenda, its membership could be quite large in order to facilitate such diversity. Membership should be through an application process with candidates being approved by the City Board. Membership of the Digital Advisory Group should be for fixed, rotating terms.

#### Management and Reporting

The Digital Board will report on a quarterly basis to the Digital Advisory Group, on a similar basis to its reports to the City Board. The Digital Advisory Group will be asked to provide feedback to these reports, and that feedback should be published and made available to the City Board.

## 8.2.4 Active Agents Working Group ToR

### Role and Responsibilities

The role of the Active Agents Working Group is to ensure that new initiatives are brought forward into the Digital City Programme to continually contribute to progress against the City's Grand Challenges. It plays a pivotal role ensuring that the Digital City Programme connects strategy to delivery. The Active Agents Working Group will operate in two distinct ways:

- Challenge-Led Innovation – working with the Digital Board and through the resources of its own networks, the Active Agents Working Group will identify challenges or themes relevant to the City's Grand Challenges and against which new digital initiatives could contribute. They will then reach out through their ecosystem to encourage such initiatives to come forth. The Group should have a specific focus on generating a minimum of two new focused challenges per year that will contribute to the City's Grand Challenges.
- Bottom-Up Innovation – the Active Agents Working Group will be open and accessible to proposals from Birmingham's communities and ecosystem for initiatives using digital to contribute to the City's Grand Challenges. It will seek to support viable, well-aligned initiatives, either informally through the resources of its members, their institutions or networks; or formally, by bringing them forward for support within the Digital City Programme.

Where necessary, the Active Agents Working Group will draw on the support of the Digital Project Development capability in the Digital City Innovation Team as a resource able to develop project ideas to the point of fully-formed proposals capable of securing the funds and resources required to deliver them.

### Attributes

The Active Agents Working Group will be chaired by a representative from industry, but will include representatives from across sectors and communities in the city. Members of the Group are not likely to be the most senior people in their respective organisations – they will be the dynamic self-starters who “know how to get

things done”. Their participation in the Working Group should be sponsored at the most senior level in their organisations, giving them the remit to act. Potentially they might be drawn from the organisations and individuals represented on the Digital Board.

The role of the Active Agents Working Group will require its members to work broadly across the other Working Groups and with their networks in the city. Members of the Group should have foresight skills and be actively engaged in the national and international technology ecosystem and abreast of new developments.

In order that new project opportunities can be supported if necessary by the Digital City Innovation Team, a member of that Team with Digital Project Development responsibility should be a member of the Active Agents Working Group.

### Management & Reporting

The Active Agents Working Group will meet monthly and will agree projects to be taken forward for development by the Digital City Innovation Team. It will report quarterly to the City Board on the status of projects in development and their alignment to the City's Grand Challenges.

## 8.2.5 Data Working Group ToR

### Role and Responsibilities

The Data Working Group has three responsibilities:

- To Create and secure commitment to a Birmingham Data Charter that commits organisations to using data collaboratively to address the City's Grand Challenges
- To identify and bring forward new opportunities for organisations in the city to use data collaboratively to address the City's Grand Challenges

- To create data standards for Birmingham and undertake other activities such that the many data sharing initiatives and platforms in the city grow together into a federated Digital Twin for Britain, aligned to the vision of the National Digital Twin programme

The Data Working Group will be chaired by a representative from industry led, but will include representatives from across sectors and communities in the city. It should develop a flexible roadmap of activity in support of these three objectives, comprising a multitude of specific data, organizational and sector wide initiatives. Where necessary, the Active Agents Working Group will draw on the support of the Digital City Innovation Development Team as a resource able to develop project ideas to the point of fully-formed proposals capable of securing the funds and resources required to deliver them.

### Attributes

Members of the Data Working Group should include those responsible for data and data sharing in organisations in the City who are committed to data sharing and collaboration. Members should also include people active in existing data sharing initiatives and groups in the city and region, such as the West Midlands Combined Authority's Office for Data Analytics, the West Midlands Open Data Forum, and Members of the SuperTech board. The Working Group's members should collectively have the expertise to create the Birmingham Data Charter and the standards and other initiatives required for the city to drive towards the establishment of a federated Digital Twin.

In order that new project opportunities can be supported if necessary by the Digital City Innovation Team, a member of that Team with Digital Project Development responsibility should be a member of the Data Working Group.

### Management & Reporting

The Data Working Group will meet monthly and will agree projects to be taken forward for development by the Digital Project Development Team. It will report quarterly to the City Board on the status of data-sharing projects and their alignment to

the City's Grand Challenges; on the establishment of a Birmingham Data Charter and organisations committing to it; and on progress towards a city-wide Federated Digital Twin.

## 8.2.6 Business Digitalisation Working Group ToR

### Role

The role of the Business Digitalisation Working Group is to co-ordinate and create synergies between organisations and initiatives providing digitalisation support to Birmingham's businesses, including SMEs. The Group should create a landscape of support available in Birmingham, and seek to create new initiatives where it identifies a lack of support, calling on the Digital Project Development Team for assistance in doing so if necessary. The Group will also act as a two-way channel of communication between the local business community and the Digital City Programme, helping to explore challenges, develop relevant skills and connect support to ideas. The Group should be chaired by an individual with strong knowledge of Birmingham's business ecosystem and who has the confidence of the bodies active in supporting business digitalization.

### Attributes

There are a several existing active programmes and communities from which Members should be drawn, including Birmingham City Council, the GBSLEP, West Midlands Combined Authority, West Midlands Digital Skills Partnership, West Midlands 5G, Birmingham Tech, STEAMhouse, Bruntwood SciTech and others. The first task for an initial Business Digitalisation Working Group would be to properly identify all of the stakeholders that should be involved. Across the diversity of Birmingham's economy, this will be a very large number of relevant organisations and initiatives, so the Group will need to establish a way of working with this broad community whilst keeping its own membership small enough to be functional.

### Management & Reporting

The Group will report its progress regularly to the Digital Board to manage progress and impact.



### 8.2.7 Supporting Teams ToR

Supporting the Digital Board and its Working Groups are staffed teams provided by Birmingham City Council from within its Innovation Team. These staff provide the expertise and resources to develop, deliver and organize the Digital City Programme that are traditionally difficult to provide through a collaborative approach.

### 8.2.8 Digital City Innovation Team ToR

The staff of the Digital City Innovation Team will play three roles in supporting the Digital Board and the Digital City Programme:

- **Digital Project Development**
- **Digital Project Delivery**
- **Secretariat**

Each of these roles is described separately below. The Digital City Innovation Team will report to the Digital Board.

#### Digital Project Development

##### Role:

The Digital Project Development role of the Digital City Innovation Team is to develop project opportunities identified by the Working Groups to the point where they are fully formed proposals capable of securing the funds and resources required to deliver them. This will include:

- Developing project proposals and business cases capable of securing private sector investment
- Developing project proposals and business cases capable of securing funds from public sector sources, grants and competitions
- Identifying third party service providers with offerings that match identified project requirements (i.e. those whose business model includes investing in and operating innovative services such as intelligent mobility)
- Facilitating the formation of collaborative delivery partnerships
- Identify which projects should be delivered by the Digital Project Delivery Team versus which will be delivered by partners

- Procuring solutions and resources from third parties

This role also involves managing a pipeline of project opportunities sourced from the Working Groups. A member of the Digital City Innovation Team with Digital Project Development responsibility should be a member of all three Working Groups so that these opportunities are smoothly captured and developed. In the course of carrying out these activities, they will naturally come into contact with new project opportunities which should be considered by the Active Agents Working Group.

Finally, the Digital Project Development capability should support the Active Agents and Data Working Groups by developing an evidence base to enable informed focus on project identification activities decisions

##### Attributes:

The staff undertaking this role should have expertise in commercial business development, project development, and the securing of funds from public sector and grant sources. They are likely to come from a commercial sales or business development role, and should possess the following skills and capabilities: horizon scanning and technology landscape mapping, relationship development and management, business development and sales, commercialisation, the analysis and scoping of projects and solutions, proposal writing and bid development, pipeline management and business case development.

#### Management & Reporting

The Digital City Innovation Team will report to the Digital Board on the pipeline of project opportunities in development.

#### Digital Project Delivery

##### Role:

The Digital Project Delivery roles is to:

- Report and support delivery of the Digital City Programme
- Manage delivery of and report on some projects within the Programme, particularly those led by Birmingham City Council
- Support and report on progress of projects delivered by partners
- This role and the Digital Project Development role together will provide analysis of new opportunities to identify resource requirements and risks.
- Attributes:
  - The staff fulfilling this role will need to be experienced in working with and managing innovation projects with a large degree of uncertainty. Specifically they should:
  - Have experience in delivering innovation projects, e.g. prototyping, testbeds, living labs etc.
  - Have experience in collaborative projects with a large number of delivery partners
  - Possess project and programme management skills including familiarity with waterfall, agile delivery and other methods
  - Be able to learn rapidly and understand the role of complex digital technologies in developing new solutions.
  - Be resourceful and be able to solve problems in support of projects such as identifying delivery partners and other expertise and resources.
  - Be results-orientated and comfortable with evaluation, lessons learnt and continuous improvement processes
  - Provide project governance and contract/supplier management capabilities including experience of innovative procurement processes (e.g. pre-commercial procurement).

To ensure quality of project delivery, The Digital City Innovation Team could consider limiting the

number of projects in delivery at any given time, with a suggested one-in-one-out rule with no more than five initiatives underway at one time. (This can be scaled up by increasing budgets and resources if required).

#### Management and reporting

The Digital City Innovation Team will report to the Digital Board to share project and programme progress, including risk management

#### Secretariat

##### Role:

The Digital City Innovation Team will support the management, organization and convening of the membership of the Digital Board, and the sub-groups that support it. This includes ensuring effective communications between each group and other interested stakeholders to ensure the work is coordinated, identifying and managing risks, coordinating meetings, reporting and external communications.

##### Responsibilities:

- Meeting logistics including facilities, agenda and minutes
- Overall Programme reporting and communications
- Marketing and branding



8.2.9 Impact of the Governance and Delivery Model





SCENARIO	 STRATEGY & GOVERNANCE	 CITIZEN CENTRED	 DATA AND DIGITAL INFRASTRUCTURE	 SUSTAINABLE DEVELOPMENT
Before Projects & Governance Model	02	02	02	02
After Projects only	03	03	03	03
After Projects & Governance Model	04	03	03	03

Figure 16: Impact of the prioritised projects and governance model on Birmingham’s maturity assessment

The insights gained from stakeholders centred around the lack of co-ordination and council awareness of many disparate projects and programmes occurring across the city. The governance structure has been created to provide a balanced perspective to strategies and programmes that include the needs of the companies, universities, charities and council.

The governance structure will integrate the digital challenges, capabilities, programmes and funding for the city into a single model. This integration and co-ordination will enable the city to act in a more cohesive and effective manner, focusing its’ digital skills on the challenges of most importance to the city.

The governance structure has been created to allow the recruitment of a CDO who can access the skills and expertise in the programme to develop and enhance the programmes of activity. Collectively, the governance structure and the appointment of a CDO will enhance the score of Birmingham as they will gather and focus the skills of local expertise on digital challenges defined by the city.

# APPENDIX A. LIST OF STAKEHOLDERS ENGAGED

## External Stakeholders

Organisation	Stakeholder Names
West Midlands Combined Authority (WMCA)	Adam Hawksbee, Ed Cox, Rebecca Riley
Transport for West Midlands (TfWM)	Mike Waters, John Paddington
GBSLEP	Ed Watson, Henriette Lyttle-Breukelaar
University Hospital Birmingham	Stephen Chilton
West Midlands Police Force	Helen Davis
Bruntwood SciTech	David Hardman
Tyseley Energy Park	David Horsfall
Birmingham Voluntary Services Council	Brian Carr
WM5G	Robert Franks
Lendlease	Ryan Elliott
PWC & Metro Dynamics (Inclusive Growth Strategy Involvement)	Mark Ambler, Patrick White
Western Power Distribution	Jonathan Berry
BeatFreaks	Amerah Saleh
Birmingham City University	Julian Beer
Kier (PFI provider)	Eddie Fellows
SCC	James Greygoose, Daniel Cartter, Olivia Harker
MEPC (Acquired Paradise Circus scheme from Argent)	Rob Groves, Caroline Rudge, Ross Fittall
Harborne Food School/ Food Foundation	Shaleen Meelu

## Internal Stakeholders

Organisation	Stakeholder Names
Interim Chief Executive of Birmingham City Council	Deborah Cadman
Birmingham City Council Leader	Councillor Ian Ward
Birmingham City Council Deputy Leader	Councillor Brigid Jones
Other BCC Officers, Leaders, Councillors and Teams	*Multiple interviews held across BCC

## Questionnaire Responses

Organisation	Stakeholder Names
Aston University	Professor David Webb
University of Birmingham	Professor Iain Styles
Digital Innov8ors	Mick Westman
CX Squared Talent Solutions, The Brum Muse & Our Smart Brum	Dan Hoff-Rodrigues
STEM Learning	Eva Fryc
AbilityNet	Amy Low
CodeYourFuture	Claire Bickley
Trowers & Hamlins	Amardeep Gill
Free@Last	John Street
West Midlands Growth Company	Mike Lewis
Transport for West Midlands	Chris Lane

## APPENDIX B. FULL LIST OF PROJECTS (INITIALLY CONSIDERED)

Focus Area	Project Title	Description
Basic Connectivity	Digital Specification for Property and Infrastructure	"Develop a digital specification for property and infrastructure using Smithfield and Paradise Circus as potential focus areas. - Resilience (robustness and security) - Mobile (coverage and 5G readiness) - Choice (multiple high-speed providers) - User experience (WiFi) - Future readiness (flexibility and capacity)"
Data Sharing	Data Charter	Creation of a data charter which clearly communicates how the city will ethically use data to deliver benefits to citizens and businesses.
Data Sharing	Data Sharing Co-ordination Group	Establishment of a coordination group to drive cross-organisational data sharing.
Basic Connectivity	Regional Full Fibre Business Case Support (Inclusion of BCC Assets)	GBSLEP is creating a business case for regional full-fibre rollouts. BCC should support this business case. Explore the opportunity for council assets to be used to catalyse connectivity investment from the private sector.
Data Sharing	Data Platform, Digital Twin and Data Trust	Digital platform to enable city-wide data sharing. Could build upon the City Observatory or leverage private sector platform. Strong relevance to inclusion and sustainability. Bringing city data together into a platform to predict and simulate future situations to enable smart infrastructure investment decisions
Social Inclusion	CSR Matchmaking Platform	Create a platform that allows private sector companies to browse and fund social-purpose initiatives put forward by community organisations.
SME Support	Sector-Specific Digital Adoption Programme	Support and expand existing programmes, which aim to support SMEs adopting new technology, e.g. WM5G's sector-specific 5G adoption programme. Join these programmes together into a more cohesive city-wide network.
Data Sharing	Proactive Maintenance and Stock Monitoring	Investing in IoT devices and associated platform that can help monitor the property assets of the Council, both operational and social housing stock, to reduce running costs, highlight issue areas and reduce utility costs for residents. (Could link with Digital Sustainability Pilot Area)
Net Zero	Digital/Sustainability Pilot Area	Creation of a pilot area in Druids Heath or Perry Barr which would focus on the use of smart appliances and other technologies for reducing carbon impact
Net Zero	City-wide EV Charging Infrastructure	A comprehensive city-wide deployment of EV charging infrastructure
Basic Connectivity	Connected Tram Connectivity Usage	Explore whether the fibre being laid as part of the tram network can be used as a neutral host network to improve connectivity.
SME Support	Digital capabilities evidence base	Develop an evidence base to map the digital capabilities of SME's in terms of the capabilities (e.g. basic digital readiness, to AI, ML capabilities) and what support they need for adopting digital technologies and digital ways of working e.g. aligned to / building on HMG 'Made Smarter' initiative. (Precursor to sector-specific digital adoption programme)

Social Inclusion	IoT in Care Settings	Using IoT devices in properties where residents are receiving care services to support the provision of in-person care, support independent living, and reduce loneliness and social isolation.
Social Inclusion	Community Engagement Characterisation	Continue and expand community characterisation work to better understand how to effectively engage with each community. Could link to Digital Twin initiative. A social equivalent of the West Midlands Science and Innovation Audit?
Employment	Mapping of Employment Support Initiatives	Mapping and alignment of employment support and skill development initiatives taking place across the city.
Social Inclusion	Youth Engagement Platform - Project Proposal, Voting and Funding	Building on Vienna's youth engagement initiative, providing a platform and fund where kids 5-18 or school classes can submit project ideas, vote for their favourite and receive funding. (Could be a permutation of civic crowdfunding initiative - ideas have to come from children?)
Aspiration	Expansion of NCCE Programme	Expansion of programme that trains teachers to be able to deliver computer science classes to school children.
Social Inclusion	Civic Crowdfunding Initiative	Launch a civic crowdfunding programme that allows communities to put forward project ideas and provides a degree of match funding.
Employment	Digitalisation of Serendip Ideator Programme and Engagement with Skills	Physical programme that engages disenfranchised students and takes them through a process that connects them with job opportunities at sponsoring companies. If digitised, the programme could expand to support 1000s of students.
Aspiration	Schools Innovation Fund	Establishment of a fund that schools can apply to to fund innovative initiatives that allows schools to invest in innovative programmes of their choosing.
Basic Connectivity	Device Recycling Scheme	Create a scheme which allows the council and other businesses to flag when they are replacing/upgrading their digital devices (computers, phones, etc), and allows them to be redistributed to schools, community centres, the voluntary sector, etc
Basic Connectivity	Rolling out of Low Power Wide Area Networks (LP-WAN)	Roll out of city-side LPWAN network to support the deployment of IoT devices - allowing them to communicate back to central platforms without multiple providers having to install own networks.
SME Support	Edge Computing Centre	Create an edge computing centre in the Knowledge Quarter to attract FinTech and PropTech start-ups.
SME Support	Joint Public/Private Investment Fund	Establish a joint public/private investment fund to kick-start the venture capital ecosystem in the city.
Social Inclusion, Aspiration	Youth Council	Paid scheme where young people (16-30 years) across Birmingham are aligned with roles across the council. Older workers will learn new perspectives from their younger counterparts while the youth of Birmingham gain a better understanding of how the council works and the challenges it faces
Data Sharing	Open Innovation Roadmap	Develop a series of challenge-based competitions to make use of the data being shared to solve city challenges.
SME Support	Knowledge Quarter 5G Testbed	Support the establishment of an area-wide 5G testbed across the Knowledge Quarter.



Data Sharing	Modelling Retrofit Potential	Using data to determine which properties would most benefit from retrofit - this could probably be a primary use-case for the for the data sharing initiatives listed above
Data Sharing	Housebuilding	"Housebuilding 2035: develop a platform that holds info on every piece of material that has been utilized in the the building of a home. Develop a virtual plan that shows the fabric of the building and how it's been built, and where all the wiring is up. Enable platforms to talk to each other."
Data Sharing	Property	Develop current system to hold more information for better decision making. For example, in the way it captures info on running costs, repair and maintenance schedules. E.g. A library - match that with the service to say which is the building that's best used, is delivering best outcomes for the local community - even information such as how many library books are taken out per day. Empower property decision makers to have fuller picture of wider landscape.
Net Zero	Expansion of TEP Green Transport Initiatives	Exploration of further initiatives using hydrogen transport.
SME Support	Back-Office Digitalisation Platform	Provision of a SaaS based platform which SMEs can use to deliver back-office functions such as HR and finance.
Public Service Optimisation	Waste Management	Capitalise on local authority's waste management assets - e.g. digitise communications and put them on the side of waste collection trucks. Attach a device to every vehicle to record issues on the street.
Public Service Optimisation	Waste Management	Waste 2035 Vision: develop system that allows data to stream to operator's device, providing info on maintenance schedules, when it will be collected, when it was last cleaned, when it's due to be cleaned, who owns the land, etc.
Data Sharing	Property	"Develop a comprehensive platform that allows all property ownership information to be extracted in an area, identifies redevelopment opportunities, vacant land, is linked to planning portal, house price data, allows baseline viability assessments, a high-level assessment.  The system can identify what fits with the local plan and what does not have planning permission etc. takes out human error. "
Food	Sustainable Urban Food Security Demonstrator	Requires definition - large group session with food stakeholders on 12/10
Aspiration	Innovation in Early Years Development	Requires definition - upcoming interviews will inform this
Public Service Optimisation	Security	Develop a system of gathering CCTV footage from doorbells so enforcement action/criminal prosecutions can occur - use those analytics to highlight what core issues are.
Data Sharing	Data	Create a way of capturing data, intelligence and insights from Birmingham universities - group it and make it open for use.