

Delivering the aspirations for a Digital Birmingham:

Digital City Programme

Executive Summary

January 2022

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00 FOREWORD

I am pleased to introduce you to 'Delivering The Aspirations for Birmingham', our Digital City Programme for Birmingham.

Birmingham is standing on the cusp of a 'golden decade of opportunity'. Never before have we had so much to look forward to – from the Birmingham 2022 Commonwealth Games, catapulting our city onto the world stage, to the arrival of HS2 at the end of the decade, bringing thousands of new jobs and billions in investment to people's doorsteps.

After the difficulties of the pandemic, Birmingham is ready to step forward into a new era, 'levelling up' our city and taking a fresh approach to the 'grand challenges' that continue to hold back our communities. We know that the world is changing. By 2025, 44% of the activities carried out in workplaces today will be digitalised. New global challenges such as the climate emergency mean that we will need to drastically rethink many areas of our lives, from how we live and travel, to where we work and access services, and even how we socialise. Longstanding social issues, such as deprivation and health inequalities, continue to prevent many of our citizens from fulfilling their potential and achieving their aspirations.

A decade of opportunities awaits our city – and the key to seizing those opportunities is digital. Our success in tackling our grand challenges will depend on the development of a transformative

digital strategy, changing how we work with our communities and local places, and accelerating a range of new economic opportunities for the city.

At the same time, we know that the development of new digital technologies and infrastructure is not enough. To truly level up our city, we have to take the same innovative approach to our relationships and models of collaboration – thinking big, while acting locally. Coordinating and streamlining activity on a city-wide scale, while harnessing the power of community-led innovation and delivering local projects in our neighbourhoods. From our public sector partners to the private sector, we all have a role to play in the creation of 'Digital Birmingham'.

The five themes outlined in this programme will equip Birmingham's institutions, communities and businesses with the digital infrastructure, platforms and enablement programmes required for our city to thrive in this new era. It sets out a bold ten year plan, supporting key agendas such as Net Zero and levelling up, while also generating over £1 billion in economic, social and productivity benefits for the city.

But this programme is just the first step of a much larger ambition to establish Birmingham as a world leader in digital. Not just adapting or thriving in the new digital era – but leading the way, helping to secure a more prosperous and inclusive future not just for Birmingham, but on a global scale.



Councillor Brigid Jones
Deputy Leader, BCC

01 INTRODUCTION

Birmingham has a huge heritage, its size, diversity and culture are some of its greatest assets. It is often described as the City of 1,001 different trades. However, over the years as the City continues to embrace the opportunities that technology offers, with an ever expanding digital and technology ecosystem, it has emerged as the City of 1,001 digital trades.

Birmingham is at the forefront in recognising the important role that digital technologies and data plays in supporting sustainable economic growth, innovation and enabling citizens to gain the opportunities to live, work and play in an ever-changing world. In 2014, it published its "Roadmap for the Smarter Birmingham" setting out an ambitious plan to build capability and capacity for digital innovation across the City. Today, many cities are in the process of making themselves smart, using data and technology to improve transport, energy use, health and air quality or to drive economic growth.

In Birmingham, we know that digital cities will change together with the advance of computing and network technologies and the pandemic has further accelerated opportunities. No digital city can remain at its current status and that's why I am pleased that Birmingham is continuing to develop its Digital City Programme

Our Digital City Programme has been developed through city wide stakeholder engagement, and a digital maturity assessment benchmarked against other leading digital cities, and this has helped us to identify some of the key themes and activities that will support the City to continue its journey in achieving its key outcomes for increasing digital investment, securing Birmingham as a place for digital innovation and establishing it as a leading international Digital City.

This Programme recognises the strength of the existing technology and data ecosystem within Birmingham, and aims to build on that expertise. Our role in the Council is to play a key convening role, providing leadership where needed, so that we bring together talented organisations and showcase the many innovative projects and activities happening right now within the City. Working together, we can continue to build a pipeline of opportunities that will position Birmingham as a leading digital city.

As the Council's Digital Champion, I look forward to working with stakeholders and partners across the City to take forward this exciting Programme and in developing our collective approach to address major city challenges by maximising the opportunities that technology offers



Peter Bishop
Director Digital & Customer
Services, BCC

02 WHY DIGITAL?

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.

Transforming Birmingham for a Digital World

Since 2020, the COVID-19 lockdowns have further accelerated the use of digital services, 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.

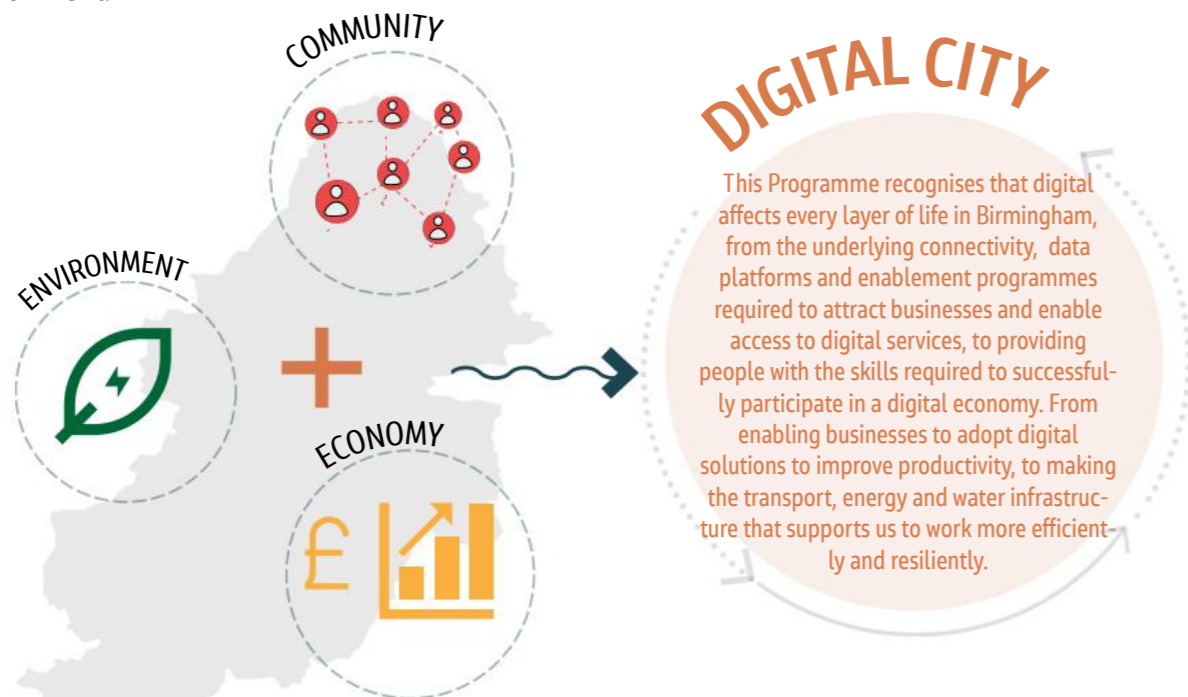
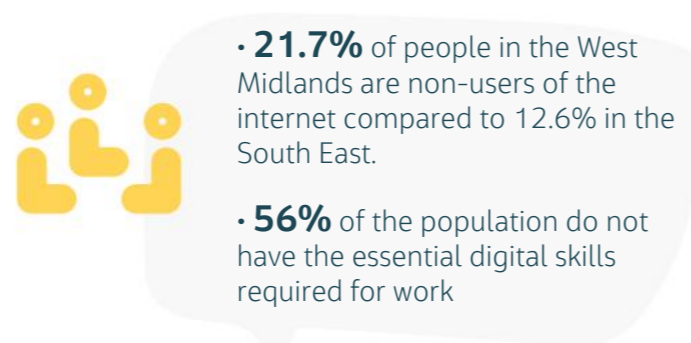


Figure 1: Digital City Programme will play a crucial role in the economic, social, and environmental functioning of a city.

Transforming Birmingham's Economy



Transforming Birmingham's Communities



Transforming Birmingham's Environment



03 CONTEXT: Digital Birmingham & BCC Major Challenges

Contributing to the major challenges

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 major 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, 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, overseeing delivery and promoting the City reputation as a Digital Birmingham.

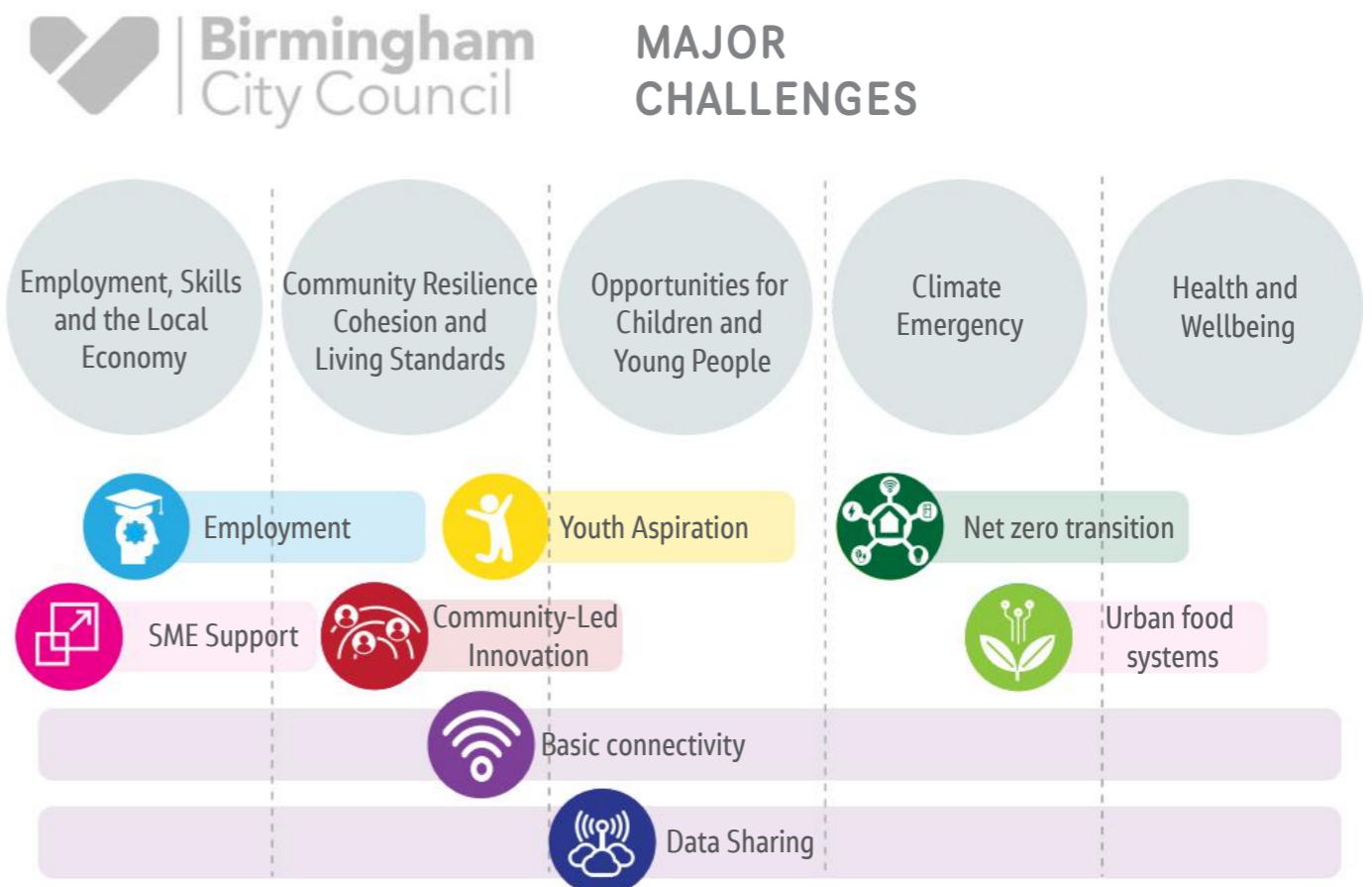


Figure 2: Identified focus areas in relation to Birmingham's major challenges

04 APPROACH: Birmingham Digital City Roadmap

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.

The Digital City Roadmap approach ensures a direct chain of logic from city challenge or weakness, through to the projects that have been taken forward for development.

The approach ensures a city-wide collaborative effort, relating back to the guiding principles of the City's Grand Challenges

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. The steps to this approach include:

- 01 Stakeholder Engagement
- 02 Maturity Assessment
- 03 Programme Roadmap & Business Cases:
- 04 Governance

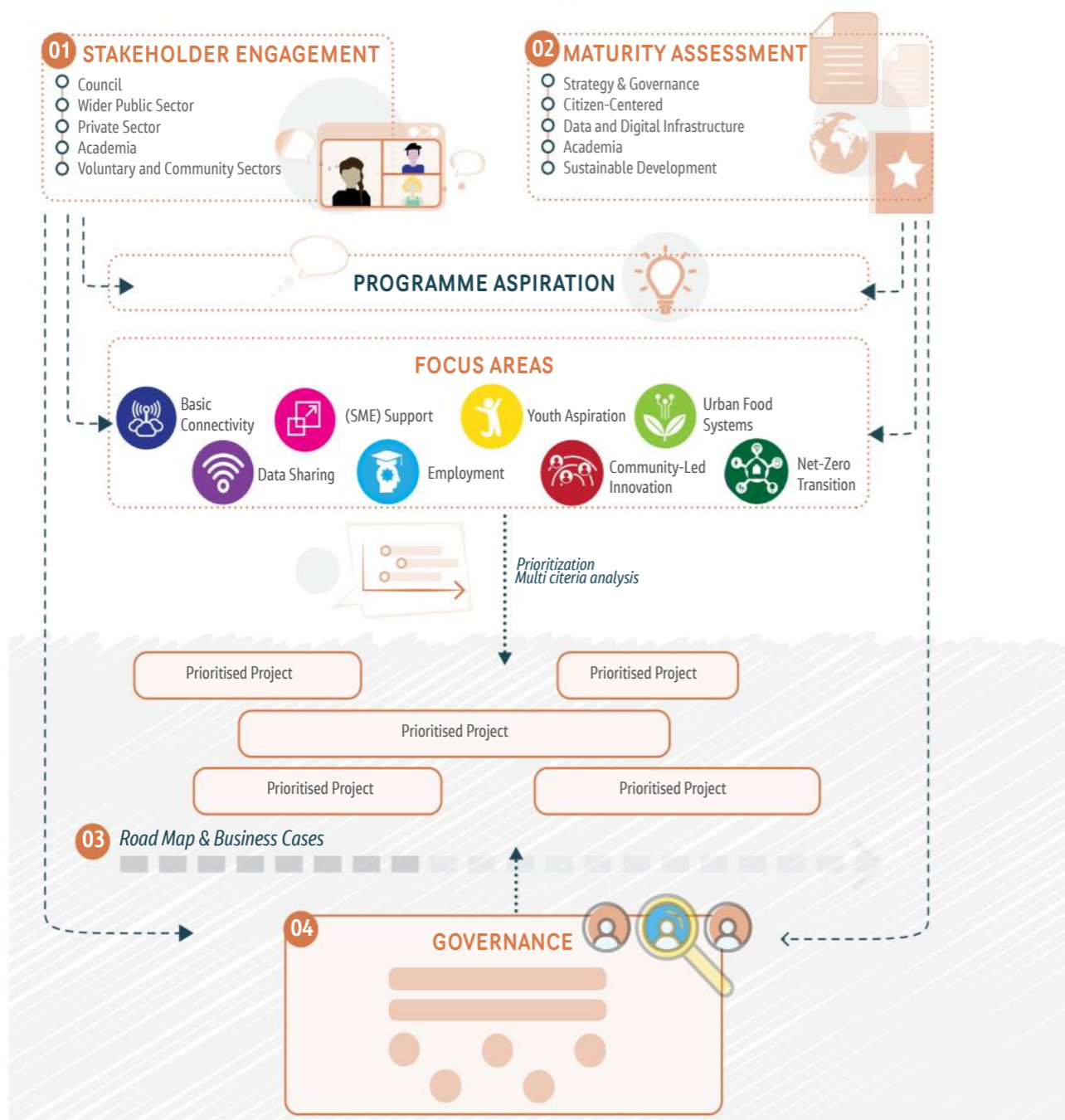


Figure 3: Digital City Roadmap Approach

05 ASPIRATION: Providing opportunity for all residents and communities

Digital will contribute to and augment Birmingham's aspirations, adding to existing and complementary initiatives across the city.

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.

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:

The Digital City Programme objectives establish Birmingham as a preferred place of choice for digital innovation, Increase levels of digital investment, enable Birmingham to be a recognised leading Digital City – "Digital Birmingham" and ensure Council services utilize new technologies and innovative solutions.

The Digital City Roadmap has utilised learnings from stakeholder engagement, maturity assessment exercises and taking into account the emerging city challenges to create a city-wide set of aspirations that ensure the aims of the city are encompassed. This will enable the Digital City Programme to contribute to the most pressing challenges of the city.



Figure 4: Programme Aspiration

06 STAKEHOLDER ENGAGEMENT

Jacobs and the Connected Places Catapult undertook an extensive programme of stakeholder engagement, conducting over 35 interviews with internal Council and external city stakeholders. The exercise aimed to:

- **Understand Birmingham's current challenges and opportunities for digital intervention**
- **Provide information to accurately benchmark Birmingham**
- **Identify potential Digital City project ideas and existing complimentary initiatives.**
- **Define suitable governance arrangements**

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

 <p>Basic connectivity Poor fixed digital connectivity and the associated digital exclusion is a major challenge. If left unresolved this will limit the productivity and growth of existing businesses and fail to attract and retain new businesses in the area.</p>	 <p>Urban food systems In addition to its impact on health and wellbeing, changing food consumption habits is a key component to achieve the city's carbon neutrality targets. Birmingham has a thriving food and drink manufacturing sector and these businesses could be involved in an initiative to increase the resilience of Birmingham's food supply chain.</p>
 <p>Data sharing Birmingham is a 'data poor' city. There is a strong need for data sharing programme that have a clear purpose and are focused on a range of clear use-cases that are meaningful for the public, private and academic sectors, as well as citizens</p>	 <p>Small and Medium Enterprise (SME) support 97% of Birmingham's businesses are SMEs. This SME community faces many challenges due to a wide digital skills gap and low investment in the city's start-up ecosystem.</p>
 <p>Community-led innovation Social inclusion was identified as the most important objective for the Digital City programme. There is a need for driving community-led innovation and delivering significant impact through the enablement of a large number of highly localised projects.</p>	 <p>Employment Despite having a large number of programmes that aim to connect people with employment opportunities or equip them with digital skills, the city has high rates of unemployment and unfilled vacancies.</p>
 <p>Net zero transition The council is committed to making Birmingham carbon neutral by 2030. Housing and transport are the key areas of intervention identified by all stakeholders.</p>	 <p>Youth aspiration Given Birmingham's youthful population, stakeholders wanted to explore whether the city could become a pioneer in early years development and aspiration setting</p>

During our engagement exercise stakeholders highlighted several wider recommendations that they feel will be critical to the successful delivery of any Digital City Programme:

<p>Localised Delivery</p>  <p>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.</p>	<p>Attitude to Failure</p>  <p>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.</p>
<p>Trust</p>  <p>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</p>	<p>Leadership</p>  <p>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</p>
<p>Coordination</p>  <p>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 aim to better coordinate existing initiatives, facilitate streamlined end user access</p>	<p>Inclusive Growth</p>  <p>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.</p>
<p>Shift of Focus to Prevention</p>  <p>Stakeholders were advocates of a transition in approach, away from reactive action and moving towards prevention and prediction.</p>	<p>Identity and Reputation</p>  <p>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.</p>

07 MATURITY ASSESSMENT

City Comparators

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.

The assessment benchmarked Birmingham's current level of digital maturity against five other global cities. Comparison cities were selected based on their similarities to Birmingham in terms of diversity, population and density, and governance structure. A global exemplar (Singapore) was also included.

Connected Places Catapult Maturity Assessment Model

The assessment is a holistic approach covering a broad set of capabilities that are needed to maximise the opportunities that digital provides to deliver citywide 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 maturity model:

- Strategy and Governance
- Citizen-Enabled Delivery
- Data and Digital Infrastructure
- Sustainable Development

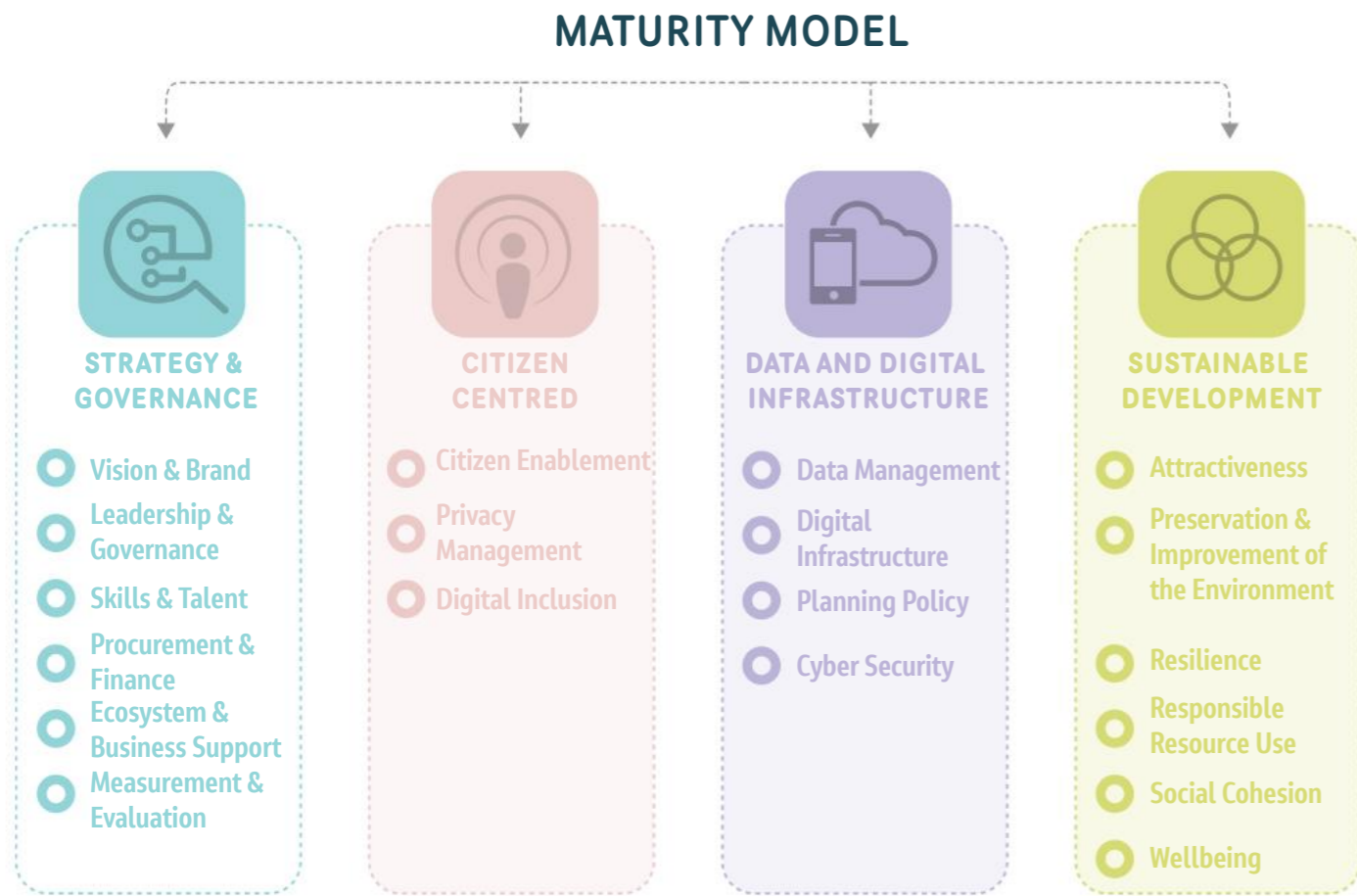
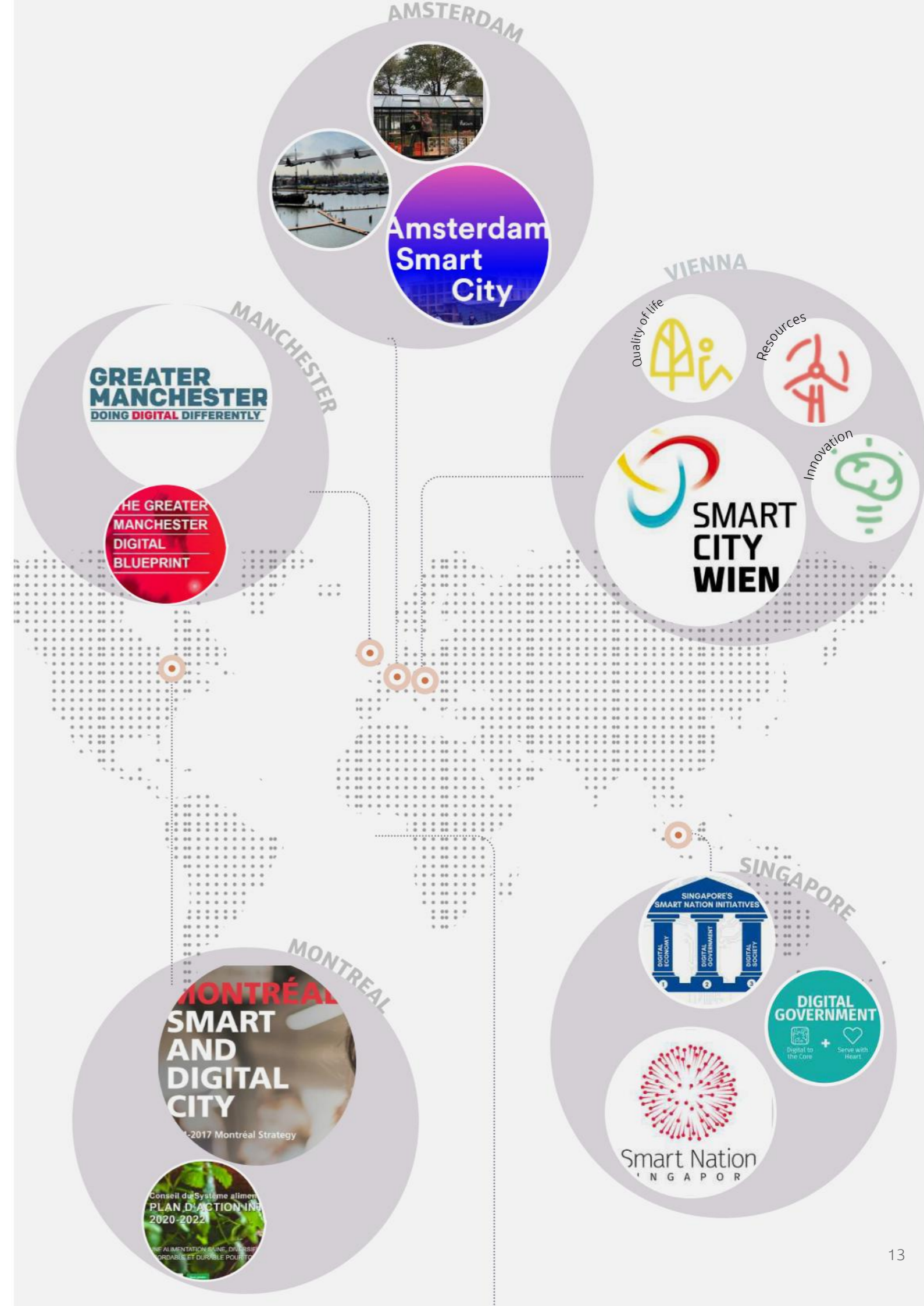


Figure 5: Digital City Maturity Model



Maturity Assessment: Results

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 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.

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

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 6: Digital Maturity assessment

08 PROJECT SELECTION & ROADMAP DEVELOPMENT

How projects were selected

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.

~40 projects were selected based on background research, stakeholder engagement, and the maturity assessment which directly address challenge areas or weaknesses. The projects span the following focus areas:

'The multi-criteria analysis to select projects to be prioritised considered the challenges of the city. As the scoring highlighted Employment, SME Support and Aspiration focus areas as being focused on heavily across other city-wide schemes, the initial prioritised projects focused on different challenge areas. The Medium-term Roadmap on page 31 highlights potential future project selections.

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

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 categories listed below:






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

09 ROADMAP THEMES & PRIORITISED PROJECTS

We have selected the highest scoring projects from our multi-criteria analysis and aligned them under the prioritised themes, linking back to the stakeholder engagement work. These are highlighted below and on the following pages:

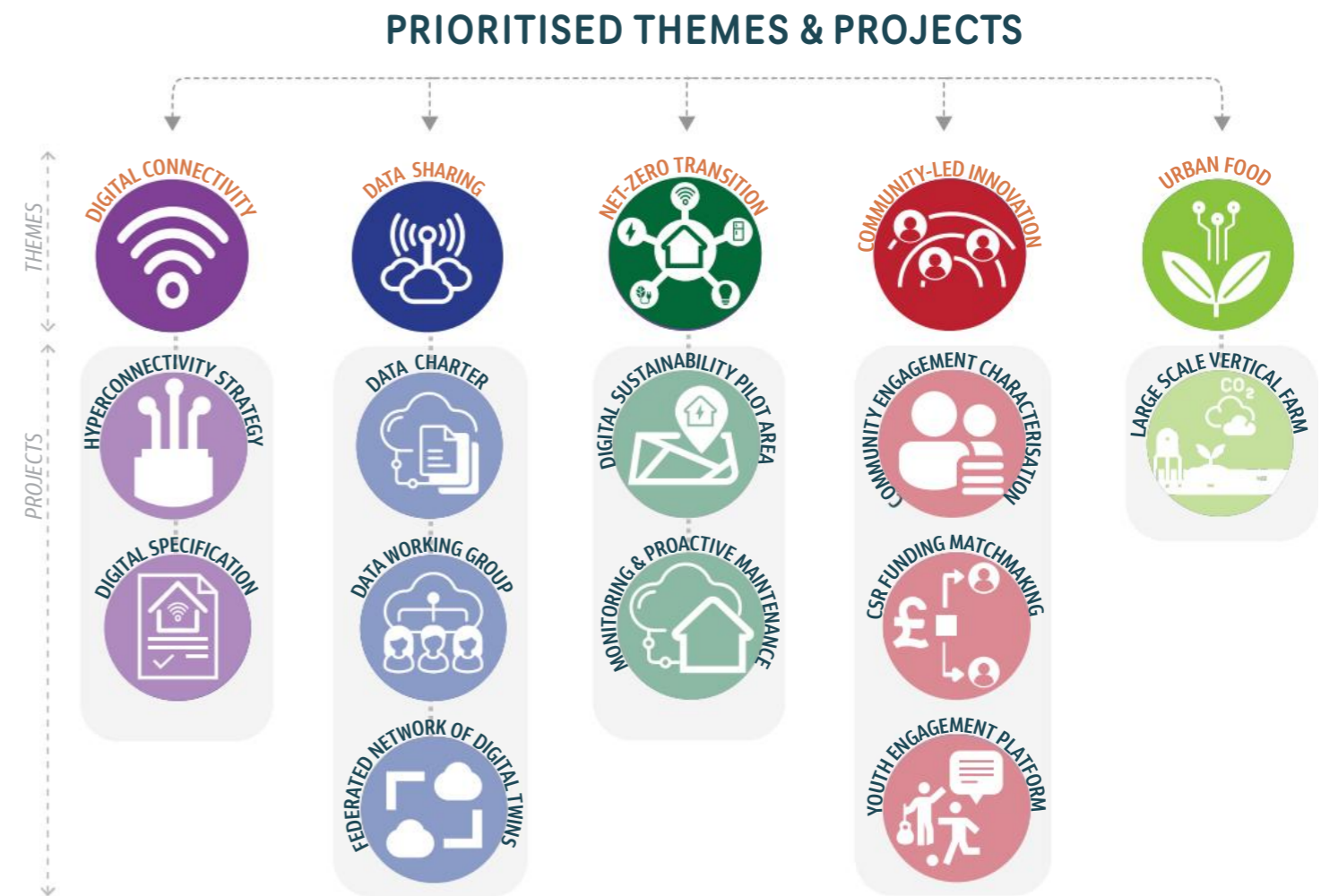


Figure 8: Prioritised themes and projects

Digital Connectivity Foundations

The challenge

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



“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

Proposed Projects

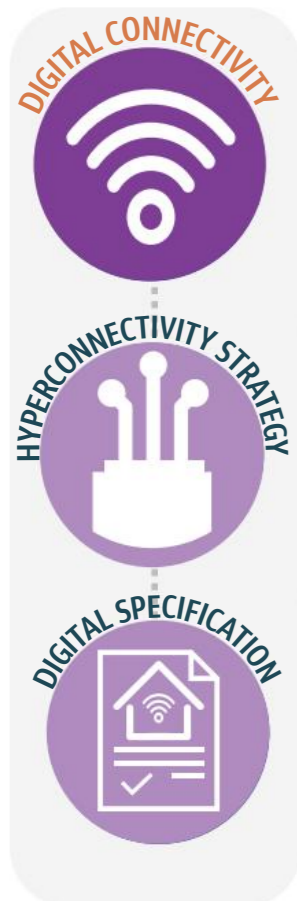
Two projects will address the need for widespread deployments of 5G or IoT network connectivity to support future technology use-cases. This will also modernise the city’s existing policy environment that influences the ease, cost, and speed of connectivity deployments. These interventions complement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

1. Birmingham Hyperconnectivity 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.

2. Digital Specification for Property and Infrastructure

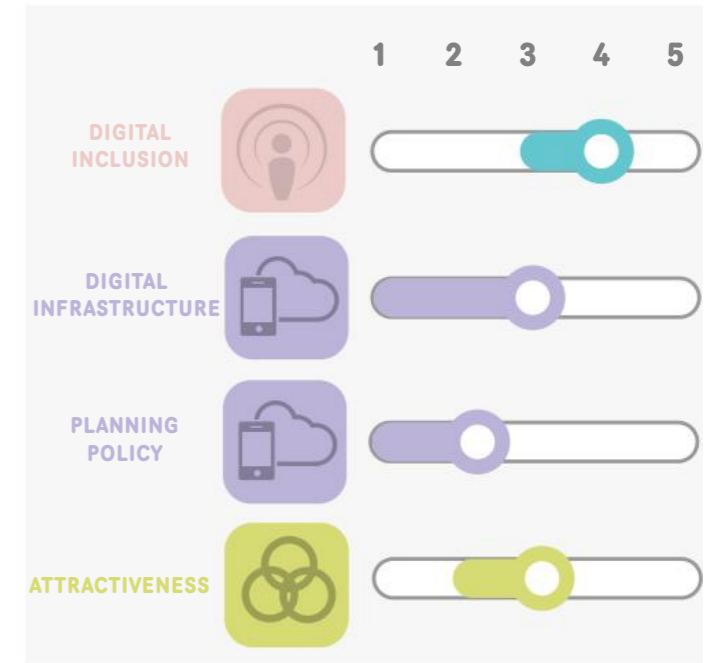
This proposes the development of a digital specification for property and infrastructure to ensure that in the future, major investments and interventions that reshape Birmingham, invest in digital infrastructure and services in a way that balances benefits for developments with benefits for the wider city.



Benefits to the People of Birmingham

- Increased investment and accelerated roll-out of 5G and other smart technologies such as LPWAN and IoT networks. This in turn will increase the attractiveness of areas of Birmingham for inward investment and enable businesses and service delivery organisations to utilise future connectivity technologies to improve productivity and service delivery outcomes.
- By making it easier, cheaper, and faster to deploy connectivity infrastructure in Birmingham, this project should lead to increased deployment activity on the part of the connectivity providers. This will lead to increased levels of direct job creation in digital infrastructure delivery. As these policies often allow less commercially viable areas to attract connectivity providers, it is also likely to result in improved social and digital inclusion outcomes.
- This will increase investment in digital connectivity and will also increase the attractiveness of recently developed or re-developed sites. Businesses or communities on these sites will likely enjoy higher levels of productivity and if investment is successfully

Digital City Maturity Impact



Potential Economic Impact*

£760m

In the form of increased productivity across business and consumer sectors

£41m

In the form of residential social value / wellbeing benefits

£19m

In the form of increase residential property values



Next Steps



The immediate next steps 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.

*Figures reflect potential benefits from high-level economic assessment of the impacts of the proposed interventions. The high-level analysis reflects the early stages of project development, and any numbers should be treated as indicative of the potential type, direction and scale of impacts that could materialise, rather than precise estimates/forecasts.

Data Sharing

The challenge

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.



Proposed Projects

By embracing data and the benefits it brings, cities have a tangible opportunity to improve society and grow their economies. 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. The Digital city programme proposes delivery of the following three projects under this theme:

1. 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.

2. 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.

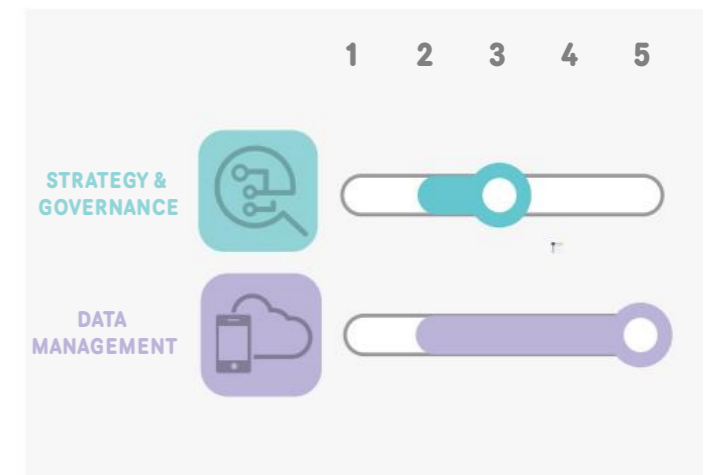
3. Federated Network of Digital Twins

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.

Benefits to the People of Birmingham

- Creating a community of data owners who will contribute to Birmingham's data ecosystem
- The data sharing group role 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. The growth in available data will provide many more opportunities for businesses to start, grow and flourish in the city.
- A Federated Network of Digital Twins is a highly ambitious aspiration that would not only see Birmingham leading the way in terms of city data sharing nationally, delivering benefits for its citizens and city organisations, but will also provide a platform to attract high profile businesses requiring data to drive their innovation agendas.

Digital City Maturity Impact



Potential Economic Impact*

£145- £436m

In the form of GDP Impacts due to open access data

£5.2m

In the form of Employment Impacts of open access and move to higher value jobs

£18.1m

In the form of potential use case, savings - Not in Education, Employment or Training (NEETS)

Next Steps

The immediate next steps include:

- 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.

*Figures reflect potential benefits from high-level economic assessment of the impacts of the proposed interventions. The high-level analysis reflects the early stages of project development, and any numbers should be treated as indicative of the potential type, direction and scale of impacts that could materialise, rather than precise estimates/forecasts.

Digital Sustainability

The challenge

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.

“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

Proposed Projects

The two projects proposed under this theme 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:



1. 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.

2. 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.

Benefits to the People of Birmingham

- The projects will help to alleviate levels of fuel poverty and in turn have significant impacts on supporting better health and wellbeing outcomes, specifically for elderly and vulnerable residents. In turn, this will reduce residential carbon emissions and contribute to the achievement of Birmingham’s net zero ambitions.
- The deployment of sensors will generate data which will allow BCC to better manage and maintain their property assets.
- The data will enable early intervention, both in terms of physical property maintenance but also in matters of tenant health and wellbeing, generating significant cost savings and social benefits. These cost savings can be passed on to tenants and/or used to further improve the properties and surrounding environments, which will result in uplifted property values

“Just recently a 65-year-old man and a 75-year-old man came to us because they were faced with the dilemma of choosing whether to heat the house or to eat - it’s one or the other,”

Imran Hameed, the founder of the Salma foodbank in Smethwick, September 2021

Potential Economic Impact*

£11.7m

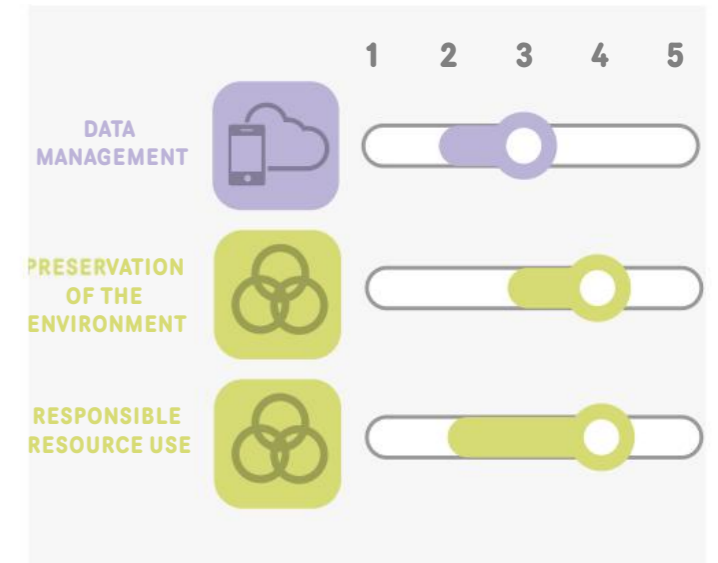
In the form of uplift in council property values.

£1.5-1.8m

for the pilot phase areas for the following:

- Reduced carbon emissions
- Reduced utility bills for residents
- Improved health and wellbeing outcomes and cost reductions for the NHS

Digital City Maturity Impact



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.

*Figures reflect potential benefits from high-level economic assessment of the impacts of the proposed interventions. The high-level analysis reflects the early stages of project development, and any numbers should be treated as indicative of the potential type, direction and scale of impacts that could materialise, rather than precise estimates/forecasts.

Community-Led Innovation

The challenge

Birmingham is ranked as the 7th most deprived authority in England and 37% of the city's children grow up in poverty. 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.



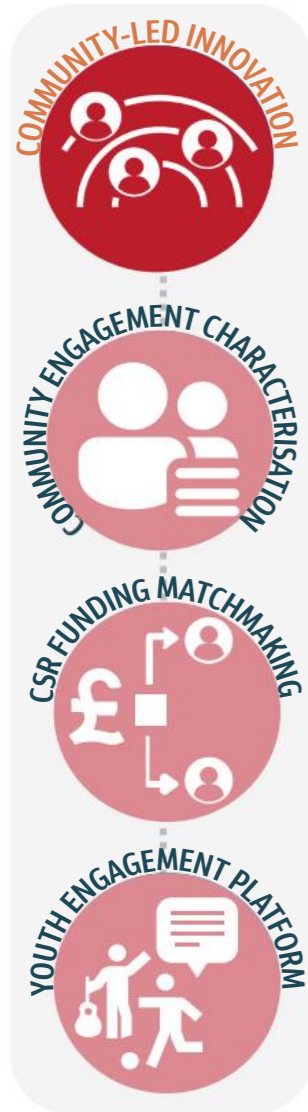
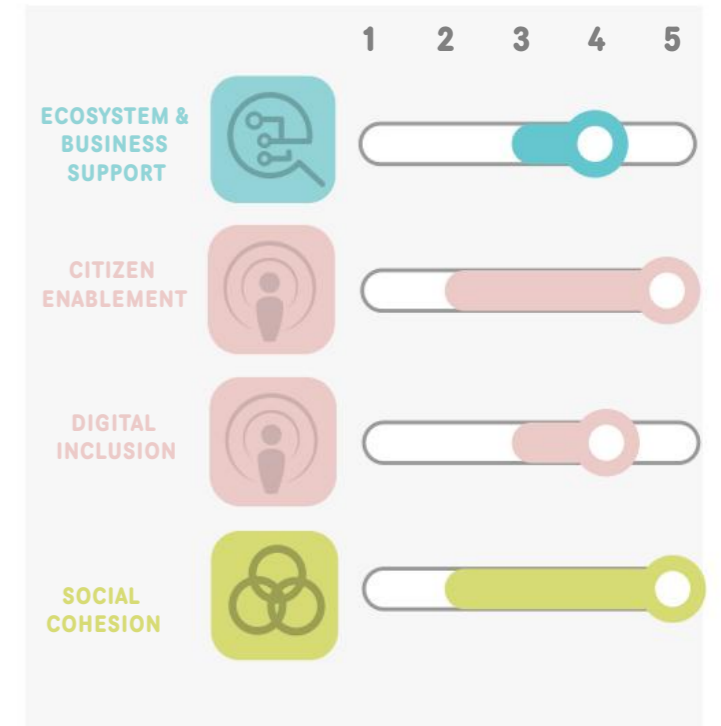
"Inclusive Growth is about all of our residents being able to touch, taste and feel the benefits of rising prosperity within the region. The West Midlands is on the rise again – but we know it will take a proactive, targeted approach to ensure that those communities currently left behind can play a full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

Deborah Cadman, CEO WMCA, September 2018

Benefits to the People of Birmingham

- Increased amounts of funding being made available to VCOs, particularly in the wake of lost European income sources and the Covid-19 pandemic, giving rise to increased direct outputs from CSR activities in the city. Such a platform would also reduce the costs of developing funding applications and democratise the distribution of funding across such organisations.
- Increased levels of trust and engagement with Birmingham's young population, which in turn empowers them to contribute to improving the lives of their peers and wider communities.
- In terms of more quantifiable benefits, we anticipate this initiative will result in a reduction in the number of young adults not in education, employment, or training (NEETs) across the city.

Digital City Maturity Impact



Proposed Projects

This theme consists of three 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:

1. 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.

2. 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.

3. 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.

Potential Economic Impact*

£45.84m

per annum in the form of benefits relating from:

- Access to a wider set of funding opportunities for third sector organisations
- Increased direct outputs (donations, in-kind contributions, and beneficiaries)
- Reduced numbers of people not in education, employment, or training (NEETs)
- Reduced levels of general unemployment and fewer residents in poor / very poor health.

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 Beatfrees) 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.

*Figures reflect potential benefits from high-level economic assessment of the impacts of the proposed interventions. The high-level analysis reflects the early stages of project development, and any numbers should be treated as indicative of the potential type, direction and scale of impacts that could materialise, rather than precise estimates/forecasts.

Urban Food System

The challenge

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.

Economically, the UK imports around 50% of the total food consumes. 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. 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.

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.



Proposed Project

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.

Benefits to the People of 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.

Expected environmental benefits include:

- Reduction of carbon emissions from food production and importation
- Reduction in water usage in farming and a decrease in the use of environmentally harmful fertilisers

Expected Social benefits include:

- Engage the surrounding communities in local food production methods
- Inspire the people of Birmingham to adopt healthier diets.

Expected Economic benefits include:

- Create high value jobs in the Tyseley area
- Start shifting the demographic of farmers in the UK

Potential Economic Impact*

£1.7m

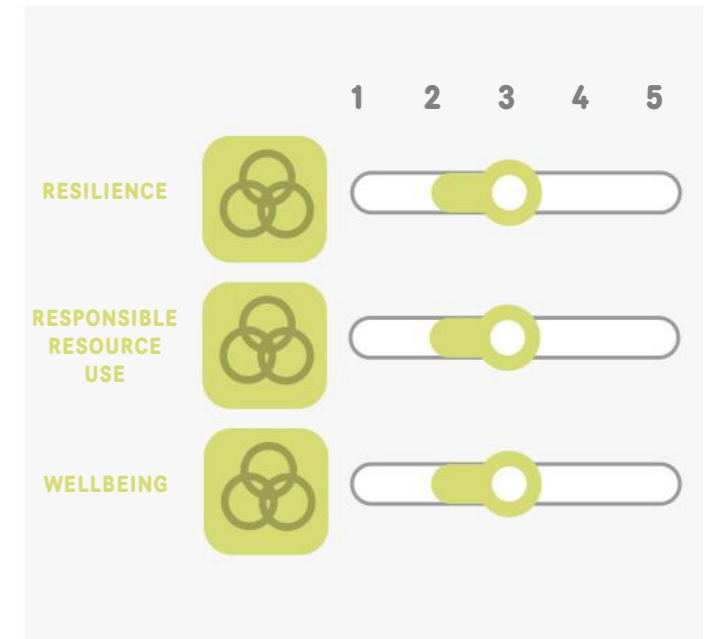
Per annum from the creation of operational stage high value jobs in the Tyseley area.

£447k

per annum across the following impact areas:

- Water bill savings
- CO2 emissions
- Reduced food miles.

Digital City Maturity Impact



Next Steps

The immediate next steps for this project include:

- Hold meeting with Harvest, Veolia and Tyseley Energy Park
- Understand how best the Council can help move the project into delivery.
- The planning and delivery of this project will be driven by Harvest and their investor.

*Figures reflect potential benefits from high-level economic assessment of the impacts of the proposed interventions. The high-level analysis reflects the early stages of project development, and any numbers should be treated as indicative of the potential type, direction and scale of impacts that could materialise, rather than precise estimates/forecasts.

10 INDICATIVE ROADMAP FOR THE DIGITAL CITY PROGRAMME

The below roadmap provides an indicative view of the themes and projects delivery timescales.

It is comprised of a number of projects that can deliver benefits in the short-term, and require minimal capital funding. These projects will pave the way for larger, transformational projects that can be delivered over longer timeframes.

Together, these projects strike a balance between short-term benefit realisation and long-term sustained impact.

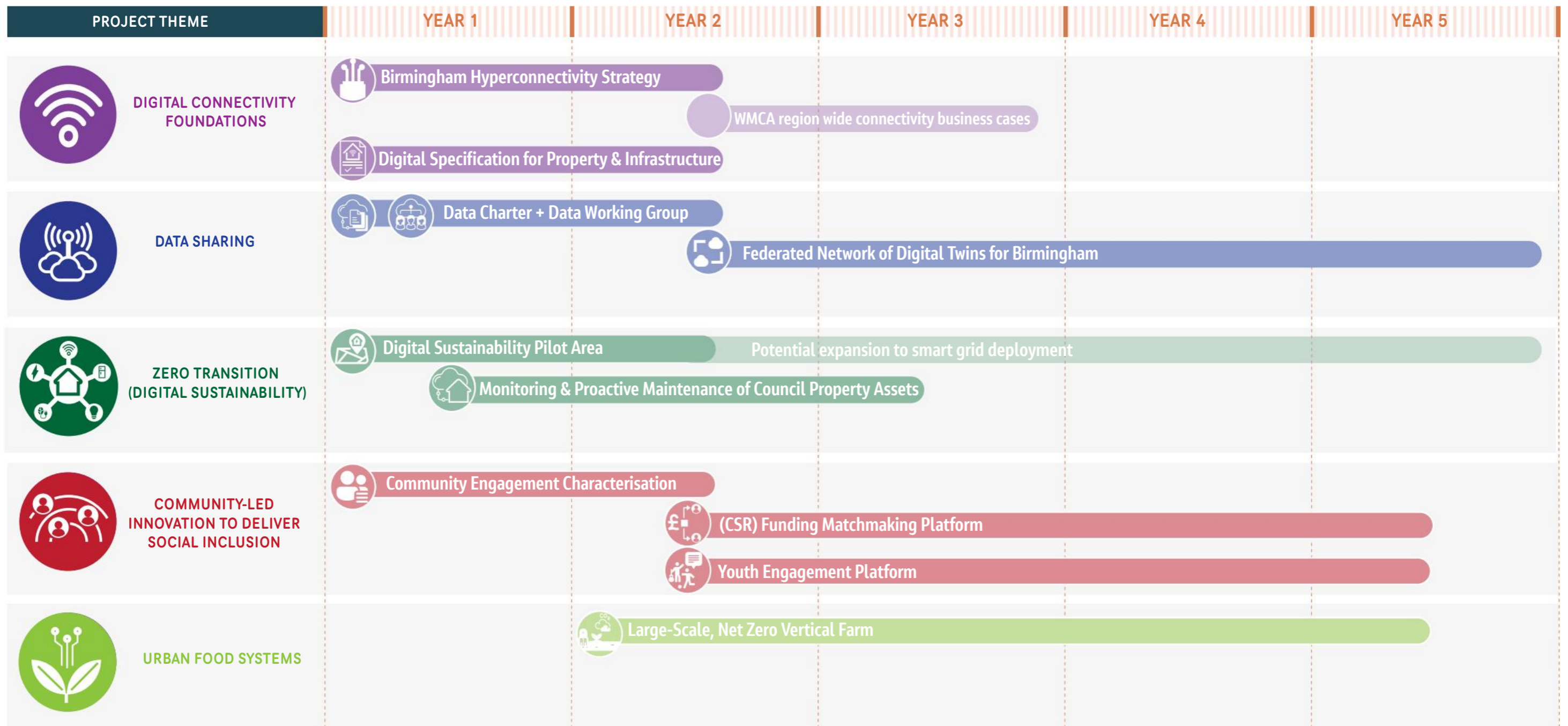


Figure 9: Indicative Roadmap for the Digital City Programme

Medium-term Roadmap

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 highlights 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, as well as potential new interventions highlighted 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 are highlighted as emerging technologies that are likely to have a significant impact in cities and communities.

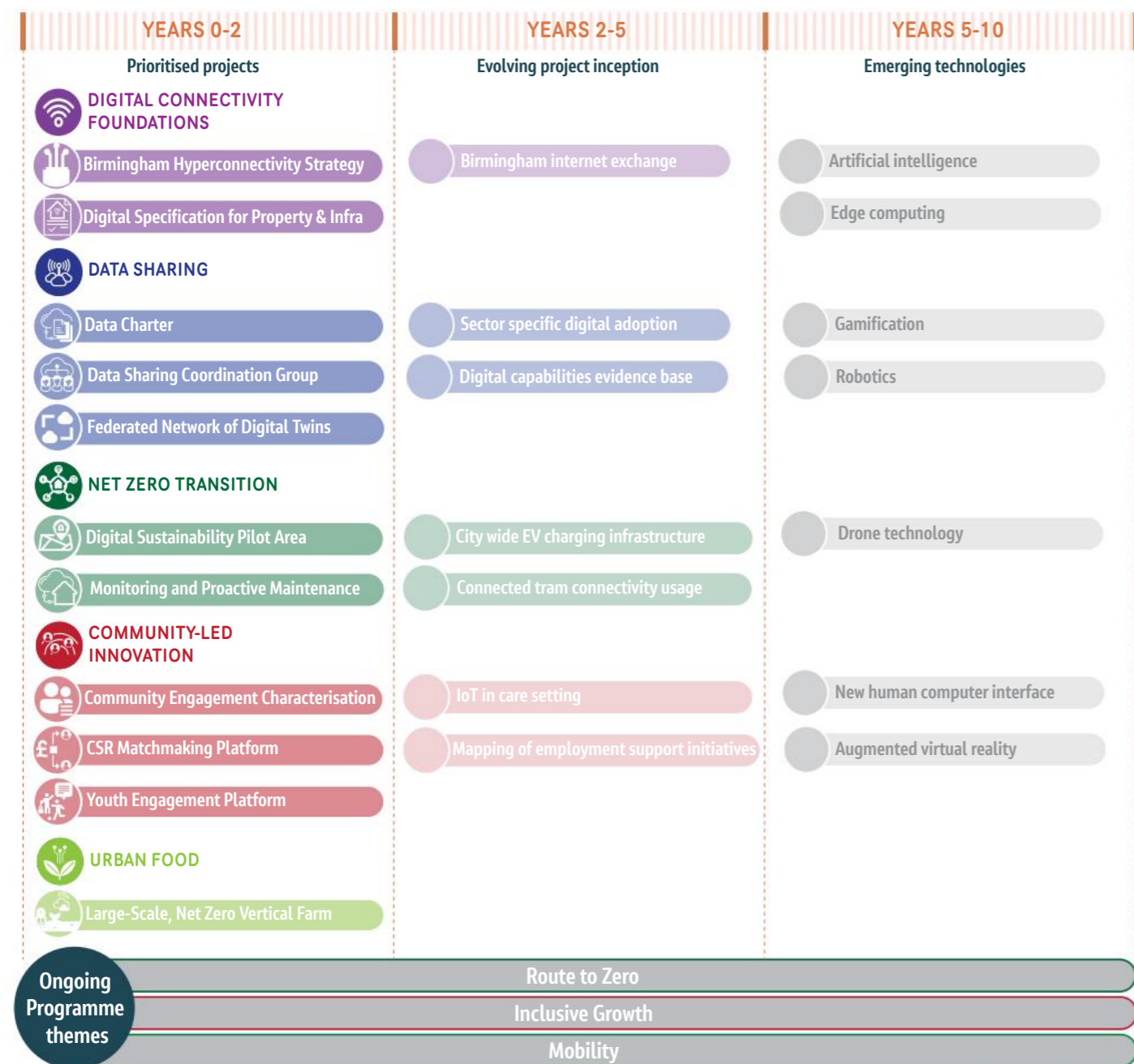


Figure 10: High-level view of the medium-term Roadmap for the Digital City programme

11 GOVERNANCE AND DELIVERY MODEL

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 some 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. The recommended approach is outlined below

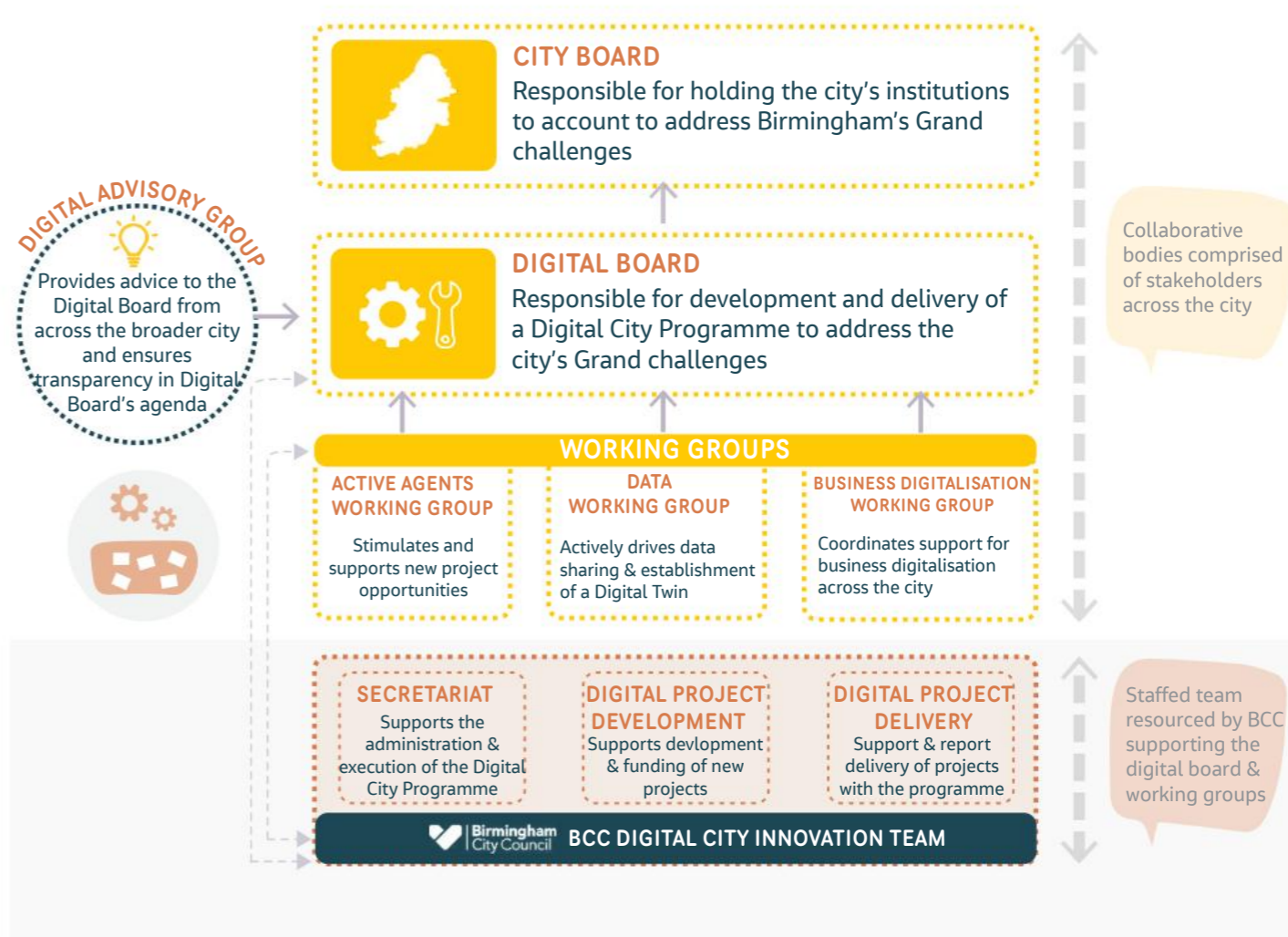


Figure 11: Birmingham Digital City Programme Governance and Delivery Model

12 IMPACTS ON THE MATURITY ASSESSMENT SCORING

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 12: Impact of the prioritised projects and governance model on Birmingham's maturity assessment

Impact of the Governance and Delivery Model

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.

13 SUMMARY: 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. It is the youngest and most diverse city in Europe, with over 40% of its population aged under 25 years old. It enjoys the highest levels of FDI and new start-up launches outside of London and the South East. 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. However, other cities such as London and Manchester have taken great leaps forward and Birmingham needs to respond to secure its position as a leading digital city.

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.

ACKNOWLEDGEMENTS

Birmingham City Council would like to thank the following people and organisations for their contribution to the development of the Digital City Programme.

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

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- UK Government inclusive skills - (www.gov.uk/government/publications/uk-digital-strategy/2-digital-skills-and-inclusion-giving-everyone-access-to-the-digital-skills-they-need)
- Centre for Cities – Birmingham skills (www.centreforcities.org/reader/train-attract-retain-increasing-birminghams-skilled-workforce/birminghams-skills-profile/)
- United Nations Environment Programme, Emissions Gap Report 2019

09 ROADMAP THEMES & PRIORITISED PROJECTS

- Climate Change Committee (CCC), UK Independent Statutory Body, '2021, Progress Report to Parliament', June 2021
- Imran Hameed, the founder of the Salma foodbank in Smethwick, September 2021

12 SUMMARY: THE CALL TO ACTION

- UK's Greenest Cities - <https://www.jurysinns.com/blog/posts/uk-greenest-cities>