

Digital Northern Devon Strategy



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EXECUTIVE SUMMARY

A digital strategy can help to address important issues in the way local authorities and public bodies deliver and improve services, the way local employers do business, how people live, work, learn and play, and by improving the way we protect human health and the natural environment.

Taking a digital approach can lead to improved employment opportunities, more affordable housing, better access to local services, better health care and a better quality of life.

This is the first Digital Strategy for Northern Devon and the first digital strategy for rural authorities. It is the first step on the journey to realising the potential opportunity digital technology presents for the region.

The drivers

In Northern Devon, the principle drivers are two-fold:

- the challenge of connectivity in a rural, relatively remote and hilly area with the cost of 'the last mile' balanced against the value of connecting every home and business to improve service delivery, be virtually connected despite physical infrastructure limitations driving economic prosperity, opportunity and experience, supported by digital infrastructure and skills to enhance social inclusion;
- the beauty and value of the exceptional natural environment which attracts people to the area on holiday or to live, recognising the importance of protecting its beauty, celebrating its remoteness and recognising that quality of life is as important as economic prosperity, accepting that people want a fair wage.

Our joint vision

Embracing a digital approach to deliver the right kind of economic growth with the greatest value for local communities, coupled with the best kind of environmental protection to safeguard our beautiful area's future.

Digital maturity

Digital maturity for a region is a measure of the extent of digitalisation in strategic management service delivery. Whilst there are some pockets of excellence and a clear willingness to adapt to and adopt digital ways in many areas of work and life, Northern Devon is undoubtedly at the start of the journey towards digital maturity.

This is in part dictated by the currently patchy connectivity, and Northern Devon is at the start of the digital journey with some great examples where tentative first steps are bearing fruit, from the local authorities, education providers and local businesses.

The economic case

Affordability of service delivery is a key concern and additional investment in transforming services can be met with resistance. The preliminary benefit analysis shows a potential £1.6 million of savings to be realised through digital transformation across the council budgets. This represents an additional 50% of the current capital infrastructure budget. The impact of this increase in capital investment will have significant benefits to be realised in terms of the £3billion regional economy. The next steps for this strategy is to analyse these figures in more detail and identify the programme of works to realise the opportunity.

Strategic priorities

Moving to realising this economic opportunity, three strategic priorities have been identified, to support the vision and unlock the benefits of a Digital Northern Devon.

Getting people digital: presenting a clear need case for connectivity and the last mile cost-benefit; incentivising digital options and services; supporting businesses and communities to make the transition and invest; embedding a digital first culture.

The right kind of economic growth: balance quality of life and protecting the natural environment with increasing efficiency, productivity and opportunity; investing in digital skills and services to 'grow our own' talent; sharing the right data and information.

Unlocking potential through collaboration: using shared data and information to transform service delivery in planning, health and social care, housing and day to day services; support local supply chains; encourage more 'Devon pounds' to be spent locally.

What happens next

This is the start of an exciting, innovative and valuable journey, one which can deliver the right kind of economic growth with the greatest value for local communities, whilst providing the best kind of environmental protection for Northern Devon.

The next steps are clear. In order to reap the full projected benefits, significant organisational and cultural change will be necessary - a digital first approach must be enabled in order to move forwards. The enabling stage will ensure the ground is well prepared.

Northern Devon must then produce a clear, Strategic Outline Case (SOC), clearly setting out the economic, financial and commercial case, balanced by the social and environmental benefits assessment supported by a detailed plan.

Let's be clear: investment is needed. But the cost is far outweighed by the benefits that a Digital Northern Devon will deliver for everyone who lives, works, learns, stays and plays in this unique part of Britain.

1 | A DIGITAL NORTHERN DEVON

Digital technology presents major opportunities for communities to benefit and rural communities could be connected in a way that has not previously been possible. However, this technology that enables innovation, growth and livelihoods also has the potential to create uncertainty and alienation for those who are left behind. North Devon Council and Torridge District Council recognised this opportunity as well as the potential impact from being left behind and are leading the development of Digital Northern Devon for the region.

This is the first Digital Strategy for Northern Devon and the first digital strategy for rural authorities. It is the first step on the journey to realising the potential opportunity digital technology presents for the region.

Digital Northern Devon

The strategy has been driven through the collaboration of North Devon and Torridge District Councils, driven by the realisation that ‘business as usual’ will create a greater disconnect between the region, the UK and internationally. It has brought together input from a range of public and private stakeholders to establish the vision and priorities for action. The approach, developed and led by digital and sustainability experts from PCSG Ltd, aligns to the UK’s Digital Strategy and aims to enhance delivery of regional plans and policy through a digitally enabled service. It has been founded on the framework for digital sustainable communities specified in the international standard for smart cities and communities ISO37106. This standard presents a working definition of a smart city or community developed by the ISO Technical Management Board. Adapted for a rural community such as Northern Devon:

A digital authority can be described as one that dramatically increases the pace at which it improves its sustainability and resilience, by fundamentally improving how it engages society, how it applies collaborative leadership methods, how it works across disciplines and its diverse urban and rural geography and how it uses data and integrated technologies in order to transform services and the quality of life for those in and involved within the authority (residents, businesses, students, visitors).

The Strategy

This strategy sets out the community vision, identifies the strategic priorities for action, the economic opportunity and a roadmap to guide the next steps towards the realisation of a Digital Northern Devon.

These next steps will be the systematic identification of the priority actions to take based on key factors from strategic, financial, economic, social and environmental impacts.

Whilst there are a number of existing digital initiatives in the region, progress has generally been slow. Largely thwarted by low levels of connectivity limiting technology advances from cloud technology to online service delivery.

Vision

Our shared vision for a Digital Northern Devon is based on core principles and objectives shaped by stakeholders and driven by the environment and the economy that characterises Northern Devon.

Embracing a digital approach to deliver the right kind of economic growth with the greatest value for local communities, coupled with the best kind of environmental protection to safeguard our beautiful area's future.



2 | WHY A DIGITAL STRATEGY?

Northern Devon is a largely rural community where the natural environment presents both the major draw for people who want to live in or visit the area, but also a major barrier to accessibility and connectivity. Government classifications support this statement with North Devon being classified as 66.2% rural and Torridge classified as 100% rural. Sustainable growth that puts the natural capital value of the region at its core is imperative to the Northern Devon community, however, growth is needed to keep pace with UK and international economic development and a growing social expectation.

There is a growing concern that the region, already challenged by its location will become further marginalised as digital technology becomes more accessible and mainstream in other UK regions. These rural regions face different challenges to smart 'cities' or mainly urban areas where there has been significant focus on digital transformation. The lack of a digital framework in this rural area raised a genuine concern that this would further hamper regional development and opportunity and amplifying existing, underlying challenges further. Business as usual is not an option. The opportunity that digital connectivity presents to social and economic development of the region in overcoming the challenging geography and lack of physical infrastructure should not be overlooked.

Digital transformation offers many benefits which could add to the existing attractiveness and prosperity of the area without negatively impacting it. Opportunities to deliver solutions to some of the challenges affecting the area including accessibility of services, employment, education and quality of life can be enabled through digital technology.

Understanding the current challenges faced by those living and working in the region alongside the existing level of digital maturity is the starting point to identify the direction of travel articulated in the strategic vision and enabling the identification of the strategic priority areas. Led by the community and current policy, the following state of play has been identified.

Northern Devon environment

Northern Devon's celebrated natural environment is what sets it apart from other UK regions. It is a key differentiator to other areas in the UK and internationally, whether rural or urban. The climate and environment play an important role in the choice people make to stay or come to the region. The Northern Devon biodiversity and landscape is recognised both internationally and nationally through its designations. The North Devon UNESCO Biosphere Reserve extends from the catchments of the Rivers Taw and Torridge with its core at Braunton Burrows sand dune system. The reserve encompasses the North Devon Area of Outstanding Natural Beauty (AONB), the Braunton Burrows Special Area of Conservation (SAC) designated under the European Habitats and Species Directive, along with 63 Sites of Special Scientific Interest (SSSIs) and 671 county wildlife sites. The Reserve is already embracing digital technology to monitor the quality of the reserve and has the aspiration to become the first UNESCO Digital Biosphere Reserve.

The North Devon Coast AONB was designated in 1960, under the 1949 National Parks and Access to the Countryside Act with the primary purpose of conserving and enhancing the area's natural beauty. This area runs along the North Devon and Torridge coastline, a major tourist and visitor attraction.

A further 18% of the North Devon administrative area sits within the Exmoor National Park, designated in 1954 to conserve and enhance the natural beauty, wildlife and cultural heritage of the National Park and to promote opportunities for the understanding and enjoyment of the special qualities of the National Park by the public.

Protected by national and international legislation, the environment is clearly a major asset to the region and its natural capital delivers direct economic benefit through tourism and recreation as well as agriculture. However important these factors are, they are often overlooked as the asset underpinning large parts of the economy.

Management of these key areas is challenging and relies heavily on collaboration between landowners, research bodies and other partners. Data are critical to understanding the impact of development decisions, land management practices, tourism and recreation development and its environmental and landscape impact and is often not readily available. Capacity to process and analyse large quantities of data can also be thwarted by the IT provision and hence is limited.

“The Biosphere Reserve will act as a catalyst for achieving innovative and exemplar sustainable development and for utilising opportunities arising from ecosystem services.” North Devon and Torridge Local Plan 2011-2031

Living in Northern Devon

The combined population of North Devon and Torridge is 163,261¹, with 58% living in North Devon and 42% living in Torridge District. The area is characterised by an ageing population, which places extra demands on local health and social care services, further exacerbated by the area’s rurality making services difficult to access through traditional methods of delivery. There is a significant out-migration of school leavers who may or may not return in their 30’s.

Whilst population growth is slow (0.2% in North Devon compared to the national average of 0.6%), the councils are planning for around 20,000 more people living in the area by 2031². Building the planned 16,469 new dwellings by 2031 given the constraints presented by the celebrated natural environment will be challenging but necessary to avoid the inefficiencies and expense required to retrofit new developments.

The UK target³ is for 95% of homes to have ‘superfast’ (24-30mbps) access by 2019; the Connecting Devon and Somerset programme (CDS) is on target to meet this for the Northern Devon area⁴, however, even with support programmes, uptake is challenging some areas that have been connected. In addition, a large area within North Devon is being connected by Air-band wireless

¹ Mid 2017 estimate, UK Government Local Authority Population Estimates

² North Devon and Torridge Local Plan 2011-2031

³ UK Digital Strategy 2017

⁴ Connecting Devon and Somerset Local Authority Briefing March 27, 2018: North Devon and Torridge

technology, whose roll-out has been delayed, now planned for 2020 completion. Retrofitting connectivity is proving expensive and in places commercially unviable to the provider. However, these delays or decisions not to connect create additional isolation and exclusion impact the effectiveness of other agencies trying to tackle the issues of community isolation.

Current planning policy is not supporting the requirement to ensure the basic infrastructure is provided for at development phase to secure the opportunity to connect easily and cost-effectively. Whilst it is acknowledged that the local plan could have gone further to ensure this, changes to government policy have eroded these local ambitions. “Smart” housing provision is seen as ‘gold-plating’ development requirements rather than ‘future-proofing’ the housing stock. The Code for Sustainable Homes does not include anything around connectivity provision as national policy is focused on building sufficient numbers of houses.

Comprehensive benefit realization of the social impact of delivering domestic connectivity provision at the planning phase, particularly across health, social and education is lacking. Houses are being built for the next 100+ years and existing and future technology will require cable or broadband to be in place, connection-ready. Without it, there are real concerns that some of the underlying trends relating to deprivation, aspiration and depressed wages will be further exacerbated.

“Digital connections for new housing should be seen as the 4th utility.” Workshop participant

Skills and employment in Northern Devon

The key challenge for the area is in attracting and retaining talent in a space that is increasingly competitive. Competition is high for employers in engineering, IT and creative industries where innovation is dependent on digital technology. The challenge becomes greater with low aspiration, low skills and uncompetitive wages compounded by an ageing population where young people leave for education or employment in more connective and technologically advanced regions. Indeed, there are underlying concerns that low aspiration may be suppressing nascent digital skills.

The region is characterised by a high number of entrepreneurs and self-employed individuals. Self-employment levels are high compared to national averages. For Great Britain the self-employment rate is 9.6% of the adult population. In the South West it is 11.1%, in Torridge it is 16.8% and in North Devon 17.1%. Unemployment in the region is also low compared to the national rate for unemployment at 7.9% of the adult population. This compares to 6% in the South West, 5.1% in North Devon but 6.8% in Torridge district.

Skill levels of Northern Devon’s working age population show low levels of attainment of Level 2, 3 and 4 qualifications compared to the Devon and national average, with the disparity being particularly significant in Torridge District. NVQ4+ level in North Devon is 22.7%, Torridge 19.9%, Devon 31.6% and England 31.1%. Conversely, there is a reported under-employment challenge where skilled individuals are taking less skilled roles.

A recognised major challenge is the need to ‘grow our own’ talent: diversify employment opportunities will require skills to match; pressures on education providers to ‘compete’ with city

universities to retain young people in the area; and provide employment opportunities not only for home-grown graduates but also to attract young people and families to locate in the area.

There are major opportunities in technical skills driven by digital services, e.g. 3D printing/rapid prototyping. There is a drive to deliver skills to support these digital opportunities by putting the 'A' ('Art') into 'STEM' (ie STEAM), encouraging local SMEs to expand through improved connectivity. With changes to the way people learn, current poor connectivity is proving to be a limiting factor.

Planning for economic development

The Local Plan⁵ set out to deliver 110 hectares of employment land during the period 2011-2031. Unemployment is low to medium, although there are big differences between North Devon and Torridge. How this land is used and for which types of employment/industries will in part depend on the availability of high-speed broadband connectivity.

The overall aim of Northern Devon's economic strategy⁶ is to enable economic growth and job creation, based on the area's strengths and unique assets.

The vision for the northern Devon economy is for a diverse and resilient economy that can adapt to challenges and maximise opportunities, underpinned by an appropriately skilled workforce and effective infrastructure. Northern Devon Economic Strategy 2014-2020

There is a keenness to encourage more technology and creative firms to locate in the area, recognising that this is an increasingly competitive space, but also recognising that these industries can deliver growth, investment and employment with a low environmental impact. Major investments planned in technical centres of excellence (via PETROC through multiple partnerships) and the innovation centre (for business start-ups) are positives, however a lack of advice for tech/high growth companies based in the area is a concern.

Agriculture is a key industry in a rural setting and delivers livelihoods to many as well as delivering a valuable landscape function with its associate economic benefits. Whilst on the face of it, the contribution from agriculture to the overall regional economy may seem low, it's social and environmental role in the region is large. Digital technology provides opportunity for farmers to improve efficiency and improve areas of marginal profitability. However, resources for investment in digital technology and poor connectivity in these rural areas will be challenging without recognising the full range of benefits delivered which may unlock some of the challenging funding decisions.

Whilst transport links are limiting aspects of business, it is recognised that digital connectivity is having a greater effect and is much cheaper and quicker to fix.

Both Councils are driving an Innovation Strategy delivering the new Enterprise Centre at Roundswell and the College of Technology and Innovation Excellence. This Digital Strategy is seen as an opportunity to enable these assets to become fully utilised. It is also essential that businesses are able to continue to grow and flourish in Northern Devon when they leave these innovation centres.

⁵ North Devon and Torridge Local Plan 2011-2031

⁶ Northern Devon Economic Strategy 2014-2020

Digital transformation of businesses

Those who are digital are benefitting. There are major efficiencies to be realised from adopting a digital approach, even in traditional manufacturing businesses. Making the transition to digital service provision should not be seen as 'too difficult' – there are plenty of examples where adoption and uptake have exceeded expectations, for example the green waste collection service roll out.

There are also major opportunities for other traditional employment sectors, especially tourism, where marketing can be precisely targeted, demand better managed. However, SMEs are struggling to make the leap in part because digital opportunities and pitfalls need demystifying. The pace of change can be daunting, and there are also underlying concerns that digital technology will take jobs rather than create wealth, especially in people-centric customer service industries. Agriculture and tourism are key contributors to the area's economic activity and prosperity, and ensuring these sectors have the necessary skills is essential.

However, the economic development plan is keen to encourage growth through growth in the tech sector rather than focusing exclusively on manufacturing as other regions do, leading to a lower land take/higher productivity and economic contribution, minimising the impact on the natural environment. This is especially important given that 52% of North Devon District area and 22% of Torridge District area is designated for reasons of landscape or biodiversity.

Maintaining a quality of life

The work-life balance is a driver for the majority living and working in the region where individuals are less driven by financial success and more by life-style. However, there are complex patterns of deprivation linked to health and social care problems in more deprived areas. Housing presents some challenges largely due to its affordability in relation to relatively lower wages and income levels. The average house price in England is 6.74 times the value of mean annual income. In North Devon this multiplier rises to 9.04 times income and in Torridge district is 9.65 times mean annual income.

Giving every child the best start in life and ensuring children are ready for school is a key driver for a number of stakeholders, allied to tackling one of the underlying issues of pockets of low aspiration which is intergenerational and linked to limited employment opportunities.

There are concerns on two fronts relating to mental health and wellbeing which will need to be balanced. Firstly, the area's rurality means communities and individuals may feel isolated, and digital services can help to improve this whilst also reducing the cost and improving the efficiency of service provision. There is concern over the lack of connectivity in the extreme, rural areas, the remaining 6% that may cause further isolation. However, there are underlying concerns over the potential effects that social media could have and indeed is having on groups, particularly younger people, in terms of impacting social skills, mental health and wellbeing and leading to isolation and loneliness.

Other health issues include poor health outcomes caused by modifiable behaviours, pressures on services (especially unplanned care) caused by increasing long-term conditions, multi-morbidity and frailty, unpaid care and associated health and social care outcomes. It is widely recognised that shifting to a prevention focus is essential, and that access to information, and indeed the provision of real time information through digitalisation and connecting people and place through the Internet of Things will play a critical role in improving health outcomes.

3 | ECONOMIC OPPORTUNITY

Affordability of service delivery, infrastructure and housing delivery is a key concern for the Councils aligned with the changing demographics and increased expectation as to the level of service. As a result, the region, like many UK regions, faces a widening fiscal gap.

Given this context it is vital that North Devon and Torridge consider significant changes to the way services are delivered and infrastructure is planned and delivered to reduce whole life costs.

Equally, it is critical to ensure the right service is delivered and social outcomes are achieved. Digital enablement can provide a platform for integrated planning, improve design, drive efficiency in construction and deliver a 'digital twin' to optimise asset operations.

This section identifies some of the high-value opportunities that can be unlocked by developing and implementing a digital strategy for North Devon and Torridge.

Economic Analysis

Current spending across the Councils has been divided into broad categories of capital expenditure, operations and maintenance and service delivery. The expenditure figures outlined in Figure 1 have been compiled using an average taken from the last three years of the Councils' budget papers and the published UK Government gross value added (GVA) figures for local authorities.

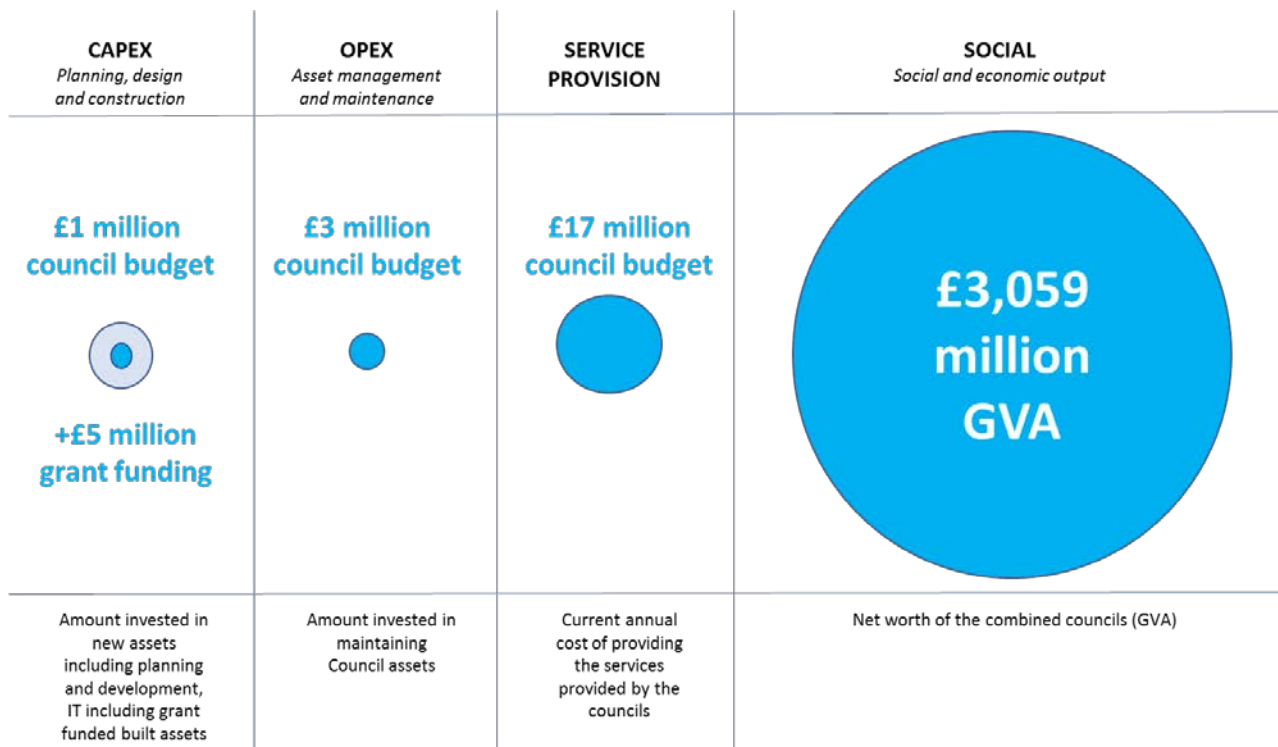


Figure 1 Summary of expenditure categories over the last 3 years for North Devon and Torridge Councils

The categories are summarised as follows:

CAPEX – Planning, Design & Construction

The figure presented is the average combined CAPEX expenditure for North Devon and Torridge councils from their core budgets as well as the indicative spend from grant funded developments. This includes all capital expenditure on both physical and digital assets.

OPEX – Asset Management and Maintenance

The OPEX figure presented is the costs extracted from the annual budget figures that related to the operations and maintenance, repair, refurbishment and energy use of council assets. Typically, CAPEX to OPEX ratios are:

Infrastructure Category	Ratio CAPEX: OPEX
Buildings / Housing/ Property	1 : 3
Roads / Water	1 : 0.42
Rail / Electricity / Health	1 : 6

Service Provision – Services that are predicated on the Built Environment

Built assets are developed to provide services to the end user to support the economy and lives of those in the region. Natural assets, whilst already in existence, are also a key foundation to the Northern Devon economy, as well as providing a service to the residents and visitors of the region. The quality and performance of the built assets has a direct effect on the cost and quality of the services predicated on the built environment. The service provision of these built assets has been estimated from the annual budget figures for the two Councils.

Social outcomes: Gross Value Added (GVA)

The mean average GVA for Northern Devon is presented to provide a sense of scale and to indicate the extent of the council services in supporting the contribution to the overall regional economy.

This highlights two key factors:

- Significance of the region's productivity and the Council investment in both built assets and service provision to support this regional economy
- Opportunity for cost saving across council spend when the built environment and service provision is considered holistically

4 | CURRENT DIGITAL MATURITY

Digital maturity for a region can be examined across (1) strategic management (2) service management. Whilst there are some pockets of excellence, Northern Devon is undoubtedly at the start of the journey towards digital maturity.

Strategic management

Strategic management is the ability of the region to collaborate, align resources and recognise cross-sectoral benefits and therefore the need for cross-sectoral investments to realise these benefits. The two councils are at the start of this journey and by the nature of this strategy, have developed a collaborative vision for a Digital Northern Devon. Strategic management remains generally a traditional, siloed approach limiting collaborative benefit realisation.

Service provision

A digitally mature service provision should be one where there is sufficient connectivity and uptake, service delivery is citizen-centric designed around ease for the citizen to access these services, the IT architecture supports collaboration, provides for data privacy building trust and security, decision making is empowered through regional data platforms, digital technology drives smart developments and infrastructure and digital inclusion is paramount to ensure isolated people benefit rather than become further isolated. These aspects are explored in more detail in the following sections:

Connectivity and uptake

Poor connectivity limits the opportunity for economic growth and efficiency of service delivery based on digital technology. However, by 2020, the region should reach 94% coverage of high-speed broadband resulting from the current Connecting Devon and Somerset programme and commercial superfast coverage⁷. Currently North Devon coverage is 84% and Torridge is 81%. Feedback from stakeholders is that the current patchy connectivity and isolation of the remaining unconnected areas has brought challenges. Concern over digital exclusion remains, particularly where connectivity is becoming essential as services are moving online, e.g., schools and college homework, farm payments, housing rent.

Whilst uptake programmes have been implemented alongside the delivery of the physical connectivity, uptake by local communities and businesses of online services offered has been inconsistent and access to services has remained largely delivered by traditional means. For example, most consultation comments on the local plan were provided through feedback forms and letter/email rather than utilising online options connected to live consultation documents.

⁷ Connecting Devon and Somerset Local Authority Briefing March 27, 2018: North Devon and Torridge

The existing underlying low skill level and digital aspiration may also lead to low uptake in part due to fear of technology and fear of change. This may be exacerbated by the out-migration of the younger, more digitally aware population who might otherwise remain and assist older relatives.

Moving to a technology led service provision without addressing these connectivity and uptake issues will potentially lead to greater isolation for some. Significant social impact on older people or remote communities from reduced traditional social engagement will have unseen negative consequences.

Citizen-centric service delivery

There have been some successes through moving services online although this has largely been piecemeal. The uptake of Torridge District Council's green garden waste services far exceeded expectation and delivered significant benefit for the council as well as the citizen, whereas the online local plan consultation received limited uptake. In-cab Refuse Collection Vehicle technology has been installed to monitor performance, record data and information and improve service efficiency. The result of this technology is an accurate record of when the bins were attempted to be collected resulting in a reduced number of complaints and reduced costs of having additional call-outs being made.

There are some interesting collaborative efforts in the private sector. The North Devon Food Trail app developed by the North Devon Marketing Bureau is a collaborative initiative by the Bureau members to promote in a single place, food offerings to visitors across North Devon. North Devon Homes is aiming to move 90% of transactions with social housing tenants online by 2020, showing a keenness to digitise housing and connect people and places.

IT architecture

In some areas, the IT architecture and digital infrastructure needs to be developed alongside a digital transformation. There is a lack of clarity amongst officers and business leaders as to what is needed and what is best. Software packages and systems don't always talk to each other, information is not joined up, access to information is time consuming or not there and digital skills are lacking.

In terms of hardware, there are two issues: on one level, there needs to be a recognition that this is no longer the focus and 'IT' budgets have moved from capital projects to revenue items (with software as a service replacing hardware); but also, at a basic level, equipment is inhibiting change. For example, the lack of digital projection at some parish council meeting venues, means everything is still printed and documents need to be produced in traditional formats rather than being designed for digital (with inherent improvements in engagement, information provision and navigation).

As digital infrastructure grows, a lack of IT and data management maturity leads to concerns over data security particularly around personal data. Whilst many companies and public sector authorities are addressing these, there is a lack of understanding and nervousness relating to change to business as usual.

Regional data platforms

Information sharing between and within organisations is generally poor, manual and limited to a few tentative steps. This leads to duplication of data and often inaccurate data being used for decision making. The planning, management, maintenance and operation of built environment infrastructure is a major area of opportunity and positive moves in terms of council services sharing data and mapping information can be seen across planning services.

Equally the opportunity to monitoring and managing the natural environment through integrated collaborative data platforms is significant.

Smart developments and infrastructure

The built environment has seen on-going commitment from the UK Government, through the Digital Built Britain⁸ programme setting targets for delivering and realising significant cost savings across major infrastructure projects. Currently there is no digital infrastructure programme within the region to realise these capital, operational and service delivery savings. Tentative first steps have been taken in enabling planning officers to access and utilise real time information on-site.

Building 'smarter' using digital engineering techniques can deliver a number of benefits, improving not only the traditional cost of construction but also the ability to increase supply chain opportunities in the local area and support new skills development. On a basic level, it can enable more homes to be built quicker, cheaper, better. This is linked to wider opportunities to digitise the planning and development control process.

Building 'smarter' buildings will also enable the cross-sector benefit realisation that is possible through a digital built environment.

⁸ Centre for Digital Built Britain: <https://www.cdbb.cam.ac.uk/>

Summary of current maturity

Current digital maturity has been assessed following desk research and high-level stakeholder engagement. Whilst this process has been limited in the number of individuals interviewed, each has relevant and substantial responsibility, drawn from the public, private and third sector organisations collectively employing thousands of local people, operating dozens of buildings, managing large swathes of land and representing billions of pounds invested in and spent on the Northern Devon economy.

The digital maturity assessment is based on the criteria set out in ISO 37106 and aims to benchmark Northern Devon so that progress towards these key criteria can be tracked over time. There is no pass or fail - the single objective is to identify where investment or intervention is needed.

Figure 2 illustrates an initial assessment based on the high-level stakeholder engagement of the current digital maturity for the region across digital service provision as described in the preceding sections.

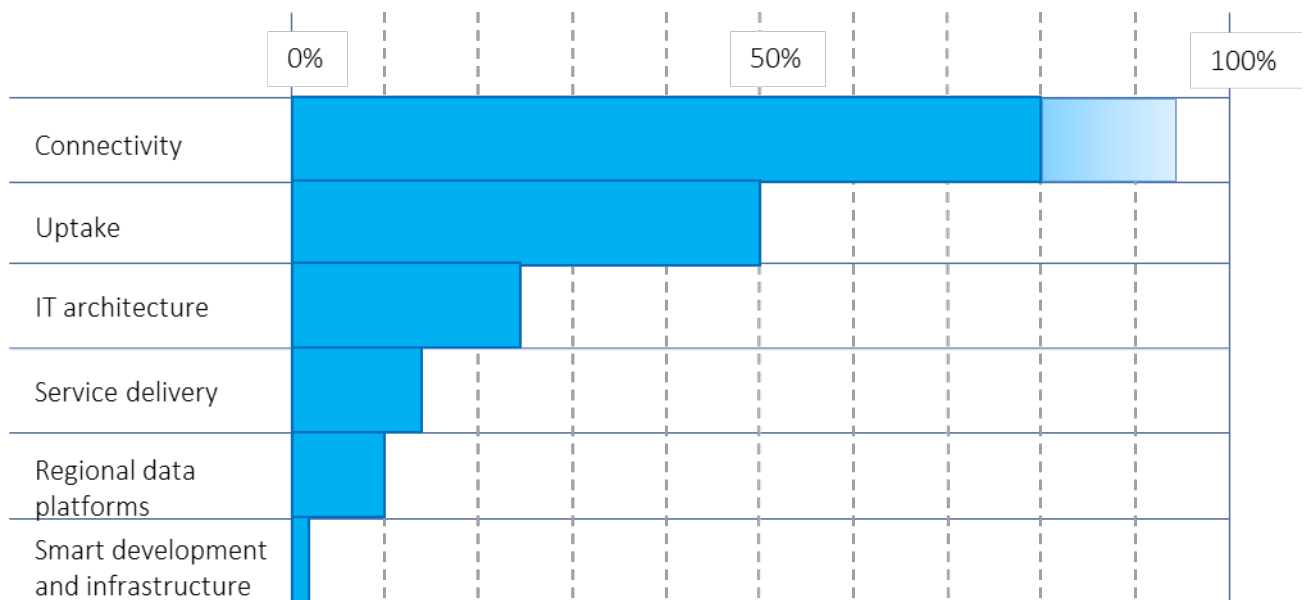


Figure 2 Summary digital maturity

5 | BENEFITS ANALYSIS

The next steps of Digital Northern Devon will be to carry out strategic, outline and final business cases of the implementation options, and will provide clarity about the social, economic and environmental benefits by adopting digital for Northern Devon. Ultimately developing the business case for funding Digital Northern Devon

In order to estimate the potential economic benefit of a Digital Northern Devon across the lifecycle of the two Councils' spend, reference has been made to several case studies, consultancy reports and business cases relating to differing levels of digital application. Appendix A shows a breakdown of some of the most recent and relevant business case outcomes and analytical reports relating to the economic benefits of digital engineering adoption in particular.

Utilising the economic analysis from the Digital Built Britain strategic outline business case Figure 4 below demonstrates the potential savings that can be realised across the CAPEX, OPEX and Service Delivery aspects of the Council budgets respectively.



Figure 3 Economic benefits analysis

This could lead to a **£1.6 million saving**, realising a further **50% budget** for capital delivery.

6 | STRATEGIC PRIORITIES

It is essential to ensure that solutions are targeted at the right problems to help reduce the cost of service provision and deliver better outcomes.

The workshop and subsequent analysis have identified the following 'challenges' and 'what needs to be done' in order to target resources and prioritise action, mapped against the objectives.

Strategic priorities

Given these principles, the research phase has shown that there are three clear strategic priorities:

1. The need to get people digital
2. Delivering the right kind of economic growth
3. Unlocking potential through collaboration

Whilst on the surface it may appear that there is a potential mismatch between economic development, protection of the natural environment and the importance of maintaining many aspects of the lifestyle economy, this in fact presents the primary opportunity for delivering a digital Northern Devon, and hence our vision.

Priority 1. Getting people digital

The challenge

The greatest challenge identified by stakeholders was that of getting people digital. Connectivity is inconsistent, and coverage is unreliable - there are gaps in service making it difficult to wholesale commit to shift services and nudge people to adopt digital technology.

There was also a perception of prohibitive cost factors of upgrading technology, hardware and facilities in rural areas.

Poor skills or awareness for some can lead to a lack of confidence and/or understanding of how best to engage, adopt, upgrade or change methods of operating.

What needs to be done

- The need-case, social and natural capital value to Northern Devon of ensuring reliable coverage and the societal, environmental and economic cost of not, must be clearly presented.
- Incentivising digital options and services and ensuring all services can be accessed digitally is an essential first step. Making it better, quicker, cheaper to access services online will drive uptake.
- Ensuring clear advice and support is in place to allow upgrades of facilities and knowledge, and encourage adoption and uptake is essential - including a behaviour change campaign to shift Northern Devon to a digital first culture.

- Make public facilities available (e.g., libraries, community hubs, banks) to support reluctant or anxious users, build confidence and show the opportunities that are available.
- Availability of a framework to ensure that everyone can easily find the right route for their needs and uses.

Ideas

1) Hubs of exceptional connectivity

Stimulate the creation of central hubs of exceptional connectivity that drive long term innovation, creativity, skills, networking, business generation, opportunity and social interaction in remote, hard to connect areas but also in towns, colleges and business centres.

Not everywhere will get high speed connectivity in the short term – even though it should be a requirement as Government is requiring services to be delivered online e.g., farm payments, tax returns, etc.

Community hubs can also address concerns over social isolation, deliver support for SMEs and provide human contact that alleviates pressure on other resources e.g., health and social care, council services.

2) Community installations

Currently commercial viability is measured on return on investment for the provider e.g. the number of homes or businesses that can be connected and the number of subscribers to a BT service. On this single measure, it is therefore unrealistic to expect that connectivity will be delivered to every property across Northern Devon.

Connectivity becomes viable when productivity and requirements to access to local authority services is taken into account. Government should look to provide incentives, interest free loans similar to solar energy installation support to stimulate investment in installations through community and rural business-led initiatives.

3) Housing provision and planning

Using digital technology to evaluate the viability and rapid evaluation of land opportunities can enable more sites to be brought forward quicker and greater quantities of social and affordable housing to be delivered at a lower economic and environmental cost, using space, time and materials more efficiently.

Local planning authorities possess much of the necessary information to make these assessments; however, this information may not be in an accessible, digital format and the tools to rapidly assess viability may not be available within the authority.

Further efficiencies flow from digitisation of viability assessments and digital information provision, including rapid review of planning applications, planning assessments and agreements to semi-automated or even fully automated building control checks, ensuing what's built was 'as permitted'.

These efficiencies continue through improved operation and whole-life performance of buildings and easy access to information by occupiers, estate managers and owners to ensure buildings perform 'as designed' in use, for example reducing carbon emissions by an estimated 20%.

Ensuring - and requiring - these buildings are smart, connected homes delivers additional social and health benefits in the short, medium and longer term. Connectivity should be required as a planning condition - a 4th utility connection at the point of handover to the occupier.

The emerging Local Plan should ensure this provision is included as a matter of urgency, and the planning authorities should make digital planning applications a requirement for larger developments and work in partnership with developers to share relevant digital data and information.

4) Transformation of local authority service provision

Taking services online can deliver cost and efficiency savings for local authorities and improve the quality, flexibility and access for residents and customers.

As an example, the Torridge District Council's recent switch to encourage residents to sign up to the green waste collection service online exceeded expectations, with large numbers automatically signing up leading to an increase in households using the service. Similar examples exist from other councils, including in the south west, such as Plymouth's recent move to enable registrations of births and deaths to be done online. Literally overnight, what had previously been one or two registrations each week became several each day, with residents able to fill out the relevant information in their own time and at their convenience.

Clearly, the previous system, requiring a form and a visit in person - was inconvenient. Revenues from this one activity have increased, yet the resource required to process the forms and issue the certificates has not.

And these are relatively low impact activities. Extending this same approach across aspects of education, social care, housing and so on is critical not only to cost effectively improve access to services, but to improving outcomes for residents, taxpayers and society.

Priority 2. Right kind of economic growth

The challenge

Government policies do not take into consideration the nature of life and development outside of urban heartlands when measuring economic growth, which is focused on GDP, or productivity, and the objective of ensuring this figure grows consistently.

However, for many, from small business owners, to employees working in the service industry, the motivation for living in an area like Northern Devon is a pursuit of a high quality of life where time is valued as highly as the natural environment.

A lack of adequate digital and physical infrastructure holding back economic growth that balances with quality of life expectations and protection of the natural environment through improved efficiency of resource and land use.

This is allied to a lack of business understanding and of how to maximise potential digital opportunities for economic prosperity, insufficient skills to harness the power of digital, and acceptance of changes to business as usual.

What needs to be done

- A digital Northern Devon can do two things: it can provide a way of creating jobs, increasing efficiency and improving productivity whilst enabling people to maintain or even improve quality of life.
- Ensuring that public bodies, support agencies and the existing high quality business community collaborate is essential in order to deliver the right kind of economic growth.
- Collaboration in adopting interoperable digital processes and approaches is key, so that they are sharing the right data and information in the right ways, in turn protecting or enhancing quality of life and the natural environment whilst still increasing opportunity and improving productivity.

Ideas

1) Procurement

Local authorities spend a large proportion of money in the regional economy. Digital procurement can be used to stimulate local economic growth, facilitating the use of local SMEs in the supply chain and minimising the administrative burden of multiple small contracts.

Digital information management and a 'digital first' approach to attracting, selecting and interacting with SMEs and other local and regional suppliers will ensure that growth and opportunities are felt locally first,

Housing development supported by a local digital supply chain is a good example of combining both a planning system rejuvenated and improved through digitalisation and building the right kind of homes better, quicker, cheaper utilising the very best of the local supply chain. Digital tools that can be used to foster greater collaboration between planning authorities, housing authorities and service providers, together with their local supply chain will bring wider reaching local benefit.

2) Employment, skills and economic growth

Providing skills support and training to employees, SMEs and residents is an important part of the transition to a Digital Northern Devon.

Skill development support requirements range from embracing online tools to access services, adopting and utilising social media to market more effectively, reach target audiences or branch out into new areas including export markets more efficiently, through to investing in design services, professional advice and hardware such as 3D printing to enable rapid prototyping.

All of this requires a cultural shift - it is a major change management process but one that will enable organisations both public and private to benefit from Industry 4.0 and make the most of the valuable opportunities afforded by digital technology.

SMEs and other organisations will require support in order to make the transition to a Digital Northern Devon to make the most of the opportunity and collaborate in the right ways. This should be supported by a campaign to drive adoption of a Digital Northern Devon, promote skills and the right kind of economic growth.

Education partnerships in Northern Devon are already planning to deliver centres of technology and skills, with funding applications submitted for determination this autumn. The objective is to address

the digital skills gap but also provide further and higher education opportunities to degree level within the Northern Devon area, with a focus on technology and digital skills.

However, this requires a strategy to provide the local and regional context in order to target and support economic growth, retention and attraction of young people and families and deliver 'home grown' talent and skills for a digital Northern Devon.

Priority 3. Unlocking potential through collaboration

The challenge

Traditional perceptions of North Devon Council and Torridge District Council and their agencies not being willing to work together need to be challenged and overcome.

Equally, businesses being reluctant to work together to develop best practice, co-invest and cooperate with public sector service providers must also be changed. Concerns exist over data security, IP ownership and GDPR responsibilities when organisations collaborate, but can be overcome.

What needs to happen

Enabling collaboration requires leadership and transparency from the public sector and agencies in order to build trust. Resulting partnerships with private sector providers, SMEs, customers and residents will enable the vision of a Digital Northern Devon to become a reality.

One clear example is in the planning system which, while permissive and policy driven, in reality is often confrontational. This can lead to delivering the least-worst rather than the best outcome for a site, a community, the planning authority and the applicant.

To support a Digital Northern Devon, clear education and skills pathway need to be created through improved coordination between local authorities, education providers and businesses. This is beginning to happen, notably by PETROC and its partnerships with education establishments and local employers.

Collaboration delivered and harnessed through a Digital Northern Devon needs to be focus on maximising the use of local supply chains, supporting the local economy at both a business and community level, with embedded benefits that could include encouraging more 'Devon pounds' to be spent locally, reduced transport emissions, more efficient use of materials, less waste, reduced procurement costs, time savings, improved just-in-time opportunities and social investment through training and economic prosperity.

These steps will help in providing opportunities to support communities to share and develop their skills base, make the most of existing hubs, good practice and local expertise.

Ideas

1) Regional information collaboration

The same data can be used multiple times to support the efficient delivery of a range of different services. Good information management is efficient, digital and secure. Local authorities adopting digital information management approaches buy their data once, have access to reliable, up to date information and deliver better services.

There are already some promising first steps being taken in Northern Devon, particularly around mapping and the information databases that are used by different departments in the two local authorities. However, much more could be done in this area, in order to assist with getting people digital, supporting the right kind of economic growth and unlocking the true potential of Northern Devon through collaboration.

Centralising, sharing and linking data and analytics can benefit multiple responsibilities, such as:

- Planning and development
- Biosphere reserve, nature conservation and land use change
- Environmental management and monitoring
- Service provision, service efficiency and demand management
- Customer relations/one-stop-shop services; improve convenience and uptake
- Information services – tourism, travel, education, health, social care, youth etc.
- Self-monitoring, semi-automated services and service efficiency
- Procurement and business engagement
- Consultation and community engagement

For example, integrated travel planning apps would enable customers to see where buses are, plan inter-modal journeys, plug into tourist information, books seats, gauge distances by bike or on foot between public transport points/places of interest, set reminders, improve access to remote areas or places of interest, find hotels and restaurants when close for remoter areas.

Tourists could be encouraged to leave their car at the holiday home and make use of local ‘hoppers’, in turn reducing congestion, supporting remote and sensitive destinations, increasing demand management in sensitive environments and stimulating local, rural economies.

2) Delivering local housing need using digital technology

The Construction Products Association has identified the potential for digital engineering and a digitally configured supply chain in the delivery of residential development and the opportunity to deliver more for less⁹. Using a digital viability assessment tool to evaluate the delivery of the identified 14,500 homes between now and 2030 presents interesting data. The benefits measurement approach measures the impact of digital technologies in the construction of the houses, taking into account locality, planning constraints and assumes a range of standard housing models. Three scenarios have been modelled.

⁹ Construction Products Association, 2016. The Future of Construction Product Manufacturing: Digitalisation, Industry 4.0 and the Circular Economy

- Traditional approach: This assumes 30% affordable homes are achieved through a requirement under planning consent
- BIM Level 2: This approach utilises digital engineering, Building Information Modelling (BIM), where savings are achieved through better clash detection, adequate information to make better informed decisions, resulting in the potential delivery of an additional 4% affordable homes.
- BIM Level 2 plus a pre-configured digitally connected supply chain: The project is delivered utilising digital engineering (BIM) alongside an outcomes-based digital procurement approach. Digitisation of the supply chain helps identify gaps in procurement, timing, capability and additionally can drive benefit by enabling greater engagement with the local supply chain. Estimates of the savings identify an additional 17% affordable housing could be delivered resulting in a total 47% affordable housing delivered across the same sites.

Whilst there is significant collaboration and transformational change in approach required to move towards a digitally connected supply chain, the opportunity looks significant. The potential benefits across the different scenarios are outlined below:

Scenario: To deliver 14,500 houses and maximise affordable housing provision	Traditional approach	BIM Level 2	BIM Level 2 plus a digitally connected supply chain
Additional affordable dwellings that can be delivered as a result of digital engineering technology for the same investment	0	59	220
Percentage of homes which are affordable (assumes baseline of 30% is achieved through current, traditional approach)	30%	34%	47%
Additional costs (£m) required to deliver shortfall in affordable housing - assuming a target of 50%, 7250 Affordable houses are required	£44 mln extra 20% shortfall, no savings made on delivering each unit	£32 mln 16% shortfall and each unit is cheaper to deliver	£6 mln 3% shortfall and each unit is cheaper to deliver
Efficiency across project delivery results in projects being finished earlier. Average weeks homes can be occupied due to early finish	0 weeks	27 weeks	68 weeks

7 | DIGITAL NORTHERN DEVON ROADMAP

To help bring the Northern Devon Digital Strategy to life there are two identifiable next stages detailed in Figure 4 below that must be delivered successfully. These stages add detail to the strategic priorities and build out an extensive list of ‘ideas’ providing and benefits assessment framework to develop a deliverable digital programme. We have been careful to maintain a progressive approach and identified three critical enabling steps to ensure the programme is planned and costed accordingly.

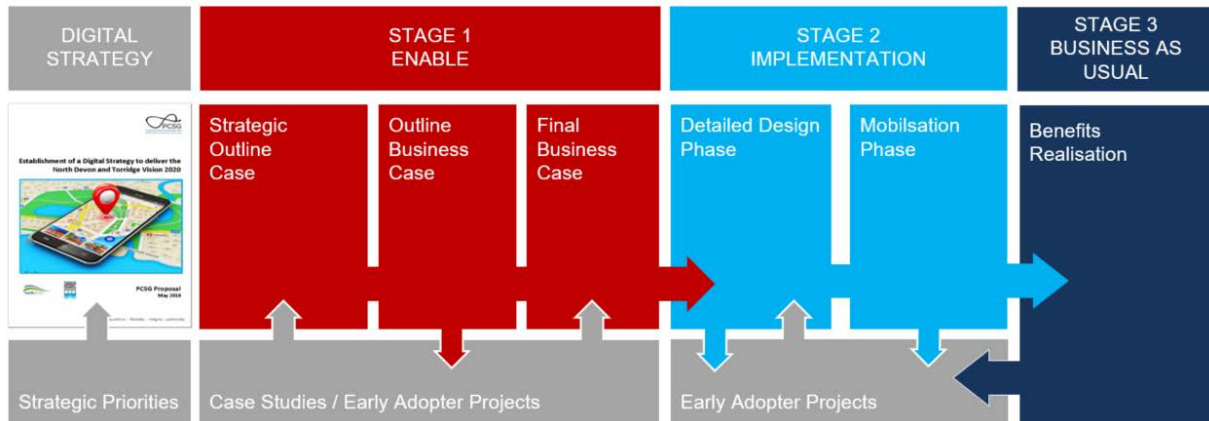


Figure 4 Digital Programme Stages

Stage 1 – Enable

No programme has any value if it does not or cannot deliver what has been promised. Benefits realization about the social, economic and environmental outcomes is therefore a core responsibility for the leadership and governance of a digital programme.

All intended benefits need to be delivered in practice, and this will not happen without proactive benefit management. In the past, many regions, mainly cities, and councils have often failed to manage the downstream benefits proactively after an individual project or programme has been completed, particularly where it touches on multiple interested parties. ICT programmes in particular are often seen as completed once the technical implementation is initially operational.

Yet in order to reap the full projected benefits (e.g. efficiency savings, customer service improvements), ongoing management is essential, often involving significant organisational and cultural changes.

This stage is critical to ensure what has been promised to the citizens and can be delivered and identifies the overall Digital Northern Devon Plan, the strategic priorities, and importantly the environmental, social and economic opportunities for a Digital Northern Devon.

The next steps are to systematically identify what could be done and through a prioritisation business case assessment, what the most effective next steps are going to be. The approach presented below is based on the UK Government Treasury’s Green Book for investment business case assessments and will primarily assess the following benefits in adopting a Digital North Devon programme.

- Social outcomes and benefits
- Economic outcomes and benefits
- Environmental outcomes benefits

Strategic Outline Case (SOC) – the scoping stage

The strategic outline business case will help Northern Devon to crystallise the need for the proposed Digital programme. It will demonstrate the case for change, presenting a clear rationale for making an investment against the strategic objectives of Northern Devon.

The strategic outline business case will provide Northern Devon with important evidence and will set out robust assumptions at this early stage in the development of the Digital Programme business case and will also explain how various options have been sifted and distilled into a preferred scheme and programme. Fundamentally it will provide Northern Devon with a preferred programme of projects.

The five steps of the Strategic Outline Case (SOC) are:

1. Strategic Case

The strategic case will set out the rationale and the context for the Digital Programme proposal and will make the case for change at a strategic level. It will set out the background to the proposal and explain the objective that is to be achieved. The strategic policy context and the fit with the wider North Devon policy objectives will also be referenced, as will any interaction with or dependency on any other council programmes.

Several areas which will be specifically addressed are:

- The underlying strategic requirement for the change and adoption of Digital for North Devon
- Key objectives and critical success factors

2. Economic Case

The economic case will assess the economic benefits of the digital programme and optimise value for money. Several areas which will be specifically addressed are:

- The formulation of options to be considered
- The economic benefits quantified (Rough Order of Magnitude) for each option
- Cost estimate for each short-listed option
- Identification of preferred option

3. Financial Case

The financial case will set out whether the digital programme is financially viable, and several areas which will be specifically addressed are:

- Summary of financial appraisal
- Consideration of overall affordability
- Funding sources
- Risk contingency

4. Commercial Case

The commercial case will set out whether the digital programme is commercially viable, and several areas which will be specifically addressed are:

- Consideration of capability and capacity in the supply chain
- Marketplace to support the change.
- Procurement options and expected approach.

5. Management Case

The management case will set out whether the digital programme can be delivered successfully, and several areas which will be specifically addressed are:

- Project management approach
- Internal capacity and capability considerations
- Benefits realisation
 - Financial (cashable)
 - Financial (cost avoidance)
 - Non-financial
- Risk identification and mitigation
- Recommendation

Outline Business Case (OBC) – the detailed planning phase

The next step building on the strategic outline case is the outline business case. The purpose of the OBC is to revisit the SOC in more detail and to identify a preferred option which demonstrably optimises value for money. Value for money will account for the full range of economic, social and environmental benefits. It sets out the digital programme plan; demonstrates its affordability; and details the supporting procurement strategy, together with management arrangements for the successful rollout of the programme.

This stage will provide the following:

- the strategic case – revisited;
- the economic case – completed according to the Green Book;
- the commercial case – outlines envisaged digital programme structure

- the financial case – contains a detailed analysis of affordability and any funding gaps;
- the management case – develops in more detail how the digital programme will be delivered with an outline of the proposed programme/project management plan

Test Digital Northern Devon Framework on Early Adopter Projects

Before moving to the final business case, we recommend that to ensure that the newly developed technologies and ways of working are user-friendly, effective and deliver the anticipated outputs a period of testing should be introduced.

This would typically include the consideration of using early adopter projects to validate the new methods of working and better understand the impact of implementation on business-as-usual. Lessons learned should be captured and addressed prior to rolling out technologies more widely. In selecting early adopter projects, it is necessary to assess whether they will enable new ways of working to be tested within the durations required by the implementation plan.

Final Business Case (FBC) – detailed final phase

Following the outline business case, a final business case will need to be developed to support ongoing investment.

The purpose of the FBC is to revisit the OBC and record the findings of the subsequent procurement activities; together with the recommendation for an affordable solution which continues to optimise value for money, and detailed arrangements for the successful delivery of required goods and implementation of services from the recommended supplier/s.

This stage will provide the following:

- the strategic case – revisited and revised if required.
- the economic case – the findings of the procurement included in the analysis and recorded;
- the commercial case – the recommended Digital programme written-up;
- the financial case – affordability and funding issues resolved;
- the management case – the detailed plans for delivery and arrangements for the realisation of benefits, management of risk; and post evaluation are recorded.

Stage 2 – Implementation

Upon agreement of the strategy and final business case, the Implementation Stage should commence. The Implementation stage will be focussed on designing and mobilising the Digital Northern Devon Task group, which its role will be to coordinate and deliver proposed workstreams that will actively change practices and standards within the region to drive digital adoption, operating consistently and within predefined timeframes.

These activities will be necessary to counteract sub-optimal digital development driven by individual vendor or supplier interests instead of overall industry efficiency. This type of intervention will include the creation and issuance of policies requiring the application of a defined standard or procurement approach.

We recommend that the key focus of the Task Group follows the successful formula developed for the UK Government Digital Built Britain program, enabling a core team to coordinate the delivery of funded work streams under the governance of a Steering Group.

Stage 3 – Business as Usual

This stage includes activities related to embedding technologies so that it becomes business-as-usual and that support structures are in place to ensure that the new ways of working are followed. A program of lessons learned, commenced during the early adopter projects, should be continued so that challenges that arise to the new ways of working are addressed.

As the new ways of working become business-as-usual, a program of measurement of the required benefits needs to be undertaken, not only to justify the program expenditure but also to drive continual improvement.

Continuous Improvement and Feedback

This phase includes activities related to embedding technologies so that it becomes business-as-usual and that support structures are in place to ensure that the new ways of working are followed.

The program of lessons learned, commenced during the early adopter projects, should be continued so that challenges that arise to the new ways of working are addressed.

As the new ways of working become business-as-usual, a program of measurement of the required benefits needs to be undertaken, not only to justify the program expenditure but also to drive continual improvement.

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APPENDIX A: BENEFITS CASE STUDIES

These are broadly in two groups: firstly, the implementation of Digital Engineering (BIM) within a specific government department or cluster; and secondly the broader application of digital transformations (e.g. DE/BIM, IoT, analytics, Smart technologies) and the resulting economic benefits across whole-of-government. Each business case and analytical report has differences in scope and approach to benefit estimation; however, the results suggest general corroboration of the predicted benefit within each group.

	Source / Department	Description of Scope and Approach to Benefit Estimation	CAPEX	OPEX	Service Delivery	Reference
Group 1	Transport for NSW	<i>Application of BIM at a similar maturity to Level 2, individual project example.</i> Benefit quantification determined by applying expert opinion to recent project examples, (CAPEX phase only) identifying the benefit BIM application would have created if applied.	1.7%			TfNSW Digital Engineering Conceptual Business Case (2016)
	UK Government Department (Transport Infrastructure)	<i>Application of BIM Level 2, across departments.</i> Analysis of the various benefit components with emphasis on risk mitigation and reduction of projects contingency (approx. 1%)	2%	1%		BIM Implementation Business Case
	Scottish Futures Trust BIM Program	<i>Application of BIM Level 2, individual project.</i> Provision of an RoI tool, requiring the input of project data to derive a predicted BIM RoI. A return is automatically calculated for CAPEX based on survey data of expected benefit during design and construction phases and other relevant case studies. CAPEX benefit of 3% indicated based on broad and comprehensive application of BIM Level 2. (OPEX RoI is also available but requires more subjective assessment of benefits).	3%			Scottish Futures Trust BIM Level 2 Return on Investment Calculator
	PwC BIM Benefits Methodology Digital Built Britain	<i>Application of BIM Level 2, individual project sample.</i> Application of a comprehensive BIM Benefit Framework across a sample of recently completed government projects to measure realised benefit. Level of BIM application also measured, with projects typically applying some, but not all, aspects of BIM Level 2.	Whole-life savings estimate ranging from 1.5% to 3%			PwC BIM Benefit Measurement Methodology (via Centre for Digital Built Britain).

Group 2	Digital Built Britain (UK BIM Level 3 Program)	BIM Level 3* A combination of relevant case studies and benefit logic analysis, exploiting expert opinion on the impact of digital intervention.	10-20%	5-15%	5-15%	Digital Built Britain: Strategic Outline Business Case (2017)
	BCG Study As reference by: EU BIM Task Group Handbook, 2017; World Economic Forum, Shaping the Future of Construction, 2016	'Full Scale Digitisation', including the adoption of BIM / Digital Engineering, robotics, data analytics, mobile interfaces, virtual reality & simulation. Estimates derived via application of case study data relating to individual technology applications to three theoretical scenarios (building, highway, power plant).	13-21%	10-17%		Digital in Engineering and Construction, BCG (2016)