8th | CITY UPDATE

Welcome to issue 26 of the 8th City Update, covering programme activity during February to April 2023.

During this period there were twelve projects being progressed - including the work of the Glasgow Smart Cities Co-ordinator. All 12 projects are scheduled to remain active up to the programme's 'physical completion' date of 30th June this year.

Upon closure the 8th City programme will have delivered 41 separate projects across seven cities, with overall investment in the region of £46.3M – of which £19.1M is via European Regional Development Fund (ERDF) grants.

One of these projects is the recently launched Dundee Smart Mobility (Phase 2) initiative which introduces the first fully accessible EV charging hub, delivered in line with BSI PAS 1899:2022 standard.

Also featured is Open Data activity - including the recent shift to Open Spatial Data to understand city situations, challenges, and opportunities in order to develop innovative responses.

Previous newsletters have included an overview of Smart City activity for Scottish cities: This issue includes a focus on Inverness, with five projects across Phase 1 and Phase 2 of the 8th City programme.

Smart City projects delivered by The Highland Council and delivery partners include:

- Open Data
- Smarter Buildings
- Smart Waste
- Smart Mobility (Phase 1 & Phase 2)

The Inverness Smart Mobility projects embrace a wide range of infrastructure and smart services. Collectively, these will support improvements and innovation to travel and transport opportunities across Inverness and the wider Highlands and Islands programme area.

Achievements and learning from these projects - and from all the projects delivered by 8th City programme partners - will help us build smart city capacity and capability across Scotland's cities.

On 25th April Dundee City Council (DCC) unveiled their brand-new, innovative Electric Vehicle (EV) charging hub.

Centred around accessibility, and delivered as part of the 'Scotland's 8th City – the Smart City' ERDF programme, this is their fourth rapid EV charging hub where inclusion is the key focus within the EV strategy to achieve sustainable change.

Mark Flynn, City Development Convenor, pictured below, opened the site.

Funding for this came from ERDF (European Regional Development Fund), OZEV (Office for Zero Emission Vehicles), Transport Scotland, and DCC. With the high expectations of this project, it was essential that Dundee City Council sought partnerships with SWARCO, Urban Foresight and Bluewater, each leading experts in their fields, to see it through to completion.

The development began in 2019 with the aim to design and install infrastructure based on the insight gained from existing charging infrastructure along with feedback received from drivers of the difficulties of using EV charge points. In addition to this knowledge that DCC had gathered, they also drew guidance from the BSI PAS 1899:2022 standard which was a valuable source during the planning stages.

The targets of this hub aimed for an innovative design, with suitable parking bays, solar canopies, and a shared battery storage set up.

Specific features that came from following advice from the BSI PAS 1899:2022 standard are:

- The delivery of access to EV charging in a busy, central location with wheelchair access to and from the site and within wheeling distance to local facilities.
- All bays are 2400mm by 5000mm with 1200mm hatching around each one.
- All bollards, kerbs and plinths have been removed, enabling level access to charge points from bays, as well as access to and from the site.

The chargers at this rapid charging hub consist of four rapid 50kW chargers and a 150kW ultra rapid charger for public use. DCC are intending to gradually introduce more 150kW chargers around the city in the future. There are also solar panels fixed to canopies which are positioned overhead and provide power to battery units on site which store this energy. These battery storage units contain 800kW of energy that can be consumed at the most suitable times, like when chargers are in regular use.

An exciting partnership on this project was with Bluewater who installed a state-of-the-art drinking water system on site, which was a world first. This utilises the canopy roof over the chargers to capture rainwater to then filter into the purifying machine, which is powered by energy produced by the solar panels. This releases fresh drinking water for the public to fill up their water bottles at the two filling stations situated beside the chargers.

Along with the public chargers, infrastructure is soon to be completed at this site on Clepington Road to support depot vehicles of DCC. This side of the site will hold 21 x 7kW chargers, 1 x 100kW charger, and 2 x 50kW chargers to power over 200 vehicles. As with the public side, solar canopies will also be positioned overhead. These will be higher in height to accommodate for depot vans.

DCC are exceptionally proud of their achievements with this project and the steps taken to provide infrastructure which is as accessible as possible for users to ease the process of EV charging. It presents an insight into DCC's future journey in EV charging.

Twitter - @DundeeElectric

Photographs by Mark Thomas (courtesy Dundee City Council)

Home to almost 51,830 people, Inverness is known as Scotland's 'Highland Capital' and is the administrative centre for The Highland Council.

Inverness is one of Europe's fastest growing cities, with a quarter of the Highland population living in or around it, and was ranked fifth out of almost 200 British cities for its quality of life - the highest of any Scottish city. It was also noted as the happiest place in Scotland and the second happiest in Britain.

Inverness is situated within the Highlands and Islands Programme Area for European Structural Investment Funds 2014-2020; this means that projects were able to benefit from a more favourable intervention rate of 70% ERDF grant, against 30% match funding, for Phase 2 of the 'Scotland's 8th – the Smart City' programme (the intervention rate was 50/50 for Inverness projects in Phase 1).

Inverness, via The Highland Council (THC), secured ERDF grant for five projects: three projects were delivered during the first phase of the 8th City programme, as follows:

- Open Data
- Smart Mobility (Phase 1)
- Smart Waste

A further two projects were funded and are currently nearing completion as part of Phase 2 - which ends in June 2023. These projects are:

- Smarter Buildings Management
- Smart Mobility (Phase 2)

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The Smart Mobility project which was also delivered during Phase 1 was founded on a 50/50 partnership between The Highland Council and HITRANS to deliver the Smart Cities programme for Inverness. The aim of the project was to update the region's transport infrastructure to make travel easier by implementing:

- A flexible wireless mesh infrastructure allowing for smart traffic management, live traffic and public transport information
- Improvements to the Far North Line
- An update of parking meters, introducing smart elements to increase ease-of-use and flexibility for users
- An improvement to bus stop signage, introducing smart elements, including NFC/QR codes and real-time information boards at selected stops


The central element of the project is a scalable and flexible wireless mesh infrastructure that forms the backbone for future digital city services, including Intelligent Transport Systems (ITS) solutions – see case study at https://scottishcities.org.uk/2023/04/04/inverness-smart-mobility-mesh-project/.

Outputs across these Smart Mobility projects are currently being reviewed but will result in up to four Innovative Services outputs and eight Datasets outputs.
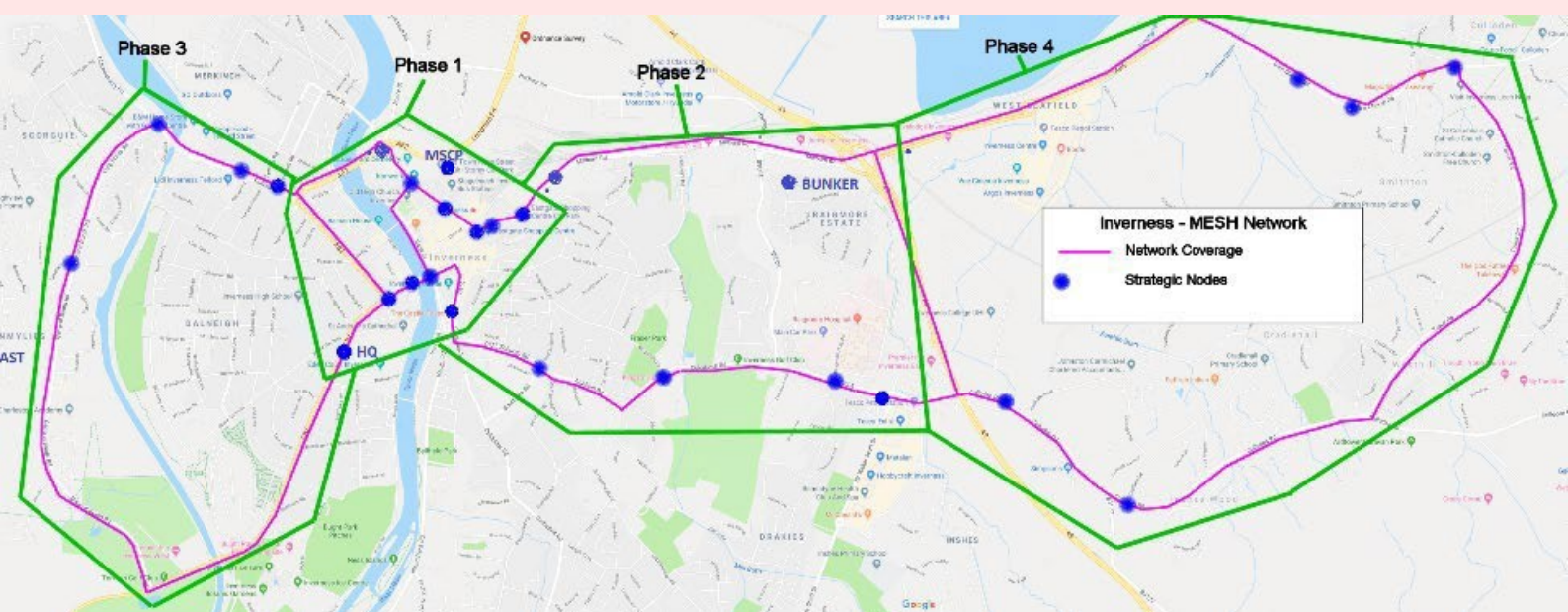
The Open Data and Smart Waste projects delivered in Phase 1 have contributed two Innovative Services and 24 Datasets Opened for Innovation.

For the Open Data project, the Innovative Service output was the development of an open data platform, procured as part of a collaborative approach with Aberdeen, Dundee, Perth, and Stirling. Upon expiration of the open data platform licence in 2020, The Highland Council made the business decision to port the open data sets to the council's open spatial data platform at https://maphighland.opendata.arcgis.com/.
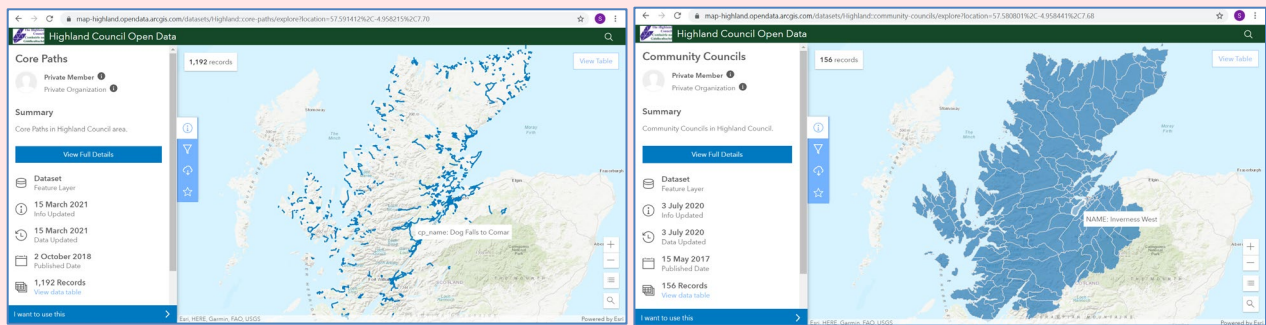
The Inverness Smart Waste project the Innovative Service output was linked to the development of an innovative, data-led driven approach to waste collection, using route management software with consistent, accurate datasets. This approach enables a more efficient routing of waste collection vehicles, reducing operational costs by decreasing miles travelled, maximising stops and lifts per hour. The software provides the ability to continually improve routing, including the ability to respond to population growth and new housing developments within the region.

For more info about the Smart Waste project see the case study at https://scottishcities.org.uk/2020/12/11/inverness-smartwaste-collection/
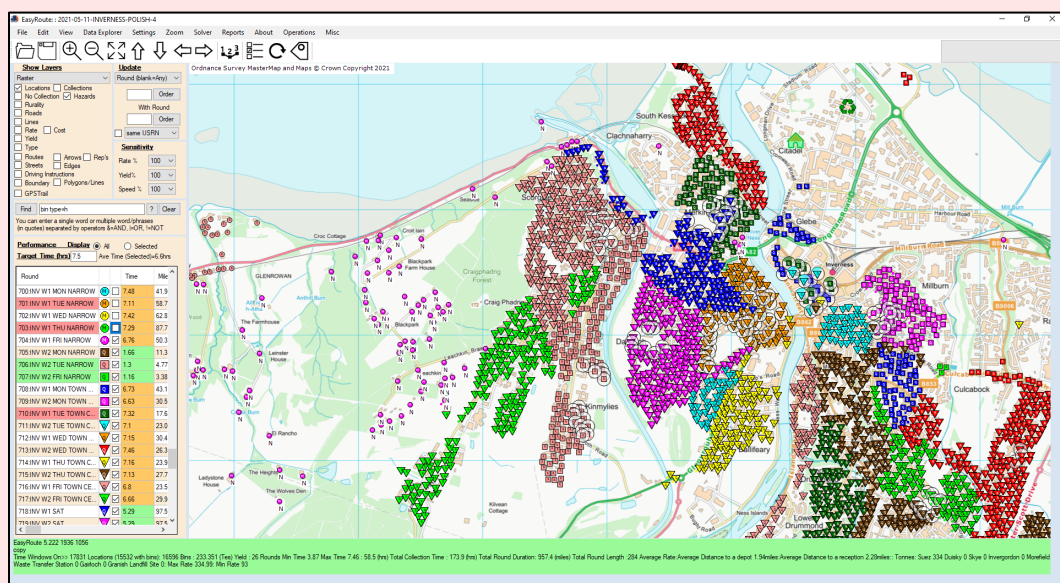
Inverness/The Highland Council and HITRANS have also delivered Smart Mobility activity as one of two projects in Phase 2 of the 8th City programme, running from July 2019 to June 2023.

The project sees the development of public transport information and smart infrastructure to inform drivers in real-time of aspects such as parking availability, ferry status, road safety and issues.

The Smart Mobility project comprises two elements:

- Introduction of new variable message signs at three locations on the strategic road network linked to ferry services. These provide information on the status of ferry services to drivers.

- Investment in real time service information on bus and coach routes that serve the main ferry terminals, delivering a step change in information to ferry passengers.

The Highland Council's other Phase 2 project has a focus on using an Internet of Things (IoT) approach to develop and demonstrate the use of close and automated control for building energy management and information systems across key areas of The Highland Council estate.

Buildings operate in an unstructured way due to the inability to gather and process data and information to bring out the most effective and efficient use. This project enables the conversion of existing and separate information and control systems to introduce efficiencies and benefits via the three cornerstones of automation, optimisation, and information.
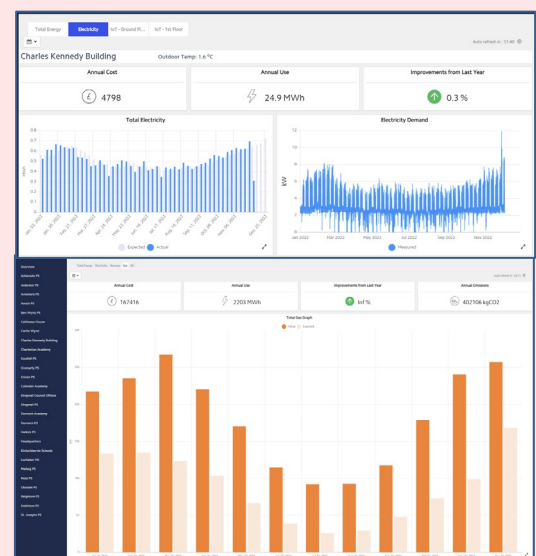
The Smarter Buildings and the Smart Mobility (Phase 2) projects will jointly deliver up to three Innovative Services and eight Datasets Opened for Innovation outputs. Work to identify and record these outputs will be concluded by the end of September 2023.

To find out more about these projects please contact: Dave Roberts - david.roberts@highland.gov.uk or Graham Martin - Graham.Martin@highland.gov.uk (Smarter Buildings) or Jayne Golding - jayne.golding@hitrans.org.uk (Smart Mobility).

Open Data and Data Analytics activity is at the heart of the 8th City programme.

In preparing the initial request for ERDF support, cities highlighted data and digital technology as the key enablers for smart city project activity.

In Phase 1 of the 8th City programme all seven cities participated in the development of the Data Cluster steering group; this provided a vehicle for the development and delivery of collaborative activity across the following four work packages:

- Data Standards
- Open Data Platforms
- Data Analytics
- Community Engagement and Capacity Building

Five cities (Aberdeen, Dundee, Inverness. Perth, and Stirling) secured ERDF grant for the shared procurement of Open Data Platforms (taken forward as Data Cluster work package 2).

These platforms were developed using open source / CKAN architecture and enabled a shared vision and a consistency of approach to be undertaken by participating cities.

Allied to the work of city Data Officers in relation to the adoption of Data Standards and common data sets, these open data platforms enabled Scottish cities to create a strong foundation for an open data culture.

In relation to Phase 1 programme outputs, this also supported the delivery of 144 data sets opened for innovation - against a target of 150 specifically for the Data projects.

GOV.UK

Make things open, it makes things better
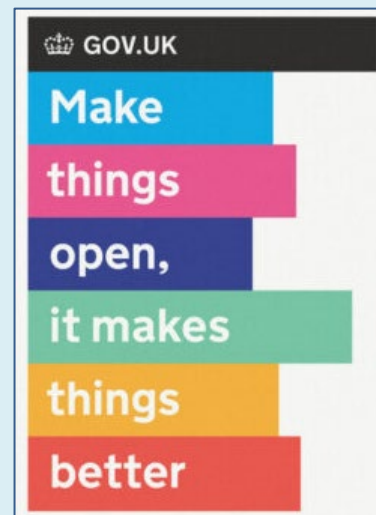
What is Open Data?

In Scotland, local governments are encouraged to make their data open and available to the public. The Scottish Government's Open Data Strategy sets out the vision for making data more accessible and transparent, and local authorities are expected to contribute to this effort.

Local government Open Data in Scotland can include a range of information, such as:

- **Public Spending and Finance:** expenditure on goods, services, contracts, budgets, and grants.
- **Environment and Environmental Protection:** air quality, water quality, flood management, and waste management.
- **Social and Demographics:** local population distribution, public health, social care, and deprivation.
- **Transportation:** cycle and pedestrian activity, traffic flows, road and path networks, car parks, and bus stops.
- **Planning and Built Environment:** local development planning, zoning and land use.
- **Education:** primary and secondary school locations, class sizes, catchment areas.

[Text from Stirling Open Data Platform]

It should also be noted that other 8th City projects (such as Smart Mobility, Public Safety, Smart Waste, and Intelligent Street Lighting networks) have also produced 'data sets open for innovation' outputs, with the vast majority of these being made available on the open data platforms. There is an outputs target of 424 for data sets across the 8th City programme – with partners firmly on track to reach this by the reporting deadline of 30th September 2023.

A number of case studies have been produced showing how 8th City partners have used data for good, including:

- Dundee - Creative Places
- Glasgow - COVID19
- Glasgow - Alcohol and Drugs Partnership
- Glasgow - Understanding Child Poverty
- Stirling - Cemeteries

All of these case studies are available in a library on the Scottish Cities Alliance website.

In recent years a number of cities have expanded the availability of their open data sets via a shift to the open geospatial data platforms deployed by each local authority. This has significantly increased the number of data sets open for innovation, as the data set outputs delivered by the 8th City programme are added to existing geospatial data sets. There are currently over 500 open data sets available for access via open data/spatial data platforms across the seven cities.

Another benefit of the shift from open source data platforms to geospatial data platforms is the enhanced potential for 'Storytelling with Data'. The Glasgow Open Data Hub notes that:

Open Data is about more than the numbers – it relates to real people, places and issues. We want to bring the data to life by sharing some stories around what it tells us about the city and how we might use these insights to improve the lives of those who live and work in Glasgow.

The Perth Open Data (Phase 2) project also incorporates a significant Data Analytics element. The use of Open Data and Data Analytics to support the development of Locality Profiles is outlined in the case study on page 11 to 15 of this newsletter.

The Improvement Service is committed to an annual Survey of stakeholders and users of its services – including the Spatial Data Hub.

The Spatial Hub (www.spatialhub.scot) is an online resource that provides a single point of access to quality-assured Scottish local authority data, in a consistent format. We would appreciate if you could take **10 minutes** to complete a short survey about the *Spatial Hub*. The survey can be accessed at: https://www.smartsurvey.co.uk/s/spatialhub2023/

Deadline for responses is **12th May 2023.** If any questions about the survey please contact Simon Roberts (he/him), Data & Engagement Manager, Digital Public Services simon.roberts@improvementservice.org.uk

Insight P&K – Power BI Interactive locality profiles

Summary/Background

As part of the ERDF 8th City Open Data Phase 2 project, Perth and Kinross Council have developed an interactive set of locality profiles using Microsoft Power BI and underlying corporate data platform. The Power BI app, known as **Insight P&K**, contains a collection of reports which present an extensive set of area based statistical information, designed to provide knowledge, understanding and insight into neighbourhoods and communities across the Council area.

The Challenge

Like many local authorities, Perth & Kinross Council (PKC) has increasingly undertaken locality profiling – the creation of a set of statistical profiles of localities within the council area, in order to help target policy interventions and prioritise service delivery to the communities that experience poorer outcomes. There is a statutory basis for this - the Community Empowerment (Scotland) Act 2015 requires Community Planning Partnerships (CPP) to prepare and publish a Local Outcomes Improvement Plan (LOIP) which sets out local outcomes the CPP will prioritise for improvement. The LOIP should identify smaller areas within the local authority area which experience poorer outcomes, and prepare and publish locality plans to improve outcomes on agreed priorities for these communities.
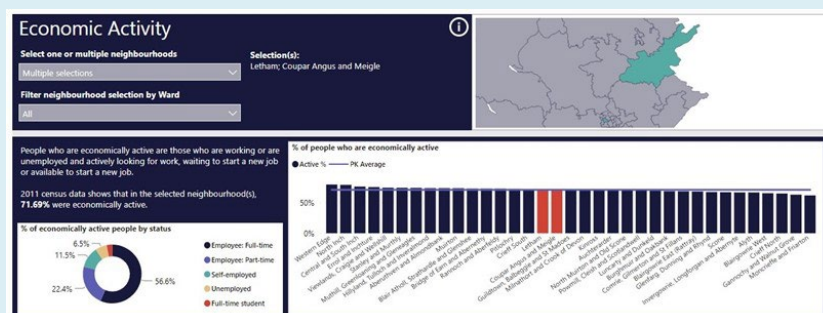
Locality profiles are the basis for taking a robust data-driven approach to this improvement. However, traditional approaches to the creation of profiles have limitations and are not without their challenges:

▪ Locality profiles are produced as a static document which limits the analysis that can be undertaken using them,
▪ Processing of the data required to produce the profiles takes a lot of time and effort,
▪ Because profiles are static, they quickly become out of date and therefore confidence in them as a basis for decision making reduces over time,
▪ There is no consistency or agreed standards for locality profiling, making it difficult to compare areas with confidence,
▪ Statistical data is scattered across multiple sources and systems, making it difficult to find and access, again increasing analysis time/ effort and reducing confidence in the resultant products.

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As part of the PKC Open Data Phase 2 project, the Council has recently implemented corporate data & analytics platforms which provides capabilities which could potentially be used to address these challenges:

- Microsoft Power BI, which provides powerful interactive data modelling and visualisation capabilities, could potentially be used to produce interactive dynamic locality profiles,
- The corporate data hub, built using Microsoft Azure, provides both data warehousing and management capabilities, and therefore could be used to automate the collation of data in to a single, up-to-date, scalable and re-usable source of locality intelligence.

Therefore, the overall challenge of the proof of concept project was to develop a set of interactive locality profiles using Power BI, which could be used both to identify/prioritise community improvement actions and more generally inform policy and service decisions.
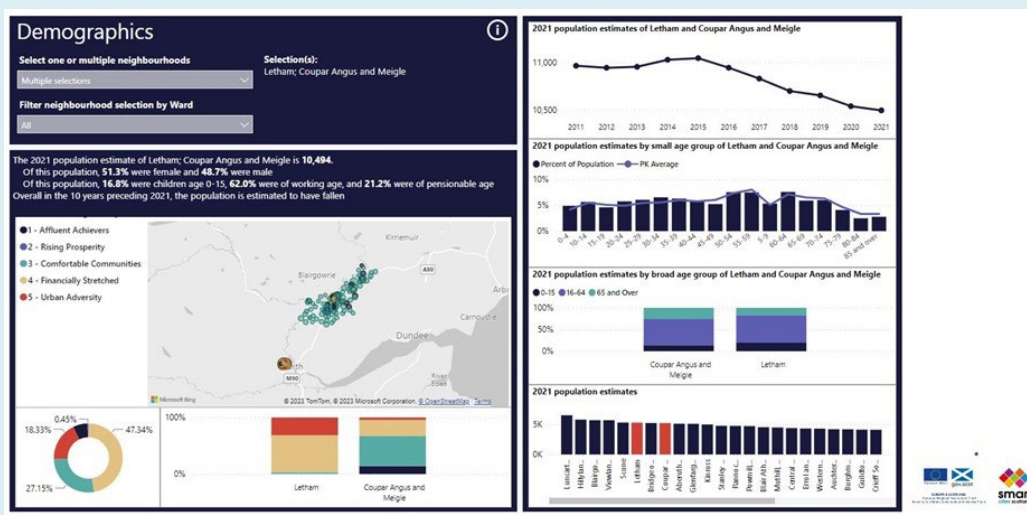
Intended Outcomes

By adopting Power BI and the corporate data platform to provide locality profiles, the Council aimed to:

- Enable an evidence-based data-driven approach to strategic improvement action setting and prioritisation in different strategic areas, including poverty, education, health & wellbeing, and the environment,
- Build an integrated and standardised data model for area-based statistics which could be re-used readily, and which was easy to manage,
- Standardise approach to the management of area-based statistics:
  - ✓ Eliminating repeat ad-hoc effort,
  - ✓ Deriving statistics consistently in terms of anonymisation and aggregation,
  - ✓ Establishing a standard location dimensional hierarchy, making it possible to analyse data at different geographic levels accurately,
- Create a visually appealing, engaging, intuitive and interactive solution to present locality based statistics, which is useful to a range of stakeholders groups, including officers, managers and leaders of the Council.

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Action/Approach Taken

A multi-disciplinary team was established to design and build an interactive locality profiling proof of concept solution using Microsoft Power BI. The proof of concept project was broken down in to a number of stages:

- Discovery – the initial focus was on the design, content and structure of the proposed solution, including an assessment of statistical datasets to be incorporated. It was agreed that the profiles would be organised by strategic theme - economy, education, poverty, health, etc. An important aspect of this was to consider what geographic areas to use to represent localities/communities. It was agreed to use Intermediate Zones for this, because they are one of the primary geographies used for the release of small area statistics in Scotland.
- Application build – an iterative approach to application development was used, with representatives of intended users closely involved to ensure the app met their needs.
- Engagement and review – the proof of concept app was demonstrated to various stakeholder groups, with feedback provided used to inform future development plans.

Obstacles and Issues

The obstacles and issues faced by project team were typical of work of this nature:

- Alignment of data to subject of interest – there is a lot of data available, therefore it is important to assess and rank candidate datasets based on their relevance and value to the area of interest
- Data quality and structure – currency in particular is often a key consideration for statistical data. This is especially an issue during periods of instability when situations are changing in a relatively short space of time.
- Data governance and ownership – data owner reticence to provide data at sufficiently granular level because of data protection concerns.

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Results/ Solution

The resultant Power BI app, called **Insight P&K**, provides users with a single reference point for a wide range of statistical information about the localities and communities of Perth & Kinross. Some examples of the information included is:

- **Demographics** – insight into the population dynamics of P&K,
- **Economy** – insight into P&K workers, economic activity and business,
- **Education** – insight into the attainment, involvement and destinations of P&K learners,
- **Health** – insight into the health of citizens in P&K, and the quality of healthcare,
- **Housing** – insight into the dynamics and quality of P&K housing,
- **Poverty** – insight into deprivation within P&K.

The above list is not exhaustive. The app has been designed to be both flexible and extendable, meaning new data sourced from either internal council systems or externally can be added as and when required.

The app includes a high degree of interactivity with the ability for users to select one or multiple neighbourhoods and therefore undertake their own analysis both with the app, or by exporting the data for use with other tools.

Management of the underlying data is or will be largely automated (see next steps) meaning it is straightforward to keep information up to date with minimal effort required.

The data model underlying **Insight P&K** can also be used to develop supplementary Power BI reports on specific subjects or in support of specific initiatives.

Insight P&K's scalable, re-usable, and standardised architecture is perhaps the apps most important characteristic, as it forms a blueprint for managing area based statistical information efficiently with optimal return on investment of time and effort. There are already plans to develop the app further, and also develop supplementary apps on specific subjects using the underlying statistical data.

Lessons Learned

Insight P&K is a proof of concept solution, therefore lessons learned which will inform future plans are fundamental to the project's success:

- Power BI and underlying data platform provides the capabilities required to manage statistical data efficiently, reducing the time and effort to undertake analysis and provide insight. This equates to better intelligence and therefore facilitates data-driven approaches to local improvement plans and policy making
- There is a potential wealth of statistical data available both from 3rd parties and internally within the council. However it is important that the relevance and value of the statistical information in relation to business questions and challenges is understood, otherwise there is a risk of information overload – as such governance of statistical data is critical
- The roles of data analyst, data engineer and data steward are critical for any organisation with ambitions to improve the ability to produce intelligence and insight from data.
- A robust approach to data anonymisation is required to ensure data owners have confidence that the data they are responsible for is being used in accordance with data protection law.

Next Steps

Insight P&K has been well received by various stakeholder groups at the Council, and will continue to be improved in future project phases. Potential improvements include:

- The integration of additional statistical datasets derived from other systems and sources both within the Council and from 3rd parties,
- Automation of the underlying data pipelines which extract data from various sources and load into the Insight P&K data model,
- Development of algorithms required to produce statistics for different geographies, for example electoral wards, school catchments, etc
- Ensure all statistical datasets collated for **Insight P&K** are published externally by default, via the Council's Open Data Portal.

The efficient data management, modelling and presentation of area-based statistics is recognised as significant area of interest for many public sector organisations. As such, the Council is participating in working group facilitated by the Local Government Digital Partnership Data Taskforce, which aims to produce best practice guidance for all local authorities to use area based statistical data effectively.

Further Information

Please contact Ewan Walker, IT Team Leader (Data Services), Perth and Kinross Council
ewalker@pkc.gov.uk

Over the past year there has been constructive engagement between 8th City programme partners and representatives of the National Cyber Security Centre (NCSC), the former DCMS, and the PETRAS National Centre of Excellence for IoT Systems Cybersecurity.

This followed on from a NCSC and DCMS briefing event for Scottish cities, in May 2022, on the Connected Places: Cyber Security Principles publication and good practice guide.

As a further update, the UK and international partners have published new advice (announced on Thursday 20th April) to help communities balance the cyber security risks involved with creating smart cities.

The new joint Cybersecurity Best Practices for Smart Cities guide, issued by the National Cyber Security Centre (NCSC) – a part of GCHQ – alongside agencies from the US, Australia, Canada and New Zealand, is designed to help ensure connected technologies are integrated into infrastructure in a way which protects systems and data.

It highlights that smart cities, or connected places, have the potential to offer communities cost savings and quality-of-living improvements, but notes these benefits must be balanced with the risks.

Communities considering adopting smart cities technologies are encouraged to consult this new guidance to understand the risks and how to mitigate them.
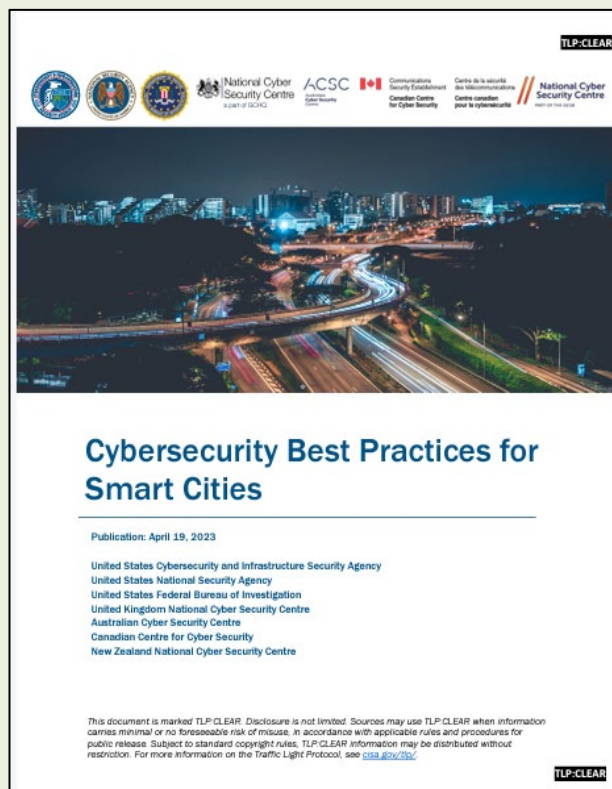
[GeoPlace annual conference: Connecting People to Places 10-11 May, 09.45-15.30](#)

GeoPlace's online conference which explores the need for the precise location information that sits at the heart of public services, good commerce, and governance. Free of charge to attend. [See the agenda and register here](#)

PREPARING FOR PROGRAMME CLOSURE: BEST PRACTICE GUIDE AND KEY DEADLINES

At the end of 2022 the Managing Authority published ['preparing for closure – best practice guide and key deadlines'](#).

Key deadline dates are noted below:

- Final claim submission (2nd deadline):   30/04/2023
- Final change requests: for changes excluding outputs and results: 31/05/2023
- Penultimate claims: 30/06/2023
- Final claim submission (3rd deadline):   31/07/2023
- Final physical end date: 30/09/2023
- Final financial end date: 31/12/2023
- Final claim submission (4th and final deadline):   31/01/2024
- Final article 125(5)(b) OTS (Stage 2) visits: 31/05/2024
- Final article 127:   31/10/2024
- Final reporting on EUMIS: 31/03/2024
- Final payments: 20/06/2024

> It should be noted that some 8th City Programme key closure dates differ from those outlined above. Key dates for projects are as follows:
>
> - Physical completion of all projects: 30th June 2023
> - Submission of project closure reports and recording / reporting of all outputs: 30th September 2023
> - Penultimate claim submission: 19th June 2023
> - Final Claim submission: 19th December 2023

The next 8th City Update will be out on 1st August.

For more information please contact Stephen Birrell, Programme Officer, 8th City PMO stephen.birrell@glasgow.gov.uk