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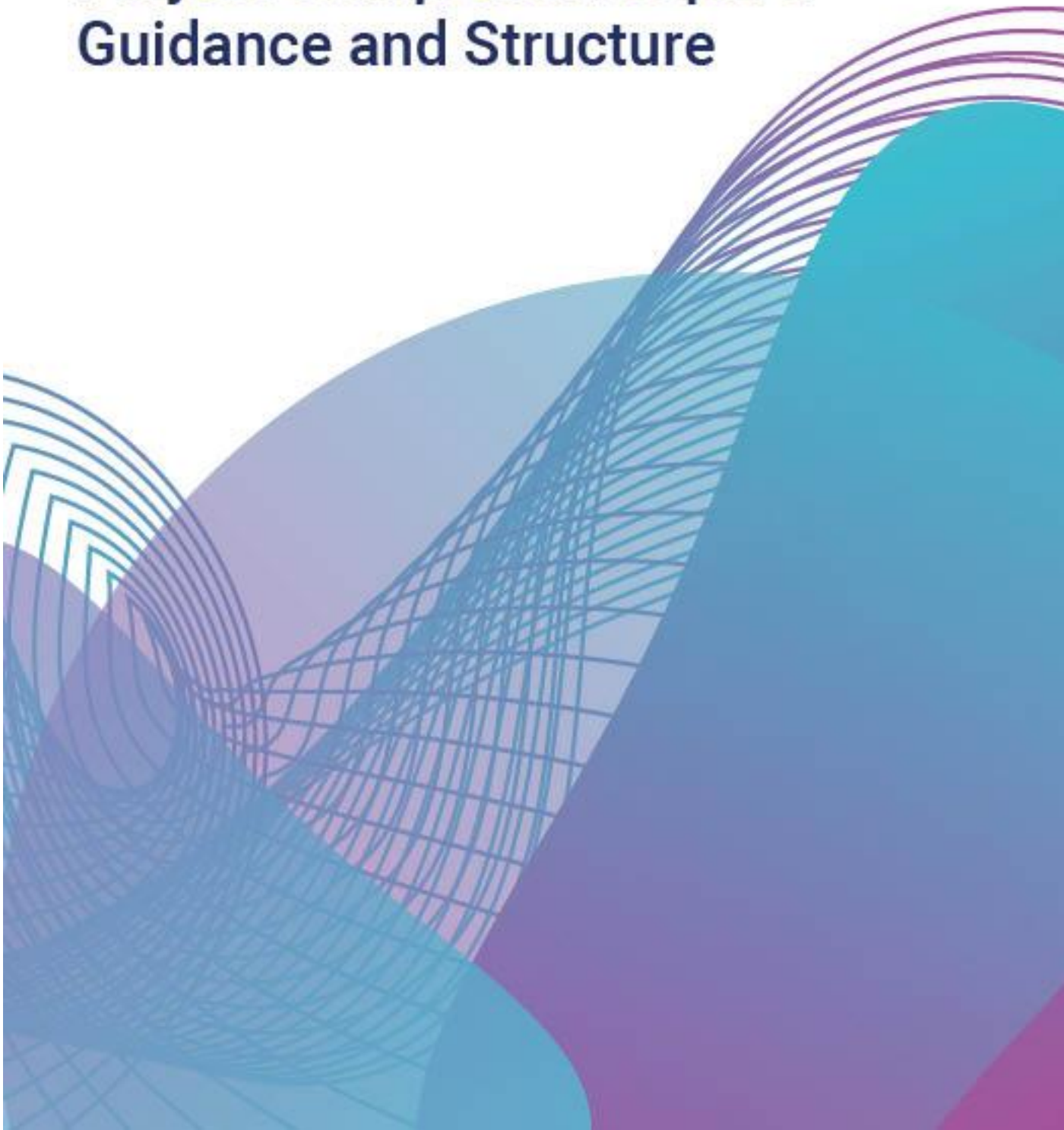
Smart Infrastructure Pilots Programme (SIPP) Project Completion Report: Guidance and Structure



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Project Completion Report: Guidance and Structure

The Project Completion Report is your opportunity to document your project's approach and highlight key findings. It should weave together benefits, lessons learned, and outcomes in a clear narrative.

Purpose of the Report

The report provides a high-level overview of the project team's approach, covering design, build, management, and operational aspects. It should be written in plain English, accessible to a general audience.

Be aware that this document, or parts of it, may be published for public consumption. DSIT values insights into both successes and challenges. If any sensitivities arise, please discuss these with your DSIT portfolio manager to ensure knowledge is captured while maintaining appropriate safeguards.

Completion Report Objectives

DSIT views the completion process as both an audit trail and an opportunity to:

- Celebrate achievements.
- Document experiences to guide future projects.
- Inspire innovation and further activity in this field.

When emailing the completed report to your DSIT portfolio manager, please feel free to attach any relevant supporting documents.

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Sections to complete

Project summary

A brief overview of your project's aims and objectives
The Cambridgeshire SIPP Project aimed to design and deploy 7 x PAS191 compliant Smart Poles hosting a range of use cases including Traffic Sensors, AQ Monitors, CCTV and EV charging as well as Small Cells. 2 types of Smart Poles were expected to be designed and deployed to enable a range of equipment to be installed. The proposed use-cases were expected to enhance our existing monitoring/mobile networks and enable deployments in locations that where there was difficulty deploying additional equipment due to the limitations of the existing columns.

The key function of the Smart Poles is to enable telecoms equipment to be deployed in a more commercially viable way to boost connectivity whilst supporting the regions digital ambitions which is a key priority within our Digital Strategy. Future-proofing infrastructure to meet anticipated requirements will play a key role in reducing costs and timeframes to deploy telecoms equipment that speed up investment and improve connectivity whilst also providing local authorities with a platform to deploy their smart city infrastructure.

The project aimed to develop detailed Smart Pole designs as well as installation and operational requirements so that the Cambridgeshire Smart Pole solution is compatible with the local environment and contractual arrangements to support a wider rollout in the future. The project additionally aimed to develop a Business Case for the future deployment of Smart Poles.

Project partners/suppliers

Please specify your project partners names and roles below:

Name	**Role in project**
Cambridgeshire County Council	Project Lead
Cambridge City Council (partner)	CCTV deployment & EV options
Balfour Beatty (supplier)	Smart Pole design lead
Milestone (supplier)	Primary civils contractor
VivaCity (supplier)	Traffic sensor deployment
EarthSense (supplier)	AQ Monitor deployment
Signify (partner)	Smart Luminaire deployment

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Benefits realisation

Overview, written in continuous prose, addressing each of the below:
Use cases description and intended purpose
The project was designed to realise multiple benefits within the project timescales. These can be split into the following categories:

- **PAS 191 compliant Smart Pole specifications/processes** – this was to ensure that Smart Poles can be deployed in the future through established arrangements
- **Increased environmental monitoring capabilities** – Traffic sensors & AQ monitors would fill gaps in our existing monitoring network in key locations in the city.
- **Improved capability to deploy small cells** – This supports on-going ambitions to improve mobile coverage in the region through a variety of deployment options. Smart Poles & Small Cells are considered a key option for mobile coverage/capacity improvements.
- **Increased investment from the telecoms & smart cities ecosystem** – The programme aims to support the deployment and testing of innovative technologies that align with our regional ambitions.

Final project outcomes vs those stated in your original application
The project set out a number of expected outcomes these are outlined below:

CCC have Smart Poles that provide multiple functions and support the operation of services/teams. Specifications become part of our Highways Development documentation.
This outcome has largely been met with 8 Smart Poles deployed hosting a variety of use-cases inc. CCTV, AQ Monitors, Traffic Sensors & Small Cells. The delay in deployment means work is on-going to finalise equipment installation and to integrate the Smart Pole specifications into Highways documentation.

Mobile coverage is improved providing a better mobile experience for residents, tourists and businesses. This can lead to increased business sales and improved image of Cambridge as a visitor/shopping destination.
This was not met during the project timescales as small cells are yet to be deployed. However, 3 small cells for a CCC run private network are expected to be deployed in the coming weeks as well as potential Neutral Host pilots being discussed with MNOs.

Smart Poles are deployed on future developments/projects providing futureproofed assets that minimise the need for additional works.
Not realised during the project due to the limited duration but it is fully anticipated that the new standard Smart Pole designs will be integrated into CCC specifications.

Process developed for deploying Smart Poles ensuring that future rollouts can be managed in a suitable way.
This has been met with specifications, procurement processes and installation/maintenance options in place.

On-going engagement with the mobile network/connectivity ecosystem and smart infrastructure suppliers leading to further investment in the region.
This has been met with £270k secured to deploy Smart Luminaires within the next 6 months. Conversations are also on-going for Neutral Host trials for Small Cells.

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PAS191 updated following the lessons learned.
This work is on-going to understand if there is any further feedback to the PAS191 standards.

Benefits realisation approach and methodology
The Benefits Realisation approach is aligned with key strategic outcomes defined in the CPCA's Digital Connectivity Strategy. This strategy included the development of Smart Poles to enhance digital connectivity and 'Smart City' ambitions. The methodology was to monitor the measurable improvements in these capabilities through the project.

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Procurement

How did you approach it? How long did it take?
The project utilised a range of procurement options to undertake the various work that was required to design and deploy the Smart Poles. The approach took into account CCC's existing contracts, known suppliers and government frameworks. This included:

- Existing contractual arrangements (2-6 weeks):
  - The design and installation of the Smart Poles
  - Traffic monitor deployment
  - Project Management Resource
- Government Framework (2 weeks):
  - AQ Monitors
- Quotations (under £5k) (2 weeks)
  - 3rd party Smart Pole design review

If / when you purchase additional PAS 191 poles, what will be the procurement method moving forward?
In future we have a specification for the design of Smart Poles, this can be issued to CCC Framework Contract suppliers to procure through their supply chain for supply & installation that will ensure value for money and a single process to deploy Smart Poles.

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Overview of sustainability

Written in continuous pros, include the following points in your overview:

Financial sustainability: how will the use case(s) continue beyond the capital funding provided by the project

The CCC use-case equipment installed on the Smart Poles have been procured with 4 years of maintenance included. Ensuring that the deployed solution will continue to provide benefits beyond the project timeframe. The equipment has been deployed in strategic locations with align with local data gathering/operational requirements and have been integrated into our wider networks. Going forward the equipment will form part of on-going maintenance frameworks, if they haven't done so already.

Maintenance of the Smart Poles themselves has been brought in line with our existing street lighting maintenance processes and discussions are on-going as to where management of these assets will sit in future. Going forward it is anticipated that the 'rental' fees for the deployment of small cells on Smart Poles will support the on-going maintenance costs.

How do you envisage increasing scale of use cases deployed (within your region or widening adoption (across other LAs, regions)

The use of Smart Poles is most likely to be suitable on new developments or during replacement of existing columns in upgrade schemes. Installation of Smart Poles will need to be targeted to ensure value for money when considering the location requirements. CCC will develop guidance on when the use of a Smart Pole should be considered on both Highways schemes and external developments by integrating in to already established design review processes. This design guidance can be incorporated into design principles of local planning teams when consideration is given to digital infrastructure as part of new developments.

In terms of wider adoption, CCC will promote the work we have done on Smart Poles through various forums such as ADEPT's Digital Connectivity Working Group as well as via direct conversations we have with other Local Authorities in our day-to-day roles.

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Investment stimulation/costs

Cost breakdown including deployment costs (cost to deploy to retrofitted poles vs the installation of new PAS 191-compliant poles)
The cost of installation of equipment on a standard column was largely similar to that of a Smart Pole. The key benefit of the Smart Pole is that is has not prevented the deployment of additional equipment which was the case with the existing columns that did not have the structural capacity. In order to accommodate the same amount of equipment 2 columns/poles would have been required – each with its own power supply & annual maintenance fee going forward.

In future the fact column doesn't need to be replaced or an additional column installed could save c. £1,000-£2,500 when new electrical connections & TM requirements are considered and is dependent on location. The Smart Poles also providing greater certainty on network planning as the capacity of the pole to host equipment is already known.

To replace a standard lighting column with a new Smart Pole was c. £5,500 however this cost would be expected to be significantly less as part of a wider programme/maintenance contract for column installations where economies of scale can be achieved. The cost could also be reduced were a specialist street lighting contractor employed directly rather than as a sub-contractor as part of a Highways maintenance contract.

Specify any investment stimulated from the project. Please indicate (where appropriate) capital, revenue, public, private.
The project has stimulated significant investment from various sources including:

- Additional CCTV cameras – Public c. £15k
- New traffic/AQ sensors – Public c. £38k
- Smart Luminaire pilot – Private c. £270k
- Funding for new Smart Poles – Public c. £50k
- There are also proposed pilots (private) for EV charging and small cell neutral host solutions that are still in discussion.

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Overview of lessons learnt

Further to your lessons learnt log, provide any high-level recommendations for future consideration, including feedback on the overarching policy objectives and your project's role in achieving these.

Policy going forward will need to focus on the wider deployment and rollout of Smart Poles. To this end there are a number of approaches that could benefit this for further consideration:

- Develop a shortlist of approved PAS191 compliant Smart Poles and use-cases in different deployment environments which is open and accessible to Local Authorities. This could in turn lead to the creation of a Procurement Framework – ideally this should include a supply and install option.

- Guidance should be created on the on-going maintenance and contractual elements of Smart Poles. This should provide examples of what maintenance contracts Smart Poles sit under in different LAs. Additionally, a template contract for deploying commercial equipment on to Smart Poles should be made available.

- Financial risk is a key consideration for a Local Authority and also their maintenance providers. Business Case information for the deployment of Smart Poles should be made available to Local Authorities to demonstrate return on investment and in particular how to mitigate any perceived financial risks.

- The knowledge required to understand preferred locations for Smart Poles will often sit across different teams inc. street lighting, economic development, traffic management centre, energy & climate. A strategic overview will therefore be required to understand deployment opportunities that pulls together expertise from different teams.

Connecting Cambridgeshire are able to support the development of each the above suggestions however input will be required from multiple local authorities to gain a broad understanding of the opportunities, processes and considerations for deploying Smart Poles.

Input will also be needed from key players in the mobile small cell & EV charging space to ensure that the proposals being developed align with the real world deployments opportunities in the future.

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Future plans

Post project activities:
What is the forward plan for the PAS 191-compliant poles deployed through this project?

- *Which department will own and manage them?*
- *What are the commercial agreements with the pole users and over what period?*
- *What happens upon the conclusion of that period?*

The Smart Poles are currently owned and managed by the Connecting Cambridgeshire programme for up to the next 4 years. Discussions are taking place internally to finalise which operational team will manage the assets going forward and under which maintenance contract they should sit.

Where commercial equipment is being installed on the Smart Poles these are subject to contractual agreements. In the case of small cells these are governed by a Small Cell Licence Agreement (SCLA), this requires the operator to pay a fixed sum to enter the agreement to cover legal/admin costs followed by an annual fee to cover on-going management fees. The operator is responsible for arranging all pre-testing/installation works which must be signed off by the local authority prior to installation – the initial term is for up to 10 years. Other commercial agreements will need to be developed going forward.

At the conclusion of the agreement period there is an option to extend the term after which a new agreement would need to be signed. Additionally, there are a number of termination clauses in the contract.

Where equipment is owned by other Local Authority teams or partner organisations, they are responsible for the installation/maintenance costs of their equipment inc. electricity fees and must provide an Elexon code for their equipment.

How you intend on capturing the outputs and learnings of this project to ensure you can make informed decisions on whether PAS 191-compliant poles will be used? Do you, as a council, have a clearly documented understanding / business case / decision tree on when it is appropriate to deploy PAS 191 poles?

The project will be writing a Business Case/Full Sustainability report in the first quarter of 2025/26, a resource has already been identified to undertake this task. The report will provide guidance on locating Smart Poles and provide the processes/specifications required to deploy them.

Has this project promoted an update to your street lighting/digital strategy?

This project has significantly advanced the programme's Smart Pole ambitions and the results/outcomes will help inform the future deployment strategy.

It is the intention that when replacements are needed (or even before) all projects will be able to follow logic to ascertain what to use, i.e.:

- *Is it an area of strategic importance (what does that mean for each), are your neutral host partner or MNOs interested in the specific area?*
- *Are your EV charging partners interested? Is there fibre? Do you need sensors etc?*

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- *From there you will also know the cost to deploy, cost recovered (via small cell rental, EV rental) and the other non-monetary benefits*
    - *i.e. better connectivity for businesses, residents, visitors*
    - *i.e., the business case to the council as well as the individual business cases that he NH / MNO, EV companies will make in isolation.*

The Connecting Cambridgeshire programme is responsible for monitoring the demand/deployment of both fixed and mobile infrastructure as well as acting as the main contact for the deployment for many of the latest environmental sensors. The team is therefore well placed to assess preferred locations from a connectivity/IoT perspective. The programme will also work with the team who are responsible for the LEVI funding in the region as well as commercial EV operators to assess suitable locations for EV charging solutions. The team will develop guidance on the locations and considerations for Smart Pole deployments.

- *Have you updated your T&C's to account for multiple stakeholders working on a single piece of hardware? i.e. what happens if there is an issue, who gets called first etc.*

Work is on-going to finalise the hierarchy and operational requirements for a single Smart Pole with multiple commercial deployments of equipment. An SCLA is already in place for small cell equipment which can form the basis for other commercial arrangements.