

NIC Project UKPNEN03

Annual Project Progress Report 2019

December 2019



Optimise Prime



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Table of acronyms

Acronym	Full form
ANM	Active Network Management
CAFE	Clean Air For Europe
CPC	Charge Point Controller
DNO	Distribution Network Operator
DSO	Distribution System Operator
EPN	Eastern Power Networks plc (one of UK Power Networks' three DNOs)
EV	Electric Vehicle
FSP	Full Submission Pro-forma
GB	Great Britain
GSA	Geospatial Analytics
IoT	Internet of Things
ICEV	Internal Combustion Engine Vehicle
IP(R)	Intellectual Property (Rights)
IT	Information Technology
LCV	Light Commercial Vehicle
LPN	London Power Networks plc (one of UK Power Networks' three DNOs)
LV	Low Voltage
MDI	Maximum Demand Indicator
NIC	Network Innovation Competition
OEM	Original Equipment Manufacturer (in this context vehicle manufacturer)
OLEV	Office for Low Emission Vehicles
PHV	Private Hire Vehicle
PM	Project Manager
RAID	Risks, Assumptions, Issues and Dependencies
RMG	Royal Mail Group
RTU	Remote Terminal Unit
SAFe	Scaled Agile Framework
SPEN	Scottish Power Energy Networks
SPN	South Eastern Power Networks plc (one of UK Power Networks' three DNOs)
SSEN	Scottish & Southern Electricity Networks
TCO	Total Cost of Ownership
TfL	Transport for London
UK	United Kingdom
WLTP	Whole Life Test Procedures

Glossary of terms

Term	Definition
Trial A	The first phase of the WS2 depot trial implementation, involving seven depots and 220 vehicles.
Trial B	The second phase of the WS2 depot trial implementation, involving all remaining WS2 sites and vehicles.
Trial Period	A 12-month period of trialling for each workstream when all trial vehicles should be on the road across.
WS1	Workstream 1 – Trial 1 – Home Charging
WS2	Workstream 2 – Trial 2 – Depot Charging
WS3	Workstream 3 – Trial 3 – Mixed Charging
WS4	Workstream 4 – IoT Platform, Network Forecasting & Flexibility Analysis
WS5	Workstream 5 – Business Model
WS6	Workstream 6 – Reports and Documentation
WS7	Workstream 7 – Project Management and Sharing Learning

1 Executive summary

1.1 Project background

Optimise Prime is an industry-led electric vehicle (EV) innovation and demonstration project that brings together partners from leading technology, energy, transport and financing organisations, including Hitachi Vantara, UK Power Networks, Centrica, Royal Mail, Uber, Scottish & Southern Electricity Networks, Hitachi Europe and Hitachi Capital.

The project will gather data from up to 3,000 EVs driven for commercial purposes through three trials. Optimise Prime will also implement a range of technical and commercial solutions with the aim of accelerating the transition to electric for commercial fleet operators while helping GB's distribution networks plan and prepare for the mass adoption of EVs. Through cross-industry collaboration and co-creation, the project aims to ensure security of energy supply while saving money for electricity customers, helping the UK meet its clean air and climate change objectives.

This project aims to be the first of its kind, paving the way to the development of cost-effective strategies to minimise the impact of commercial EVs on the distribution network. Commercial EVs are defined as vehicles used for business purposes, including the transport of passengers and goods. Compared to vehicles used for domestic purposes, commercial EVs will have a much greater impact on the electricity network. The potential impact of commercial EVs charging at depots results from two factors: co-location of multiple EVs at a single depot location, and higher energy demand per vehicle resulting from higher daily mileages and payloads. The latter is also a factor when commercial EVs are charged at domestic locations.

This project will seek to answer three core questions relating to the electrification of commercial fleets and Private Hire Vehicles (PHVs):

1. How do we quantify and minimise the network impact of commercial EVs?

The project will gain a comprehensive and quantified understanding of the demand that commercial EVs will place on the network, and the variation between fleet and PHV types. The project will achieve this through large-scale field trials where significant volumes of vehicle and network data will be captured and analysed. This data will enable the creation and validation of practical models that can be used to better exploit existing network capacity, optimise investment and enable the electrification of fleets as quickly and cheaply as possible.

2. What is the value proposition for smart solutions for EV fleets and PHV operators?

The project will gain an understanding of the opportunities that exist to reduce the load on the network through the better use of data, planning tools and smart charging. Additionally, the project will consider and trial the business models that are necessary to enable these opportunities. The project will achieve this by developing technical and market solutions, and then using them in field trials to gather robust evidence and assess their effectiveness.

3. What infrastructure (network, charging and IT) is needed to enable the EV transition?

The project will develop an understanding of how best to optimise the utilisation of infrastructure to reduce the load on the network. This will be achieved through the collection, analysis and modelling of depot-based, return-to-home fleet and PHV journey data. By answering these questions, the project will enable network operators to quantify savings which can be achieved through reinforcement deferral and avoidance while facilitating the transition to low carbon transport. The trial will also assess the vehicles' journey data to understand the charging and associated IT infrastructure requirements and implications for depot and fleet managers to be able to operate a commercial EV fleet successfully.

1.2 Purpose of this document

This is the first Project Progress Report for the Optimise Prime NIC project, covering the first year since the Project Direction was issued by Ofgem on 21 December 2018. This document fulfils the reporting requirements of Sections 8.11 – 8.15 of v3.0 of the NIC Governance Document.

Going forward the project intends to issue a progress report every six months to provide stakeholders with a more frequent update as the project enters the trial phase. The combination of two of these reports will constitute the Project Progress Report for Optimise Prime.

1.3 Summary of progress

Overall, the project has made good progress towards delivering the three trials throughout the last year, while addressing the significant challenges the project is facing in ensuring that there are sufficient vehicles available to meet the requirements of the Project Direction.

The project has successfully:

- Signed project collaboration agreements with all Project Partners by March 2019
- Completed initial designs for the three trials
- Established a [project website](#) to disseminate learning
- Completed Deliverable D1 on schedule
- Commissioned the IT hardware platform
- Developed a prototype of the Depot Planning Model
- Selected trial depots and installed charging infrastructure

In addition, the procurement of EVs for all trials is underway:

- WS3 is making good progress, with many EVs already on the road
- WS1 and WS2 are progressing slower than anticipated. Actions are being undertaken to maximise the number of vehicles for the trials.

Key progress from each project workstream is highlighted in the following sections.

1.3.1 WS1, 2 & 3 – The Home, Depot and Mixed Charging Trials

The initial version of the three trial designs have been produced. These designs set out the objectives for each of the trials and break them down into a series of sub-objectives and activities. The trials design work was reported in the [project's first deliverable](#) in August 2019.

In WS1, Centrica have set out their plan for developing the home charging solution and have made progress towards procuring EVs for use in the project. A procurement exercise has been undertaken to find a solution that will meet the needs of the business in the future. Following on from that a test charge point has been installed at a Centrica office and an employee home in order to test the home charging solution before rollout. More sites are being identified for the next phase of testing.

In WS2, a procurement process has taken place for the Charge Point Controllers (CPCs) that will be installed in each WS2 Depot. Royal Mail have identified seven Trial A depots and have installed additional charge points at five of these, EVs are now successfully operating from all of these depots. UK Power Networks has installed monitoring kits at secondary substations where Royal Mail Trial A depots are connected in order to collect granular network data. A prototype of the Depot Planning Model has been built to assess depot capacity requirements.

In WS3, Uber have been collecting and anonymising trip data from EVs on their platform. UK Power Networks have been collating utilisation data of their secondary substations for the

London Power Networks area. This data will be used to model the impact of future power demand from PHVs on the electricity networks, highlighting the need for additional charging infrastructure.

At the time of writing the Optimise Prime Partners have 700 EVs on the road in the UK Power Networks and SSEN regions. A breakdown of EV numbers by workstream can be found in Confidential Appendix A.

1.3.2 WS4 – IoT Platform, Network Forecasting & Flexibility Analysis

The IT platform that will be developed and operated by Hitachi is core to the project, as it captures and manages all data from Project Partners and hosts applications used by the project. The project's hardware platform has been commissioned, however it has taken longer than originally planned to begin the acceptance and analysis of some datasets, primarily because the platform must not only be secure and comply with applicable data protection laws, but also comply with each Project Partner's corporate information security and data protection policies. Additional work was required to ensure compliance, while not impacting the project's ability to achieve meaningful insights from the data.

Following the specification of the trials, work has begun on detailed design and implementation of the Trial Operational Applications: Trials Management System, Depot Planning Model, Depot Optimisation, and Flexibility Services. A prototype version of the Depot Planning Model has been developed. In addition, the data analysis team has been established to manage and perform analytics on the data collected during the trials.

1.3.3 WS5 – Economic Analysis & Business Models

The Economic Analysis & Business Models workstream has not been active during this reporting period as its outputs are not required to complete the initial deliverables. WS5 is expected to start activities during 2020.

1.3.4 WS6 – Reporting & Deliverables

Deliverable D1, High level design and specification of the three trials, was submitted to Ofgem on 29 August 2019 and published on the [project website](#). Work on the contents of deliverable D2 has begun although, as explained in Section 6, its publication will be delayed.

1.3.5 WS7 – Project Management & Sharing Learning

Throughout the first year of the project, Hitachi and UK Power Networks have established the detailed project plan, governance structures and reporting processes to ensure that the project is delivered on time, to scope and to budget and that risks are managed effectively. Following the project start on 21 January 2019, the project and collaboration agreements between all Partners were signed on 18 March 2019.

Hitachi's Design Authority has been established with the aim of managing the design of the platform and application elements of the project. A number of design documents have been defined for the development of the project's systems. The Design Authority has completed the overall solution architecture, which formed part of Deliverable 1, and the high-level design of the platform and analytics solutions. Detailed design is ongoing as part of the agile development process.

A project website, www.optimise-prime.com, has been developed to provide up to date information to stakeholders. Details of the project have been presented at a number of events, including the Low Carbon Networks Innovation Conference, Fleet Live, and IoT Solutions World Congress, where the project team has raised interest in Optimise Prime amongst a

wider group of stakeholders in the fleet, private hire, technology and electricity network sectors.

1.4 Risks and issues

The project operates a robust risk management process in order to reduce the probability of risks occurring and lessen the impact of any issues upon the project. The full risk register can be found in Section 10.

One specific risk has been identified as having developed into an issue during the first year of the project: the very limited availability in the market of electric LCVs, impacting progress in WS1 and WS2. The consortium believe that this still represents a significant risk but this is under proactive management by the Partners.

Optimise Prime intended that all of the EVs required for the trials would be on the road by July 2020 in order to run the trials for a full year, fulfilling the Project Direction requirement of “one thousand vehicles per trial...or, if this is not possible, a number of vehicles which...will deliver statistically significant results to each of the trials”. The WS1 and WS2 Partners have notified the project that they will be unable to meet this deadline, as either suitable vehicles are not available within this timeframe, or the total cost of ownership (TCO) for the vehicles available does not allow them to construct a viable business case. The TCO has changed significantly from bid stage due to a number of factors, including:

- A general shortfall in supply of electric vans in the UK at present. Launch of a number of new models has been delayed into 2020 and 2021. This is in part due to EU environmental legislation focusing manufacturer efforts on achieving targets in 2021, 2025 and 2030, partially due to component supply issues, and partly due to the lead time for manufacturers to adapt vehicle and production line designs to electric technology. Availability of the larger LCVs required by the Partners has been particularly limited
- Vehicle prices have increased in 2019, vs. 2018 when the original business cases were written, driven primarily by supply constraints
- Transport for London’s (TfL) announcement that the congestion charge discount for EVs will cease in December 2025. This potentially reduces the benefits case for EVs operating in central London. As TCO may be calculated on an 8-10-year vehicle lifetime this can have a significant impact. While TfL may introduce further legislation imposing a charge or ban on Euro-6 diesel and petrol vehicles in central London, no substantive announcements have been made to allow the Partners to take this into account in their cost modelling.

This issue is expected to impact the timeline, costs and output of the project, as it may result in fewer vehicles being available for the Home and Depot trials, or more time being required to recruit sufficient vehicles. The project is taking a number of mitigating actions to ensure that the project continues to produce valuable learnings for GB DNOs and other stakeholders. A working group has been set up to plan the acquisition of additional trial participants and rate of spend on the WS4 IT development and analysis has been reduced. The publication of Deliverables D2 and D3 is likely to be delayed as they are dependent on the progress of the IT development and infrastructure deployment. These issues and mitigations are described further in Section 3.3.

Acquisition of vehicles for the WS3 mixed trial (which involves cars rather than vans) is progressing well. On 25 November 2019, TfL announced that it would not renew Uber’s PHV operator license. Uber intends to appeal this decision and will continue to operate and provide data to Optimise Prime during the appeal process. If required, the project will look to supplement the data in WS3 through the new trial participant process developed for the WS1 and WS2 trials.

The project team developed three options to manage and mitigate the impact of issues stated above on the project's ability to deliver the planned outcomes and good value for money. These were:

1. Targeted spend on the areas where the consortium is confident EV numbers will be delivered and on finding new participants, while pausing other work
2. Continue all activities at lower rate of spend to allow for an extended project
3. Halt the project.

At a meeting of the project board on 29 November 2019, it was decided that proceeding with Option 1 was in the best interests of the project and offered best value for network customers, as it means that applications will not be developed until the vehicles that will take part in the trials are known. As a result of this decision the start of the 12-month Trial Period will be delayed and focus has been put on recruiting new participants for the trials. The project does not currently foresee this delay exceeding 12 months. A full discussion of these options can be found in Section 3.3.2.

1.5 Project Learnings

The Optimise Prime project is at an early stage in its development, and it is expected that the majority of the project learnings will materialise once the project begins to implement infrastructure, capture data and perform analysis. However, the trials design process generated learnings as the methodology to meet the project objectives was defined and specific requirements for each Partner were clarified. This included having to design the trials so that they do not adversely impact the day-to-day business of the Project Partners, dealing with the different ways the project Partners calculate their TCO and ensuring the trials can be carried out whether or not there is an actual constraint on the site connection.

EV acquisition has been a key challenge for Optimise Prime. Future large-scale projects dealing with emerging demand-side technologies should carefully consider whether the supply chain is capable of satisfying the need of the project at a reasonable cost, however this risk needs to be balanced against the potential benefits of testing the impact of technologies before they are adopted at scale.

2 Project Manager's report

2.1 Progress in this reporting period

The project has made good progress through its first reporting period, with activities focused on completing the:

- Project and collaboration agreements with all Partners signed on 18 March 2019
- Detailed project plan
- Project reporting and governance processes
- High-level design and documentation of the three Optimise Prime trials
- Specification, build and commissioning of the project's IT platform
- Acquisition of EVs by the Depot and Mixed-use trial Project Partners
- Trial by the Home trial Partner of a number of EV models
- Procurement of CPCs to be installed in depots and planning of their installation and integration into the solution
- Selection of the depots to be electrified for use by the project in Trial A and installation of EV charging infrastructure and CPCs at these depots. High-level design of the Trial Operational Applications (depot planning, depot optimisation and flexibility response)

- Production of a first version of the Depot Planning Model tool, which has been used to analyse the connection requirements of Royal Mail depots
- Installation of monitoring kits at UK Power Networks' secondary substations where Royal Mail Trial A depots are connected in order to collect granular consumption data
- Consolidated utilisation dataset for all secondary substations for which data is available in the LPN area, which will be used to create a heat map of PHV charging requirements
- Plan of modifications required to an existing UK Power Networks planning tool to enable assessment of profiled connections.

Each of these items is considered in detail in the relevant sections of this report.

2.1.1 Project Partner meetings

With eight Project Partners spanning multiple industries, Optimise Prime is a complex project requiring engagement and collaboration across all organisations. Hitachi hosted two 'kick-off' meetings on 12 February 2019, the first with the PMs from each of the Project Partners; the second with senior stakeholders from each organisation, together with representatives from Ofgem and project supporters as can be seen in Figure 1 below.



Figure 1 – Project Managers and Project Partner executives meet following the project kick-off

Four project steering board meetings have been held during this reporting period, on 13 May 2019 between Hitachi and UK Power Networks and on 12 June, 20 September and 29 November 2019 involving all Project Partners.

In addition, a weekly project progress reporting process has been put in place between Hitachi Europe, Hitachi Vantara, Royal Mail, Centrica, Uber and UK Power Networks.

In a project such as Optimise Prime, where multiple Partners have a significant part to play in making the project a success, it is crucial that all organisations are fully engaged with the project process, aware of their responsibilities and the project teams are supported by their organisations. Involving senior stakeholders for each Partner in the project kick-off has helped to ensure that senior managers in each organisation are fully aware of the benefits of involvement in Optimise Prime and committed to ensuring the success of the project.

2.1.2 Project team

During the first 12-month period the Project Partners have incrementally built up the project team to deliver the project. Hitachi have appointed a team covering roles including Programme Manager, Lead Technical and Business Architects, Trials Business Analysts, Project Management Officer & Reporting Analyst, Platform PM, Solution Architect and a development

team. UK Power Networks have recruited a Project Lead and an Innovation Engineer for the project, with other staff supporting the project as required. Other Project Partners have appointed PMs responsible for delivering their areas of Optimise Prime. In addition to these dedicated roles, the project teams are supported by colleagues throughout the Partner organisations in delivering the project.

Figure 2 shows the organisation of the project teams.

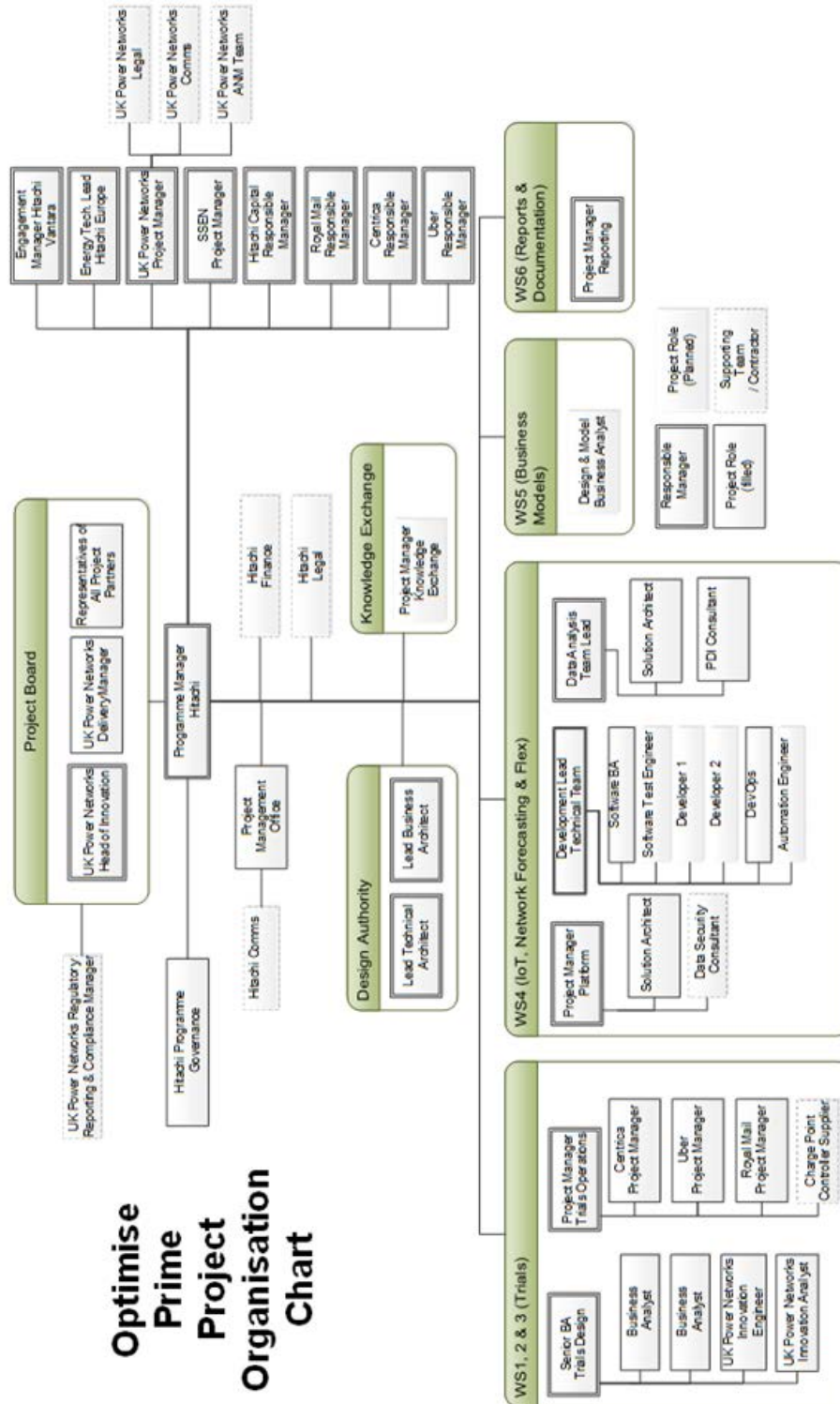


Figure 2 – Optimise Prime Organisation Chart

2.2 Workstream progress

2.2.1 WS1, 2 & 3 – Home, Depot & Mixed Trials

These workstreams are responsible for the design and implementation of the Optimise Prime's three trials: home, depot and mixed charging. They are presented together here in reflection of the significant amount of activity which is common to all trials, with subsections detailing the specific progress on each trial.

2.2.1.1 Progress during this reporting period

During this reporting period, the workstreams focused on the following activities:

- Mobilisation of the trial design team
- Defining the objectives of the three trials: home, depot and mixed and writing three trial design documents. These documents specify the trial methodology, a set of objectives common across all of the trials, and a set of activities that will make up each of the trials, ensuring that Optimise Prime generates all expected learnings
- Collaborative work between Project Partners to reach a common understanding of requirements for the trials
- Defining the data requirements of the trials
- Collaborative work between Project Partners to understand EV roll out plans
- Beginning to detail the experiments that will take place in each of the trials.

2.2.1.2 WS1 – Home trial

The home trial, outlined in Figure 3, is implementing technologies to monitor and manage commercial EVs charging at home, testing their ability to provide flexibility services.

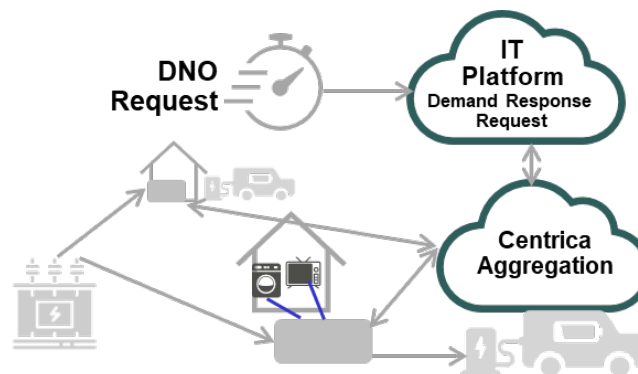


Figure 3 – Schematic of WS1 trial

In the home trial, Centrica have:

- Carried out discussions with a number of manufacturers for the supply of a new electric LCV for the British Gas fleet
- Approached a number of additional fleets to join the home trial to ensure the required volumes are met
- Created a plan for the integration of the system that will control and aggregate the charge points in the return-to-home trial
- Tendered for procuring the charge points for their drivers – Centrica now plan to test these chargers and the wider solution at homes of a number of existing EV drivers before implementing them more widely once the vehicles become available
- Tested a number of EVs.

UK Power Networks actively supported Centrica and Hitachi with recruiting additional fleets for the home trial, contributed to the development of the trial designs and had initial internal discussions to understand how flexibility could be provided by commercial EVs at LV level.

2.2.1.3 WS2 – Depot trial

The depot trial, shown in Figure 4, is implementing a range of technologies to allow depots to electrify economically by putting minimum additional peak load on the distribution network.

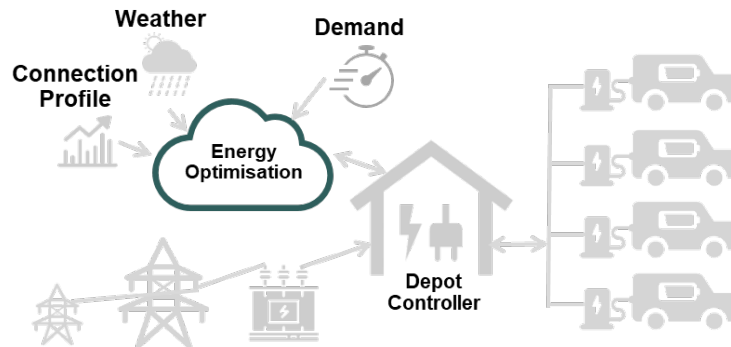


Figure 4 – Schematic of WS2 trial

In the depot trial, Royal Mail have:

- Ordered 190 new vehicles (example in Figure 5), with the first batch being delivered in July 2019 and all vehicles expected to be in service by early 2020. These will complement 30 EVs already on the road in London, for a total of 220 vehicles by early 2020
- Shortlisted the depots for the trial, carried out site surveys and feasibility studies and selected seven depots for Trial A
- Tendered for depot EV infrastructure and groundworks, and installed charging infrastructure at five of the seven depots (the remaining two will make use of existing chargers)
- Worked with telemetry providers to ensure the project will receive the required vehicle data
- Developed and implemented training for drivers of the new vehicles, based on feedback from earlier EV trials.



Figure 5 – Peugeot Partner EV charging at Royal Mail's Whitechapel delivery office

Within this reporting period, UK Power Networks have focused mainly on providing a high-level feasibility study on Royal Mail depot sites, started the development of the profiled connection tool and led interactive discussions with Project Partners in assessing the output of the Depot Planning Model applied to Royal Mail sites. Specifically, UK Power Networks has:

- Supported Royal Mail in their Trial A site selection and provided initial high-level network capacity analysis based on the EV demand expected at trial depots
- Provided quotes for the connection upgrade of five Royal Mail depots, which informed Royal Mail's site selection process
- Installed temporary monitoring at secondary substations where Royal Mail Trial A sites are connected in order to collect granular consumption data in prevision for profiled connections design and analysis
- Held initial internal discussions to understand changes required to accommodate profiled connections
- Defined the scope of work that is required to modify the existing network planning tool to have the capability to assess profiled connections
- Carried out initial work to understand monitoring and control requirements necessary to ensure network reliability during the trial of profiled connections and to generate sufficient evidence to demonstrate the adherence of Royal Mail's depot consumption to an agreed profile
- Held a workshop with SSEN to present the initial approach developed for profiled connections design and trial, and check whether it would be applicable in their area
- Led a connections surgery involving Royal Mail and Hitachi in which the outputs from the Depot Planning Model developed by Hitachi were used to assess the different connection options.
- Analysed two Royal Mail sites into further detail following the surgery to calculate benefits from managing EV charging as recommended by the Depot Planning Model.

Within this reporting period, SSEN have provided network data for proposed depot sites in their region, participated in a workshop to discuss profiled connections and attended a connections surgery to assess different connection options for Royal Mail sites.

Hitachi has:

- Tendered for the provision of Charge Point Controllers to manage charging at each depot. This contract was awarded to Nortech Management Ltd. Royal Mail are installing the system (Figure 6), together with the necessary communications infrastructure at seven of the trial depots and a test site is being created at a Hitachi facility
- Developed a prototype version of the Depot Planning Model and applied this to the selected Royal Mail Depots. This output was then used in the connections surgery involving Royal Mail, UK Power Networks and Hitachi mentioned above.



Figure 6 – Charge Point Network Switch, part of the depot solution for WS2

2.2.1.4 WS3 – Mixed trial

The mixed trial, shown in Figure 7, collects anonymised trip data from PHVs in the London area and will analyse this data to forecast future charging demands and network impacts.

In the mixed trial, Uber has:

- Defined, together with Hitachi, a data schema for the project, and collected anonymised trip data from EVs operating from January-October 2019
- Uber is also in discussions with vehicle manufacturers to ensure supply of vehicles to their driver partners
- Outside of the scope of Optimise Prime, Uber have implemented their Clean Air Plan which places a 'clean air fee' of 15p per mile for every trip in London - every penny of which will go towards helping drivers upgrade to EVs as well as other clean air initiatives.

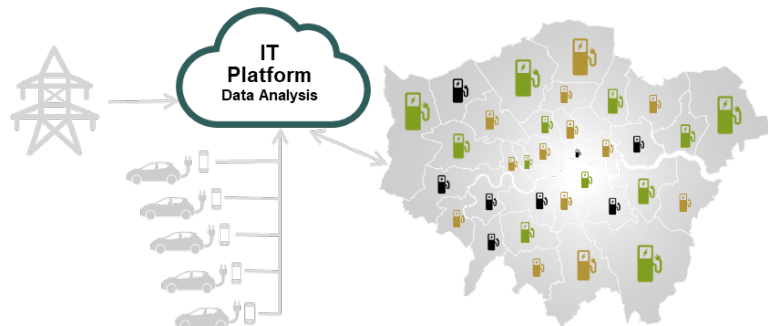


Figure 7 – Schematic of WS3 trial

UK Power Networks have compiled a data set of secondary substations in their LPN area for the mixed trial, including geographical location, existing capacity and maximum demand. Maximum demand is based on data measured half-hourly by Remote Terminal Units (RTU) where they are deployed on the network (nearly 60% of LPN secondary substations are covered), or otherwise based on Maximum Demand Indicators (MDI).

2.2.1.5 Challenges & lessons learnt (all trials)

The trials design process encountered several challenges as the methodology to meet the trials objective was defined and specific requirements for each Partner were clarified. A certain amount of adaptation to the practical realities and individual operational requirements of the trials' Partners is to be expected in creating a trials methodology, but there are some specific challenges that Optimise Prime has addressed that future projects are also likely to face.

Vehicle acquisition

Optimise Prime is working with early adopters of commercial EVs in order to quantify their impact in advance of large-scale adoption. As a result of this, the Project Partners are reliant on being able to obtain vehicles from manufacturers ahead of full-scale production. While the Partners are making significant contributions to the Optimise Prime by investing in EVs over ICEV alternatives, they must be able to create a positive business case for investment based on each vehicle's TCO.

The Partners have struggled to procure sufficient EVs which meet their business requirements at an acceptable cost. Supply of electric LCVs in the UK is extremely limited, which has resulted in prices remaining high, with a limited range of models available. Optimise Prime is now looking to involve a wider range of fleet participants in the trial as it has become clear, that achieving the original target volumes of the project is not possible in a reasonable timeframe with just three Project Partners. This was not anticipated at the time of the bid, as it was expected that suitable new vehicles would come to market earlier based on manufacturers' previous roadmaps.

Trial design

By its nature, this project involves introduction of unfamiliar technologies and processes into a busy environment where uninterrupted operations are crucial. It was therefore essential that the trials were designed to minimise risk of disruption to business as usual activities, for

example not charging vehicles sufficiently to carry out their normal duties, which could foreseeably conflict with some of Optimise Prime's innovation ambitions. To address this, a 'simulation before application' methodology was designed to enable any potential unacceptable risks to be identified and mitigated *in silico* at each level of technological complexity, before any changes to physical systems are implemented. In addition, the project is planning to install all physical equipment at a test facility prior to installation at trials Partner locations.

Total Cost of Ownership (TCO)

One of the learning ambitions for Optimise Prime is to clarify the impact of adoption of EVs on a fleet's TCO. For this learning to be useful to other fleets with different TCO models, the impacts should be visible at an individual line item level (e.g. impact on fuel costs). However, much of this baseline data is commercially sensitive and is unable to be shared across the trials Partners. The project will therefore develop a generic TCO model and use this to calculate the impact on each line item. The impact will be verified by the trial Partners, who will share the overall percentage change to their TCO resulting from fleet electrification.

Connections

For the depot charging trial, there is no established process for defining and establishing a profiled connection agreement, as it is a new product that this project seeks to design and trial. The trial has been structured to generate a range of profiles for the DNO to consider (cost optimal, network optimal, operations optimal), within a proposed connection offer, agreement and order cycle with the DNO. The formalisation of this into an ongoing process for future profiled connection agreements has been included within the Optimise Prime objectives.

It is possible that some of the depots selected for inclusion in the trial may not currently suffer from network constraints impacting their ability to charge additional EVs. One of the aims of the trial is to identify in which cases offering a profiled connection as opposed to a standard firm connection would be beneficial. The connection agreement in place at some depots may provide enough capacity to cover the additional EV charging load. In these cases, assessment of the benefit of profiled connection agreements will be simulated by considering the potential cost and capacity benefits to the distribution network if the new load was more significant or if the headroom at the nearest substation was smaller.

Network data

There is a wide variation in the availability and accuracy of utilisation data for different assets on the distribution network, particularly at LV where monitoring is limited and is currently being deployed at strategic locations. As such, the necessary data may not be available in all locations to enable detailed analysis of the impact of EVs on network asset performance – for example the maximum demand at a transformer resulting from addition of EV charging load at a specific home or public charge point. To address this, the project plans to identify the crucial infrastructure requiring monitoring early in the implementation process, so that it can be set up as a priority in UK Power Networks' LV monitoring roll-out process. WS2 sites will all be monitored, and clusters identified in the WS1 and WS3 trials will also be fitted with network monitoring. Assets with the necessary monitoring data available will be used to incrementally improve modelling capabilities as the trials progress, with these modelled impacts being applied to other locations. This will be conducted across multiple voltage levels, to explore the interaction of flexibility across at different levels in the network.

Statistically significant results

For the findings of the trials to be applicable beyond the scope of Optimise Prime, the experiments must be designed to provide statistically significant results. Due to the nature of these field trials, the experiments will be conducted subject to a wide range of uncontrolled variables (e.g. weather, traffic incidents, driver behaviour, major public events). To address this, trials will be structured to produce statistically significant results using representative

sample groups. Multi-level models will be developed that account for variation both within the sample group and between sample groups. The quality of crucial learnings will be controlled through experiment success criteria, demanding stringent statistical significance before experiment completion in order to be considered viable.

To ensure the amount of data used within the experiments is sufficient, the project will use multiple statistical tools such as variance, statistical bias and model learning rates. An experiment can then be run with three different data sets (test, bias and real data) per make/model, and the average variance between each run can be compared. Enough data would result in small variation between each run whereas not having enough data would result with a significant increase of the variance.

Model learning rates can be used to trace the learning curve per amount of data ingested. This would help the project identify when the model would have enough data and avoid feeding the model with more data that would not make an impact on the result. More broadly, Optimise Prime is planning to commission third-party statistical analysis to validate the robustness of the project approach and the resulting applicability of the results to other regions.

2.2.1.6 Outlook for the next reporting period

During the next reporting period the trials workstreams will focus on:

- Completing the charging infrastructure with CPCs at the Trial A depots
- Beginning initial trial activity with the first vehicles and data to be captured by the project's systems
- Finalising the trials quality assurance testing plan
- Utilising the prototype Depot Planning Model with additional depots and further developing its capabilities
- Defining the functionality of the depot optimisation system in conjunction with WS4
- Continued design of the profiled connection product to meet depot operator and UK Power Networks' needs
- Continued refinement of trials' requirements to demonstrate successful use of profiled connections
- Defining UK Power Networks' flexibility products to be trialled
- Recruiting new project participants in order to confirm the sites for the WS2 Trial B (in conjunction with WS7).

2.2.2 WS4 – IoT Platform, Network Forecasting & Flexibility Analysis

This workstream is responsible for the delivery of the Optimise Prime IT platform and the use of the platform to provide analytics resources and services to the trials. WS4 will also support WS1 & WS2 through the development of the Trials Operational Applications (i.e. the Depot Planning Model, depot optimisation system and flexibility services) and WS3 through the development of the data analysis capability. UK Power Networks will develop the capability within their systems to receive and process profiled connection applications as part of this workstream as well as modifying the existing Geospatial Analytics (GSA) tool to maintain and use the full dataset from the project for specific use cases.

2.2.2.1 Progress during this reporting period

This workstream has made significant progress in this period, designing and delivering the IT platform on which the project will store data and carry out analytics activities. The commissioning of this system at an early stage was necessary to allow the project to accept as much data as possible from the Optimise Prime Partners as early as possible. Key activities in this reporting period include:

- Reviewing the platform solution proposed in the FSP to ensure it was still the most appropriate for the Optimise Prime

- Completing and documenting the high-level design of the IT platform
- Completing security screenings to enable sharing of data between Project Partners
- Building the IT platform, securing data centre space and commissioning the system
- Reviewing the trials designs in order to plan the mobilisation of the development team and based on this developing a series of features that will need to be developed to deliver the trial objectives
- Mobilising the teams required to build the Trials Operational Applications and to begin the data analysis
- Developing interfaces to accept data from the project's various data sources
- Capturing the high-level functional requirements of UK Power Networks' Active Network Management (ANM) solution to meet the needs of Optimise Prime. The ANM platform will be used to enable a live trial of a profiled connection and will send signals for flexibility services
- Engaging with UK Power Networks' internal stakeholders such as connections and planning teams to capture the requirements of the profiled connections tool and flexibility solution
- Recruiting a GIS expert at UK Power Networks that will support and inform the GSA work for Optimise Prime
- Building a prototype Depot Planning Model to allow the WS2 team to analyse the power requirements of the Royal Mail depots.

2.2.2.2 Challenges & lessons learnt

- Delays in contract signature delayed the ordering of the platform, however the delay has been managed within the project plan
- The hosting location for the platform was not agreed before the project began; this required the delivery team to identify a suitable location, which complies with the information security and data protection policies of the Project Partners, before the platform could be delivered and built.
- It was essential to ensure that the project's systems complied with each Project Partner's corporate information security and data protection requirements without hindering the project's ability to gain meaningful insights from the data. The project team had to review the infrastructure solution originally proposed, along with the security policies and controls to ensure compliance, before delivery began. This has resulted in the system development taking longer than originally planned, leading to delays in the acceptance and analysis of some datasets. A solution has now been set up on the project infrastructure to analyse the mixed trial data in advance of the full solution being ready.
- Due to the uncertainty with regard to vehicle numbers the programme board has decided that development of the IT platforms should be slowed until such time that Optimise Prime has commitment from Partner fleets in order to manage project costs. This will impact the ability of this workstream to meet its original deadlines for delivering technology to the project.

2.2.2.3 Outlook for the next reporting period

Over the next twelve-month reporting period WS4 will focus on:

- Completing the ingestion and analysis of the first set of data from Uber, covering EV journeys in the January-December 2019 period.
- Ingesting the first set of data from Royal Mail depots, UK Power Networks and SSEN
- Integrating Centrica's home solution and aggregation platform
- Pursuing the low-level design of the analytics solution, specifying the data models that will be used by the project and the reports that will be produced by the analytics workstream

- Progressing the analytics of the data collected and the continued build of the Trials Operational Applications
- Creating a quality assurance plan and reviewing the output of the technical teams against this plan, the designs and Optimise Prime objectives
- Developing UK Power Networks' profiled connections tool and processes
- Detailing a new ANM work package to ensure the functional requirements are developed by the ANM vendor
- Developing the GSA use cases for Optimise Prime and capturing the requirements for the modification of the existing GSA tool including relevant additional data interfaces
- Installing equipment in the Royal Mail depots to monitor the profiled connections
- Designing the flexibility trials, flexibility products and operating model.

2.2.3 WS5 – Economic Analysis & Business Models

This workstream is responsible for further developing the business case that was put forward in the FSP. This business case will consider cost savings and improving use of capacity. It will also study the TCO impacts of the project methods and make recommendations on use of these methods by both vehicle operators and DNOs to reduce the cost and impact of the transition to EV.

This workstream has not been active during this reporting period, as detail of the business models is not required to be published until Deliverable D5. It will be mobilised during 2020 and will focus on the high-level design of the business models.

2.2.4 WS6 – Reporting & Deliverables

This workstream is responsible for the creation of the project deliverables that are published and submitted to Ofgem in line with the Project Direction.

2.2.4.1 Progress during this reporting period

The focus of this workstream has been the preparation of the first Optimise Prime deliverable, D1, High Level Design and Specification of the Three Trials, which was published on 29 August 2019 and can be found on the project website www.optimise-prime.com. This deliverable detailed the requirements, use cases, scenarios, technologies and locations for the three Optimise Prime trials: Home charging, Depot charging and Mixed charging.

Further details of the project's deliverables can be found in Section 6. This workstream is also responsible for the production of all Project Progress Reports. Ricardo Energy & Environment have been appointed as the independent reviewer of the project's deliverables.

2.2.4.2 Outlook for the next reporting period

The status of Optimise Prime's future deliverables can be found in Section 6.

2.2.5 WS7 – Project Management & Sharing Learning

This workstream is responsible for the overall management of the Optimise Prime project and its Partners, ensuring the project delivers to time, scope and budget. WS7 also incorporates a project Design Authority and knowledge exchange activities. The Design Authority is responsible for managing the overall architecture of the project's systems as well as reviewing the trial designs and ensuring that the design of the applications and analytical services meet the requirements of the trials.

2.2.5.1 Progress during this reporting period

During this reporting period, the workstream focused on the following activities:

- Negotiating and agreeing the collaboration and Partner agreements with all Project Partners, which were all signed by 18 March 2019
- Setting up the project governance and processes, recording this in a Project Initiation Document
- Detailing and reviewing the detailed project plan and budget
- Defining the project organisation and recruiting key roles
- Running a calendar of project governance meetings
- Maintaining the project Risks, Assumptions, Issues and Dependencies (RAID) log
- Chairing weekly project update meetings with workstream leads and Project Partners
- Producing regular project status reports
- Reviewing the deliverables of the other project workstreams
- Developing a relationship with SPEN's NIC project Charge. A joint workshop was held on 7 August 2019 where it was agreed Charge would provide peer review of Optimise Prime deliverables and the projects would host a series of joint dissemination events. Charge is an EV project with a different, complementary focus to Optimise Prime, aimed at accelerating the deployment of public charging infrastructure by combining transportation planning with distribution network planning. The projects will continue to monitor each other's progress in order to identify synergies and avoid overlaps
- Launch of the website, www.optimise-prime.com
- The planning of a number of conference speaking engagements. Further details of these can be found in Section 8
- Drafting of the Optimise Prime communications strategy to detail how the project and its Partners will communicate with external stakeholders.

The Design Authority function has made good progress in this reporting period towards designing the platform and applications that will support the Optimise Prime trials. Activities have focused on:

- Defining a set of 'Design Authority Artefacts', shown in Figure 8, that together describe what will be delivered by the project's technical teams and how this will be delivered
- Developing a Solution Architecture for Optimise Prime
- Reviewing the trials design to ensure that the trials are deliverable within the project's technical resources, and that the Solution Architecture is sufficient to deliver the trials.
- Developing a technical delivery operational model, setting out the structure, roles and responsibilities of the technical teams
- Selecting a Scaled Agile Framework (SAFe) that will be implemented to manage the project's technical delivery
- Setting out a process for the management of project requirements and the mapping of trial experiments to software features and analytics services
- Overseeing the specification of a series of 'epics' (blocks of development work) based on the trials design, and a backlog of 'features' that will be developed into software by the technical teams.

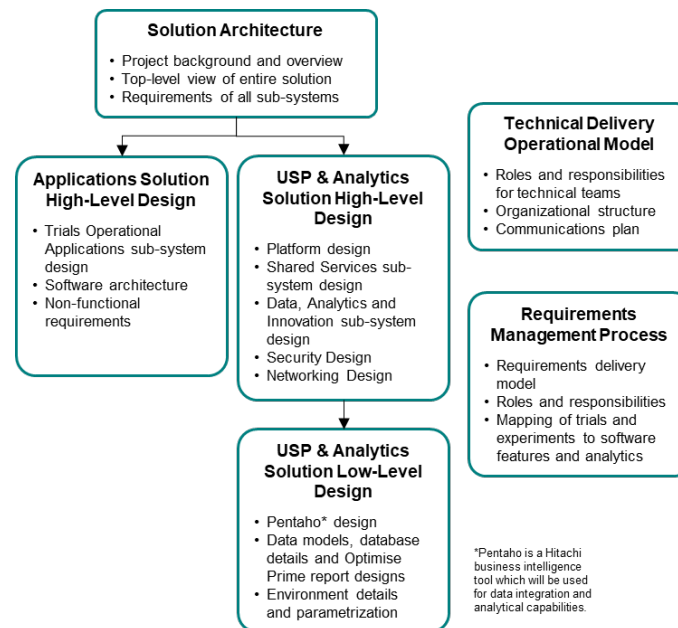


Figure 8 – Design Authority Artefacts

2.2.5.2 Challenges & lessons learnt

Challenges were met in the early stages of Optimise Prime. While a consortium collaboration agreement was agreed in January, the individual Partner agreement took longer than originally anticipated. All contracts were signed on the 18 March, compared to the project start date and anticipated 21 January signing of the contracts. Reasons for this delay include:

- The volume and complexity of contracts in this project was particularly high due to there being eight signatories coming from a large variety of sectors and the complexity of reflecting each parties' data protection requirements in the agreements
- The timing of the contract negotiations coincided with the end-of-year period, putting pressure on the Partners' legal resources
- The fact that Optimise Prime is being led by a non-licensee, while UK Power Networks are ultimately responsible to Ofgem also added complication to the negotiations. This required many tripartite project agreements to be negotiated, in addition to a collaboration agreement agreed by all of the Partners and sub-contracts between some Partners.

Future projects would be prudent to leave a longer gap between the project award and project start in order to give sufficient time to complete negotiations, and this timescale should be extended when there are a large number of Partners, mindful of the complexity and available legal resources.

One of the key issues in contract negotiations was gaining enough commitment from the Optimise Prime Partners to provide vehicles into the project, bearing in mind that the Project Partners cannot control the availability or price of vehicles in the market, and that the NIC is not providing funding towards vehicle purchase. As discussed elsewhere in this report, external factors have impacted the Partners' ability to purchase vehicles and the project is now engaging with a wider group of participants to provide the required vehicle volume.

The delay in the signature of the agreement led to a delay in the recruitment for two Hitachi project roles and the ordering of the IT platform. However, these challenges have been managed within the project timeline, and the resources of the Project Partners, without impacting any of the deliverables.

The primary challenge faced by the Technical Design Authority has been in balancing the creation of the solution design in alignment with the evolving trials design. Delayed recruitment of the Lead Business Architect due to contract signature delays added to this challenge. This has been managed through the adoption of an agile methodology in both the design processes, and close collaboration between all relevant parties, with clear communication and review cycles.

In the future, the lessons learnt in establishing this relationship and associated collaboration methods between the trials team and technical delivery team will be used to ensure that the project can deliver against expectations. A key factor in this will be the appointment of the Trials Lead into the Technical Governance team to lead the Solution Quality Assurance team.

2.2.5.3 Outlook for the next reporting period

The project management workstream will continue to manage Optimise Prime in the next period following the procedures set up in the first period. The project management office created a draft detailed project plan in January 2019 which is updated on a monthly basis. This will be reviewed during the next reporting period as the project reviews the impact of the need to recruit additional participants.

Additionally, WS7 will:

- Guide the resourcing and mobilisation of the technical teams
- Convene the Solution Security Working Group
- Implement the communications strategy for the dissemination of project learnings, including managing a programme of contributions at relevant conferences and events
- Update the project website with news of the project's progress
- Coordinate the acquisition of additional trial participants, in conjunction with WS1 and WS2.

2.3 Business case update

At this early stage the project has not become aware of any circumstances that may significantly impact upon the business case that was submitted in [Optimise Prime's FSP](#).

While the project has experienced delays in the availability of EVs, impacting the trials, there has not been significant negative change in the longer-term forecasts for EV adoption, on which the business case was based.

The Optimise Prime business case will be regularly re-assessed as more data becomes available or changes occur that require a review of the original assumptions, including if the completion of the project is delayed.

3 Progress against plan

This section of the report summarises the progress the project has made throughout this reporting period, highlights changes made since the FSP submission and reports issues faced by the project.

3.1 Detailed progress in the reporting period

Optimise Prime has made a slightly slower start than originally planned for in the project plan. This is largely due to the longer than anticipated time it has taken to negotiate and sign the project agreements between the Project Partners.

While the project kicked off as planned on 21 January 2019, investment in project systems and recruitment of new resources was delayed until all agreements had been signed on 18 March 2019. Significant progress has been made since this time to ensure that the initial trial designs are complete and the Hitachi Platform is commissioned.

Development of the Trials Operational Applications has begun, with a prototype of the Depot Planning Model having been produced. However, progress on WS4 and some aspects of the trials has been slowed down, pending confirmation of vehicle availability, in order to prudently manage project resources.

Table 1 details the status of key project activities expected in this reporting period:

Table 1 – Key Project Activities planned within the current reporting period

Task name	Sub-activities	Status at end of period
Trials (WS 1, 2 & 3)		
Design trial	High Level Design of the home, depot and mixed trials	Complete
	Detailed design of the trial experiments	In progress, behind schedule pending confirmation of EVs for WS1 & 2, see Section 3.3.1
WS1 Home trial		
Confirm EV rollout (Home trial)		In progress, behind schedule pending EV availability, see Section 3.3.1
New participant selection	Find additional participants for Home trial	In progress
Select trial technology solution		High level plan complete
WS2 Depot trial		
Confirm sites (Trial A)	Confirm Royal Mail depot site locations	Complete
Procure CPCs	Procurement of CPC supplier	Complete
Trial A depot Infrastructure & CPCs installed	Implementation of EV charging infrastructure at Trial A depot sites	In progress – first site install complete, final site planned for January 2020
Confirm EV rollout (Depot trial)		In progress – 2019 volume being delivered by January 2020
New participant selection	Find additional participants for Depot trial	In progress

Task name	Sub-activities	Status at end of period
WS3 Mixed trial		
Confirm EV rollout (Mixed trial)		In progress, on schedule
Data capture and analysis (Mixed trial)	Capture of data from Uber vehicles	In progress, on schedule
	Analysis of data from Uber vehicles	In progress, behind schedule, plan recovery in next period, see Section 2.2.2.2
WS4 IoT Platform, Network Forecasting & Flexibility Analysis		
Hardware design & build	Build and deploy project IT platform hardware	Complete
Analytics platform – develop & test	Detailed design of the analytics platform	In progress, behind schedule, plan recovery in next period, see Section 2.2.2.2
	Build of data ingestors	In progress, behind schedule, plan recovery in next period, see Section 2.2.2.2
Depot Planning & Optimisation Systems	Design and Build	Depot Planning Model prototype complete. Other work paused pending vehicle availability see Section 3.3.3
WS6 Reporting & Deliverables		
Deliverable D1	Compile report	Complete
Appoint independent reviewer of deliverables		Complete
Project Progress Report 1	Compile report	Complete
WS7 Project Management & Sharing Learning		
Solution Architecture Design	High level design of the project's technical architecture	Complete
Support & Review project design and implementation processes	Design of the Universal Service Platform	Complete
	Detailed design of the analytics platform	In progress, behind schedule, plan recovery in next period, Section 2.2.2.2
Depot tools/systems requirements and design	High level design	In progress, behind schedule. Work to accelerate once WS1/2 vehicle volumes confirmed. See Section 3.3.3
Profiled connection requirements and design	High level design	In progress, on schedule
Network Flexibility Model Requirements and design	High level design	In progress, on schedule
Website design and build	Publish website	Complete
Set up project management processes	Finalise Collaboration and Project Partner Agreements	Complete
	Develop the baseline project plan	Complete
	Agree & document project governance	In progress

3.2 Summary of changes since the FSP

Since the FSP there have been no material changes, as defined in the NIC Governance document v3.0.

A summary of the project plan is shown in Figure 9. As described in Section 1.4, the project board has recently decided to pause some project activity, delaying the trials and deliverable publication. This re-planning is currently in progress and will be reflected in the next PPR.

The following changes have been made to the project plan to improve the deliverability of Optimise Prime and in response to learnings gained since the application stage:

- The order of some activities within the workstreams have been altered as part of detailed planning in order to ensure that Optimise Prime is deliverable and fits with electrification plans of Project Partners. Specifically, it was necessary to reflect the fact that the Partners would need to gradually introduce EVs (and install infrastructure) over a longer period of time, rather than introduce them in a short 'install' phase. These changes include:
 - Trials have been re-designed with a smaller scale first phase occurring earlier, in order to capture data over a longer period and identify issues to be addressed before the large-scale trial phase. This requires certain elements of systems and infrastructure to be developed and installed earlier than in the FSP project delivery plan
 - Core IT systems are required to allow data ingestion, implementation of the platform was re-aligned to the revised ingestion dates
 - Development and build of the technical solutions will follow a more agile approach where the high-level design is completed in advance and detailed design and build is completed through a series of 'sprints', rather than in separate design and build phases
 - The start of business model workstream activity has been pushed back to after the design phase, as it is not required to fulfil the early project deliverables
- The start of the trial/run period was been delayed from July 2020 to October 2020 in order to allow more time for the fleets to procure the required EVs. As discussed in Section 1.4, the project will now delay this further to allow sufficient EVs to join the trial.
- Additional tasks have been added to the home and depot trial workstreams covering the need to identify and on-board additional trial participants in this part of the project.

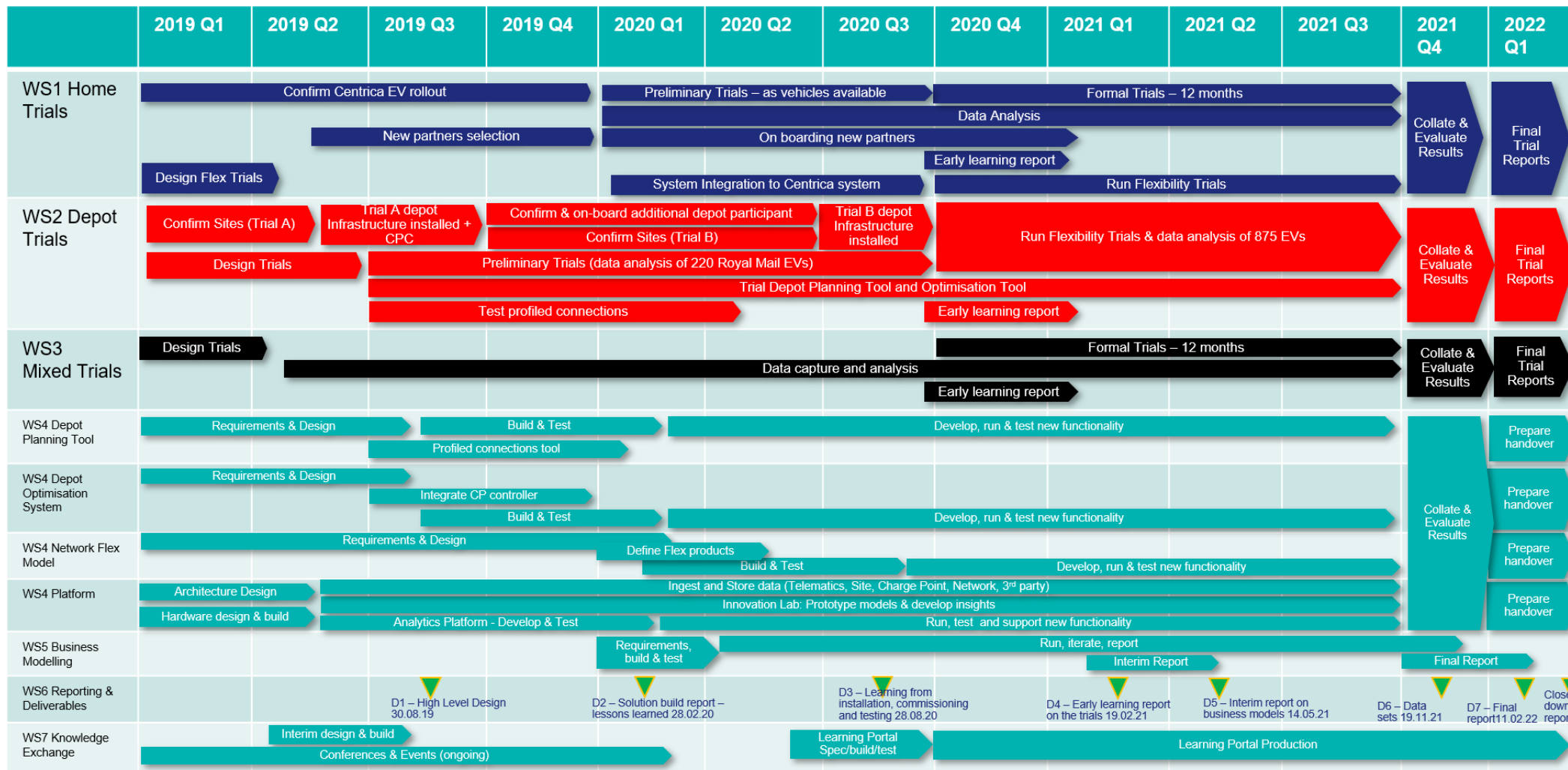


Figure 9 – Summary Project Plan

3.3 Identification and management of issues

3.3.1 EV Volumes

At an early stage in Optimise Prime Centrica notified the project that it would not be possible to deploy sufficient EVs to meet the start of the planned formal 12 month Trial Period, July 2020. The project must ensure that there is a statistically significant volume of vehicles involved in each trial in order to be confident that the learnings from the trials would be valid when scaled to GB level. This has been classified as an issue, as it is likely to impact the project timeline and financial profile. Particular difficulty had been encountered in procuring suitable vehicles due to delays in vehicle manufacturers releasing new commercial EV models at scale. This issue is explained further in Section 3.3.2 below. Centrica is now aiming to place orders in early 2020 with deliveries expected throughout 2020 and 2021.

The project team has taken several actions to mitigate the impacts of this issue:

- The project set up a fortnightly meeting to manage the identification and on-boarding of new participants to supplement the vehicles in WS1 and developed a strategy for the recruitment and selection of additional 'return-to-home' fleets
- Discussions are progressing with a number of operators of return-to-home commercial vehicles
- Centrica has continued with their vehicle procurement trialling EVs from multiple suppliers
- The Project Partners agreed at Optimise Prime's first quarterly steering board meeting to delay the start of the 12-month Trial Period by three months from July 2020 to October 2020, utilising pre-planned contingency time
- The project is closely following developments in the commercial EV market to identify suitable models becoming available.

Following this, in October 2019, Royal Mail notified the project that they would be altering their EV acquisition plans for 2020. This was due to a number of changes impacting their EV investment case, including EV availability, cost and changes to London's congestion charging regime discounts for EVs. As a result, the project does not at present have a commitment to provide the full number of vehicles required for WS2 within the project timelines.

In response to this the project has:

- Extended the search and recruitment for additional participants to include depot-based fleets, discussions with a number of parties are currently underway
- Reduced spend on application development for WS1, WS2 and WS4. This has an impact on the delivery of Deliverable 2, which will be delayed to after 28 February 2020 and will likely also delay Deliverable 3. The project will notify Ofgem of the revised submission dates once they have been fully planned and agreed amongst the project partners.
- Worked with Partners to consider whether other deliverables, and the project end date will need to be delayed in order to recruit additional vehicles and run a comprehensive trial.

Section 10 provides a full list of the risks that are being monitored by the project.

3.3.2 EV Market Outlook

The supply of EVs into the UK market continues to be linked to vehicle manufacturers' product lifecycles and the EU's Clean Air for Europe (CAFE) programme, with such legislation causing unintended consequences in the market. Regulation 2019/631 sets out a series of tightening CO₂ targets for manufacturers in the coming years, starting in January 2020 for cars and

commercial vehicles, resulting in many traditional manufacturers focussing their EV launches to align with this timeline. However, as the car market is eight times larger than the van market and WLTP (Whole Life Test Procedures) do not take full effect until April 2021 for commercial vehicle tax purposes, the primary focus through 2020 for manufacturers is on cars. This is resulting in a minimal level of product availability of EV vans through 2020.

Whilst there will be two new disruptor entrants to the UK market in late 2020, these disruptors are already 18 months behind their originally planned launch dates and their price point is proving uneconomical for business customers from a TCO perspective. In early 2021, commercial vehicles volumes into the 1,000s are expected to come on stream from traditional manufacturers, with order books for such vehicles opening late summer/early Autumn 2020. By 2022/23 it is expected that there should be significant choice at volume, with the majority of traditional manufacturers having launched an EV offering and annual product availability in the tens of thousands.

3.3.3 Managing EV volume related risks

Given the potential significant impact of these issues on the project achieving the volumes agreed in the Project Direction, the project team modelled three options for the continuation of the project and the pros and cons of each were considered by the project board. These options are presented in Table 2.

Table 2 – Evaluation of project options

Option	Pros	Cons
1. Targeted Spend on the areas where the consortium is confident EV numbers will be delivered and on finding new participants, pausing other work	<ul style="list-style-type: none"> • Spend on application development follows vehicle availability, reducing risk of wasted expenditure • Reduced costs allow project to be extended without additional funding • Project can focus on finding new participants • Allows more time for EVs to enter the market 	<ul style="list-style-type: none"> • If new partners are signed up quickly, development teams will have to be ramped up soon after they have ramped down • Time spent ramping down and then up is not productive • D2 onwards will be delayed • No guarantee that targets will be achieved within 12 months • Learnings may become redundant as market moves and project is extended • Teams disrupted and/or shared across multiple projects
2. Continue all activities at lower rate of spend to allow for an extended project	<ul style="list-style-type: none"> • Reduced costs allow project to be extended without additional funding • Continuity of team • Project can focus on finding new participants • Allows more time for EVs to enter the market 	<ul style="list-style-type: none"> • Risk of spend on applications without being sure of vehicle availability • Potential need for re-work if new participant requirements change • D2 onwards will be delayed • No guarantee that targets will be achieved within 12 months • Learnings may become redundant as market moves and project is extended
3. Halt the project	<ul style="list-style-type: none"> • More risk-adverse approach 	<ul style="list-style-type: none"> • Spending to date is sunk, before the project has delivered significant learnings • Opportunity lost to gain data from early EV fleet before large scale adoption

The project board decided to pursue Option 1, Targeted Spend, in order to secure optimal results for electricity bill payers. This option will allow the project to achieve the learning objectives while managing risks associated with developing applications before the vehicles for the trial are confirmed. As a result, Deliverables 2 and 3 will have to be delayed – the project will notify Ofgem when it is able to confirm a revised publication date. Subsequent deliverables are likely to be delayed reflecting the re-timing of the Trial Period.

3.4 Look-ahead to next reporting period

The key tasks for each workstream for the next reporting period are described in Section 2. In summary, the key tasks for the next period are:

- WS1 – Home Trials
 - Confirm introduction of Centrica EVs and additional trial participants
 - Begin development of home charging solution and integration with IoT platform
 - Develop flexibility model for home fleets
- WS2 – Depot Trials
 - Completion of infrastructure required for Trial A
 - Begin capturing trial data
 - Confirm additional fleet participant(s) in order to proceed with Trial B.
- WS3 – Mixed Trials
 - Continue to add more EVs to this trial and capture journey data.
 - Produce interim report based on analysis of Uber journey data
- WS4 – IoT Platform, Network Forecasting & Flexibility Analysis
 - Detailed design and build of trial operational applications
 - Ingesting first data sets in to platform
 - Detailed planning and implementation of analytics solution
 - First report on Uber data insights for WS3
- WS5 – Economic Analysis & Business Models
 - Mobilise workstream
 - High-level design of business models
- WS6 – Reporting & Deliverables
 - If sufficient progress in the solution build is made, writing Deliverable D2.
 - Prepare June project progress report
- WS7 – Project Management & Sharing Learning
 - Re-profile the project plan and budget to follow the ‘targeted spend’ option chosen by the project board and continue to manage progress
 - Continue to update the project website
 - Guide detailed design process, mobilisation of technical team and detailed planning of analytics solution
 - Support WS1 & WS2 in new participant acquisition.
 - Implement communications plan
 - Arrange disseminations event

4 Progress against budget

Details of project progress against budget is given in Confidential Appendix B.

5 Project bank account

A project bank account statement is included in Confidential Appendix C.

6 Project deliverables

Table 3 summarises the current progress towards completing the project deliverables. To date Deliverable D1 has been [published](#). It is anticipated that Deliverables D2 and D3 will be delayed, as full solution and infrastructure build will be delayed until the project has secured sufficient vehicles for the trials.

Table 3 – Project Deliverables

Deliverable	Description	Due Date	Status
D1 High level design and specification of the three trials	Report outlining the requirements, use cases, scenarios, technologies and locations for WS 1 (Home Charging), WS 2 (Depot Charging) and WS 3 (Mixed Charging)	30 August 2019	Published
D2 Solution build report – lessons learned	Report setting out the lessons learned from the infrastructure and technology build for the trials. The report will also include a description of the methodology to be used for trials	28 February 2020	In Progress. Publication will be subject to delay due to slower than planned progress in technology build.
D3 Learning from installation, commissioning and testing	Report setting out the key learning points from the installation, commissioning and testing processes/activities	28 August 2020	Not yet due to start. May be subject to delay due to delays in EV recruitment.
D4 Early learning report on the trials	Report setting out how each trial is performing, data gathered, insights gained, changes required	19 February 2021	Not yet due to start
D5 Interim report on business models	Interim report outlining the preliminary economic and behavioural findings and high level options for commercial solutions/business models	14 May 2021	Not yet due to start
D6 Data sets	Final datasets gathered from the trials for dissemination to stakeholders.	19 November 2021	Not yet due to start
D7 Final learning report	A report covering: <ul style="list-style-type: none"> • A summary of the work undertaken • The insights gained from the trials • Recommendations and likely costs and benefits • Models for use of commercial EV flexibility by DNOs. • Recommendations on business models • How the trials, the infrastructure and technology should be transitioned after the project has completed and How to ensure integration of the Methods with DNO/DSO systems and processes 	11 February 2022	Not yet due to start

Deliverable	Description	Due Date	Status
Comply with knowledge transfer requirements of the Governance Document	<ol style="list-style-type: none"> Annual Project Progress Reports which comply with the requirements of the Governance Document Completed Close Down Report which complies with the requirements of the Governance Document <p>Evidence of attendance and participation in the Annual Conference, as described in the Governance Document</p>	N/A	This document fulfils item 1 for 2019. Item 2 is not yet due to start.

7 Data access details

It is recognised that innovation projects of this nature may produce network and consumption data, and that this data may be useful to others. This data may be shared with interested parties whenever it is practicable and legal to do so and it is in the interest of GB electricity customers. When such data is available the project will provide access to non-personal, non-confidential/non-sensitive data on request, in line with UK Power Networks' Innovation Data Access Policy:

<https://innovation.ukpowernetworks.co.uk/wp-content/uploads/2018/12/InnovationDataSharingPolicy.pdf>

As part of deliverable D6, the project plans to make a comprehensive dataset resulting from the trials openly available. This is currently scheduled to be released in December 2021.

8 Learning outcomes & dissemination

Optimise Prime is committed to sharing learnings with a wide group of stakeholders in order to help accelerate the EV transition. While the project is still in its early stages, there have been a number of learning outcomes to date, which have been identified throughout this report and in the project's first deliverable.

The project team has set out the project's communications strategy and the project website has been launched at www.optimise-prime.com, together with the project LinkedIn account <https://www.linkedin.com/company/optimiseprime>, to provide periodical updates to interested stakeholders. In addition, the project team has been attending a number of industry events including the Low Carbon Networks & Innovation Conference in October 2019.

Dissemination activities to date have focused on building awareness of the project and its goals amongst potential stakeholders. As part of this, Project Partners have represented the project at a number of events:

- Computer Business Review CBR Dining Club – Royal Mail and Hitachi representatives gave an introduction to the use of data in Optimise Prime (March 2019)
- Fleet 200 Executive Club – UK Power Networks introduced Optimise Prime in a speech calling for cooperation between fleet and DNOs (April 2019)
- ITTHUB Collaborators Launch – new FTA sponsored event, Centrica sponsored and on panel (May 2019)
- CIRED 2019 – UK Power Networks introduced Optimise Prime as a case study in a round table discussing Distributed Energy Resources (June 2019)

- Regen Electric Vehicles & Electricity Systems Forum – UK Power Networks and Centrica spoke at this event considering the progress of fleet electrification (June 2019)
- National Technology News Data Innovation Forum – Hitachi, Centrica, Royal Mail panel (Figure 10, June 2019)
- Powering the Capital – Arup/GLA event – Centrica were part of panel on fleet electrification, (July 2019)
- Solar & Storage Live – UK Power Networks, Hitachi & Centrica joined plenary session (September 2019)
- LoCity Annual Conference – UK Power Networks presentation to an audience of fleet operators (September 2019)
- Fleet Live – Centrica, Royal Mail, UK Power Networks & Hitachi panel discussion (October 2019)
- Hitachi Next 2019 – Hitachi, Uber and Centrica panel discussion and award presentation (Figure 11, October 2019)
- IoT Solutions World Congress – Presentation by Hitachi (October 2019)
- Smarter Tomorrow Conference – Presentation by UK Power Networks (October 2019)
- Low Carbon Networks & Innovation Conference – Presentation by UK Power Networks and Hitachi (October 2019)
- PTV User Group – Joined panel with SPEN's Charge Project (November 2019)
- Impact Mobility Conference, San Diego – Presentation by Hitachi (November 2019)
- BDA Confex – Presentation by Hitachi (November 2019)
- Big Data London – Presentation by Hitachi (November 2019)
- IDC Roundtable, Saudi Arabia – Presentation by Hitachi (November 2019)
- Bilişim Zirvesi 2019, Istanbul – Presentation by Hitachi (November 2019)
- IDC Big Data Event, Johannesburg – Presentation by Hitachi (November 2019)
- BVRLA EV Energy Roundtable, London – Presentation by UK Power Networks (November 2019)
- BVRLA Industry Outlook Conference, Nottingham – Presentation by UK Power Networks (December 2019)
- IET Sussex Network Talk, Crawley – Presentation by UK Power Networks (December 2019)



Figure 10 – Optimise Prime Partners join a panel discussion at the Data Innovation Forum, 6 June 2019



Figure 11 – Consortium representatives introduce Optimise Prime at Next 2019, 10 October 2019

UK Power Networks have also covered Optimise Prime in a variety of presentations as part of their innovation portfolio and wider EV readiness strategy.

In addition to this, the project's launch press release generated significant interest, including 69 published articles in global media, and Project Partners have mentioned Optimise Prime in their PR and communications activities. Project Partners have produced a number of videos

and other resources to support the project's dissemination activities and have promoted the project via social media.

9 Intellectual Property Rights (IPR)

This section lists any relevant IP that has been generated or registered during the reporting period along with details of who owns the IPR, any royalties that have resulted (Table 4), and any relevant IPR that is forecast to be registered in the next reporting period (Table 5).

Table 4 – IP generated last period (January – December 2019)

IP Description	Owner(s)	Type	Royalties
Solution Architecture Design	Hitachi	Relevant foreground IPR	Nil
Trial Design Royal Mail	Hitachi, Royal Mail, UK Power Networks	Relevant foreground IPR	Nil
Trial Design Centrica	Hitachi, Centrica, UK Power Networks	Relevant foreground IPR	Nil
Trial Design Uber	Hitachi, Uber, UK Power Networks	Relevant foreground IPR	Nil
Deliverable D1– High Level Design of the Three Trials	Hitachi, UK Power Networks, Royal Mail, Uber, Centrica	Relevant foreground IPR	Nil
Universal Service Platform & Analytics Solution High Level Design	Hitachi	Relevant foreground IPR	Nil
Trials Operational Applications High Level Design	Hitachi	Relevant foreground IPR	Nil
Prototype Depot Planning Model	Hitachi	Relevant foreground IPR	Nil
Depot Planning Model High Level Design	Hitachi	Relevant foreground IPR	Nil

Table 5 – IP forecast next period (December 2019 – June 2020)

IP Description	Owner(s)	Type
Trials Operational Applications – Detailed Design & Build	Hitachi, UK Power Networks, Centrica	Relevant foreground IPR
Universal Service Platform & Analytics – Detailed Design & Build	Hitachi	Relevant foreground IPR

10 Risk Management

Table 6 lists the risks highlighted in the FSP as well as new risks that have arisen during the reporting period. This table describes how the project is managing the risks and what has been learned.

Risks R001 to R022 are captured in the FSP. The project has identified risks R023 to R047 during the first 12 months of the project. The project continues to monitor risks and issues through regular risk management meetings. Following each meeting risk impacts and mitigation plans are updated. 13 risks have been closed over this period, either due to the risk passing, or to avoid duplication of risks in the log.

Table 6 – Project Risk Log

ID	Name	Risk Description	Mitigation	Cost	Probability	Schedule	Status	Owner	Last Updated	Closure
Project Name: Optimise Prime										
R001	Project costs are higher than expected	Project overspend requiring additional Partner contribution or request to Ofgem for additional funding	<ul style="list-style-type: none"> - Budget completed in 2018 and submitted in the FSP - Budget updated in November 2018 for contracts - Budget is updated each month for actuals and new forecasts, with a new baseline every quarter. - 14/10/2019 Considering options for extended programme 	High	Low	Negligible	Open	PM	14/10/2019	
R002	Some aspects of the technical solutions are not achievable to the desired specification within the project budget	The project will not be able investigate all of the available techniques	<ul style="list-style-type: none"> - 14/06/19 An agile method is planned to be used. The exact method used will be flexed according to budget and time available in order to achieve the project scope. 	High	Low	Low	Open	TDA	14/10/2019	
R003	Solution design and implementation is more complex than initially thought	Potential over-spend on solution development	<ul style="list-style-type: none"> - 14/06/19 An agile method is planned to be used. The exact method used will be flexed according to budget and time available in order to achieve the project scope. - 05/09/19 - Set up workshops to plan what can be built by July 2020 	High	Low	High	Open	PM	14/10/2019	
R004	Solution does not deliver anticipated outcomes	Lower than expected value delivered	<ul style="list-style-type: none"> - Trials design agreed on 07/06/19. - Trial and solution design is clearly defined following set methodology clearly linking activities with outcomes. Designs are agreed with relevant Partners and linked to FSP commitments. - Solution design and business case regularly reviewed throughout the project lifecycle and changes are made where needed - Review of each Deliverable by UK Power Networks prior to submission to Ofgem to ensure the solution delivers the outcomes - 14/10/19 Independent assessor of deliverables selected 	High	Low	Negligible	Open	PM	14/10/2019	
R005	Partner performance is not contractually defined	Outputs delayed or inadequate and potential overspends	<ul style="list-style-type: none"> Weekly meetings with Project Partners, Suitable incentives where required Shared responsibilities for deliverables Contracts signed on 18/03/2019 Partner performance is tracked by weekly meetings and programme governance 	Medium	Low	Medium	Open	PM	14/10/2019	

ID	Name	Risk Description	Mitigation	Cost	Probability	Schedule	Status	Owner	Last Updated	Closure
R006	Suitable equipment suppliers cannot be found	Project will be delayed or require re-scoping	Realistic requirements specified at FSP. Early consultation with suppliers. 10.06.19 Hitachi have selected their suppliers and Royal Mail have selected their CP provider and is testing a new telematics system. Changed to Low Risk	Low	Low	High	Open	PM	14/10/2019	
R007	It is not possible to test equipment adequately prior to commencing the trial	Project may need to be re-scoped	Good understanding of supply chain. Realistic requirements specified at FSP. 10/06/2019 – Pilot site agreed for depot equipment to be tested	High	Low	Medium	Open	PM	14/10/2019	
R008	Unable to agree on project contracts between UK Power Networks and Partners	Project unable to proceed	Early discussion of contractual arrangements between Partners Contracts signed 18/03/2019	High	Low	Medium	Managed (Closed)	PM	10/06/2019	10/06/2019
R009	Partner or supplier may withdraw from project	Partner or supplier needs to be replaced. Partner or supplier withdrawals resulting in new technology or equipment having to be purchased.	14/06/19 Working group established on May 3rd to find new participants for the home fleet Weekly status reports with the Partners, and quarterly governance meetings to assess performance	Medium	Medium	High	Open	PM	14/10/2019	
R010	Suitable sites for trials not available	Demonstrations and trials cannot proceed	10/06/19 - Royal Mail have target list of 21 sites for Trials A and B 05/09/2019 - 7 sites agreed for RMG Trial A.	Medium	Medium	High	Open	PM	14/10/2019	
R011	Lack of business support from key departments in organisation in consortium/Partners	Project suffers delays or cannot proceed	Gain support early from senior management teams in each organisation. Early identification of an issue. Closed as this risk duplicates R9 10/06/2019.	High	Low	Medium	Managed (Closed)	PM	10/06/2019	10/06/2019
R012	Changes to key personnel	Project delays due lack of availability of personnel for key roles/loss of knowledge	Ensuring project progress, systems, processes and learnings are well documented in a timely way to prevent loss of knowledge caused by staff changeover.	Low	Low	Medium	Open	PM	14/10/2019	
R013	Specification and build of trials and technology solution takes longer than planned	Project delays	Trials design agreed on 07/06/2019. 27/06/19 - Technical Delivery plan created, close collaboration with Development team in Lisbon set up. 14/10/19 - Planning work completed in September 2019, regularly revise based on progress	Medium	Medium	Medium	Open	TDA	14/10/2019	
R014	IPR requirements deter some suppliers from involvement	Suppliers must be replaced. This Risk has been closed, as main procurement has taken place without IPR issues.	Early discussion of IPR requirements with suppliers Alternative suppliers identified. 10/06/2019 - Closed. All suppliers found	Medium	Low	Medium	Managed (Closed)	PM	10/06/2019	10/06/2019

ID	Name	Risk Description	Mitigation	Cost	Probability	Schedule	Status	Owner	Last Updated	Closure
R015	Integration of equipment and systems not achievable or takes longer than planned	Project delayed or cannot proceed.	Collaborative design process with all key Project Partners. Early installation of controllers at trial site 10/06/2019 - Closed as duplicate of R007	High	Low	High	Closed	TDA	10/06/2019	10/06/2019
R016	Major issues with equipment causing damage to network or causes injuries	Equipment is damaged or individual is injured	Analysis of this potential is carried out early in the project and recommendations are incorporated into the design. 10/06/19 - Pilot site identified to test infrastructure	High	Low	Low	Open	Trial Operations PM	14/10/2019	
R017	Depot Partner may change their plans for the timing of the roll out of EVs and infrastructure	Re-planning and potential for project delays. Potential cost of on boarding new participants. 14.10.19 – Delay in depot vehicle plans for 2020 notified.	Work with Partners in the early stages to ensure plans are realistic and build in contingency. Project will work with Hitachi Capital and new participants to endeavour to meet the volumes. Stage Gate process in place to manage	Medium	High	High	Open	PM	14/10/2019	
R018	The target number of EVs may not be available for the start of the trials due to lack of supply of LCVs at a competitive price in market or fewer PHV drivers adopting EVs.	Re-assess number of EVs required. Could delay project until EVs available.	Work with Partners in the early stages to ensure plans are realistic and build in contingency. Have alternative participants if required. Project will work with Hitachi Capital and new participants to endeavour to meet the volumes. Stage Gate process in place to manage project spend if EV volumes are ahead of, at or behind target - Closed and re-opened in R29, R30 & R31	High	Medium	High	Managed (Closed)	PM	10/06/2019	10/06/2019
R019	Delays to the procurement and installation of infrastructure	Delays to the start of the trials	Plan procurement and installation as early as possible. Identify alternative suppliers if delays are likely. Monitor supply chain. Early discussion between the Partners and car manufacturers to secure sufficient number of EVs.	Low	Low	High	Open	PM	14/10/2019	
R020	OLEV EV Subsidies are curtailed earlier than forecast	EV rollout slows and business case affected	Closely monitor legislative proposals with OLEV. Lobby where necessary.	High	Low	Low	Open	PM	14/10/2019	
R021	Adequate TCO for EVs cannot be achieved	Fleets do not invest in EVs or infrastructure	27/06/2019 - Closed as managed in R29, R30 and R31	High	High	Negligible	Closed	PM	27/06/2019	27/06/2019
R022	Legislative changes	Legislative changes mandate project methods or make them illegal by mandating alternative methods. Project business case is not achievable	Closely monitor legislative proposals with OLEV. Lobby where necessary.	High	Low	Low	Open	PM	14/10/2019	
R023	Clean Air for Europe (CAFE) regulations	CAFE regulations place obligations on vehicle OEMs that may encourage them to delay new ultra-low carbon LCV launches into 2020. Delay to scaling of trials.	Closed and re-opened in R29, R30 & R31	High	High	High	Closed	PM/Centri ca PM	10/06/2019	10/06/2019

ID	Name	Risk Description	Mitigation	Cost	Probability	Schedule	Status	Owner	Last Updated	Closure
R024	Ofgem ability to Halt the Project (Cancellation)	Ofgem may halt the project in certain circumstances e.g. because it has become clear that the Method is not viable or there are other reasons why it is not efficient, or not possible to continue with the project. Ofgem will identify Halted Project Revenues; funds received by Funding Licensee which have not yet been spent (less funds to halt the project).	Critical to keep accurate and up to date records of expenditure and evidence of committed funds	High	Low	Negligible	Open	PM	14/10/2019	
R025	Availability of Data from Existing telematics Devices	Current telematics does not work with existing electric van fleet.	10/06/2019 trialling alternative telematics service 14/10/2019 Receiving data from new provider - Closed	Low	Medium	Low	Closed	RMG PM	14/10/2019	14/10/2019
R026	Possible delays to groundworks if poor electrical infrastructure or asbestos is discovered. (Royal Mail)	Potential for additional work required to install chargers at Royal Mail depots	Once sites are selected, survey site at earliest opportunity 27/06/2019 - Site surveys completed 14/10/2019 Groundworks complete - closed	Low	Low	Medium	Managed (Closed)	RMG PM	14/10/2019	14/10/2019
R027	Royal Mail have not identified all of the Depots for Phase 1 trials, or the depot managers who will be involved in the trials	Royal Mail site selection delayed. So as not to delay work on the Depot Planning Tool, Hitachi shall start work on the Depot Planning Tool requirements, as planned in June. This may mean that some re-work is needed, by Hitachi, on the requirements and design of the Depot Planning Tool.	Hitachi to work with Royal Mail to confirm detailed site planning requirements as soon as decision is made. 05/09/2019 - 7 sites selected for Trial A 14/10/2019 – Closed – Trial A install in progress	Low	Low	Low	Closed	PM	14/10/2019	14/10/2019
R028	Royal Mail Grid Connection Applications delay - Trial A sites	The standard LV connection takes up to 9 weeks from application to offer. The delay in site selection, from April to June, may impact the connection of the charge points at their Trial A sites.	27/06/2019: Connection applications for initial sites received and being processed by UK Power Networks 22/07/2019 - Only one site may require upgrade in Trial A. No new CPs will be installed at this site in Trial A. 14/10/2019 Closed	Negligible	Medium	Medium	Closed	PM	14/10/2019	14/10/2019

ID	Name	Risk Description	Mitigation	Cost	Probability	Schedule	Status	Owner	Last Updated	Closure
R029	WS1 - EV targets are not met	Potential that WS1 is unable to meet EV targets due to factors outside Project control, EU CAFE regulations place obligations on vehicle OEMs that may encourage them to delay new ultra-low carbon LCV launches into 2020 Centrica original EV purchasing timeline delayed,	Project will work with Hitachi Capital and new participants to endeavour to meet the volumes. Stage Gate process in place to manage project spend if EV volumes are ahead of, at or behind target 30/04/19 Fortnightly meetings taking place 14/06/19 - Draft Strategy produced and a list of target potential Partners being pursued. 29/11/19 – Targeted spend option chosen to give time for vehicle procurement	High	High	High	Open	PM	29/11/2019	
R030	WS3 - EV targets are not met	Potential that WS2 is unable to meet EV targets due to factors outside Project control, eg: Vehicle availability, TCO Issues, individual drivers' choice -Uber issued 2-month licence extension by TfL 24/09/2019	Uber vehicle growth on target	Low	Medium	High	Open	PM	14/10/2019	
R031	WS2 - EV target not met	Potential that WS2 is unable to meet EV targets due to factors outside Project control, eg: Vehicle availability, TCO Issues, change in corporate strategy 04/10/2019 – RM Notification of issues securing 2020 volumes.	Work with Partners in the early stages to ensure plans are realistic and build in contingency. Project will work with Hitachi Capital and new participants to endeavour to meet the volumes. Stage Gate process in place. New trial participant on-boarding work begun 29/11/19 – Targeted spend option chosen to give time for vehicle procurement	High	High	High	Open	PM	29/11/2019	
R032	Home aggregator unable to implement flex services integration as developed for Depot	Flexibility services will be developed initially for Depot controller and extended to domestic aggregation. Additional integration effort or changes may be required.	27/06/2019 Requested plan of home aggregation work. Discuss flexibility for home trial early to design in any required integration. 23/09/2019 - Received plan & Architectural design work started	Medium	Low	Medium	Open	TDA	14/10/2019	
R033	Profiled connection agreement level of innovation	UK Power Networks definition of a profiled connection as adherence to a single flat constraint level may not be innovative enough to satisfy Ofgem's requirements, potentially requiring revisions to experiment design	Work with RMG to enable the experiments to explore more complex profiles, without impacting on UK Power Networks' legal responsibilities UK Power Networks PM is following up with connections team to understand whether more detailed profiles will be available in future, and if so by when.	Medium	Low	Low		Trial Design PM	14/10/2019	
R034	Comms from existing chargers are encrypted and systems may not be able to control chargers	These chargers are located in six existing RMG depots	Tested and confident that charger can be controlled. Both sets of chargers will use same back office. 14/10/2019 Closed/tested	Negligible	High	Negligible	Managed (Closed)	Trial Operations PM	14/10/2019	14/10/2019

ID	Name	Risk Description	Mitigation	Cost	Probability	Schedule	Status	Owner	Last Updated	Closure
R035	RMG Mount Pleasant depot deployment	Full deployment of Mount Pleasant may not be completed by the end of October due to complexities of ongoing building work and RMG requirements.	10/07/2019 - Monitor installation progress to assess risk of all Trial A EVs not being deployed 14/10/2019 - Mount Pleasant expected to be complete by January 2020 (all EVs on road)	Negligible	Low	High		RMG PM	14/10/2019	
R036	Ability to measure depot load at Royal Mail sites	Not yet clear how project will measure the site load at Royal Mail depots.	10/7/2019 Several options - feasibility being explored. Site dependent 14/10/2019 - Candidate solution being investigated.	Low	Medium	Low		Trial Operations PM	14/10/2019	
R037	Data Comms Solution - RMG Network connection process not yet known.	Project does not yet have a data comms solution for RMG depots.	Agreement for generic comms design and ADSL lines ordered. 14/10/2019 All lines ordered, waiting on quote for broadband backhaul cost.	Low	Low	Low		Trial Operations PM	14/10/2019	
R038	Acceptance test site and depot sites will not be exactly the same	Likely differences in network, exact charge point, scale and ability to test user interfaces effectively.	05/09/2019 CPs and back office will be identical, EVs will not, so some tests may need to happen of RMG site with RMG van prior to live use.	Low	Low	Low		Trial Operations PM	14/10/2019	
R039	Method of counting number of Uber vehicles on the road	Uber report number of vehicles on an 'active in the past week' basis. Although Uber may start the trial with sufficient vehicles, it is possible that the number reported will drop (eg. for Holidays) and that the same vehicles aren't tracked for a full year.	Develop a consistent method of counting number of Ubers in trials that respects the unpredictable nature of their vehicles. It is useful to show the unpredictability in the data	Low	High	Low		PM	14/10/2019	
R040	Unable to meet the evidence criteria for Ofgem Deliverables D2 & D3 in current timeframe	The evidence for D3 "Report setting out the key learning points from the installation, commissioning and testing processes/activities" is due on 28/08/2020. Trial Period delayed to 01/10/20 creating risk that all learnings may not be captured to meet the evidence criteria by this time. Same issue with D2.	11/09/2019 - Work with Partners to make them aware of the requirements for D3. Ensure the progress of each trial is monitored and all key learnings are captured as activities are progressing. D3 can be delayed by up to 1 year without being a material change. 14/10/2019 - Likely that D2-7 will be delayed while EV numbers are confirmed 29/11/2019 - Delay agreed at board meeting, re-planning to take place	Low	Medium	Medium		PM	29/11/2019	
R041	Lack of coordination for integrating UK Power Networks systems with Hitachi IoT platform and home aggregation platform	There is currently no dependency built in to the programme plan with regards to integration of the different systems/platforms that are being developed by the Partners. There is a risk that if a development of a particular system/platform is delayed it could potentially have an impact on the start of the trial.	11/09/19 - Work with Partners to build the key dependencies into the overall programme plan and track progress 23/09/19 - Identifying resource requirements for integration and testing of project systems and infrastructures. 14/10/2019 Dialogue ongoing between Hitachi, UK Power Networks and Centrica.	Medium	Medium	Medium		PM	14/10/2019	

ID	Name	Risk Description	Mitigation	Cost	Probability	Schedule	Status	Owner	Last Updated	Closure
R042	Trialling of profiled connections in network congested areas posing network security risk	Trialling profiled connections for a site connected to a congested area of the network could pose a network security risk due to breach of the agreed profile.	11/09/2019 - Carry out trials of profiled connections in a safe environment, i.e. at sites that are within their agreed capacity, setting the agreed profile lower to ensure a breach does not lead to network security risk and ensure a simulation exercise is carried out to assess the risk.	Low	Low	Medium		UK Power Networks PM	14/10/2019	
R043	Centrica wish to use LEM as part of solution	Centrica may see less value in flex trial if LEM solution not included in architecture.	23/09/2019 - UK Power Networks PM to review with Centrica PM - LEM no longer seen as key component of Centrica's Optimise Prime architecture	Low	Low	High	Managed (Closed)	UK Power Networks PM		
R044	Dplan rollout delay to EPN/SPN	Profiled connection assessments using existing planning tool cannot be carried out for Depot sites in EPN/SPN area as Dplan is not yet rolled out. There is a risk that additional cost and time will be required to build the network in these areas using Dplan.	Limit the Royal Mail profiled connection trial sites to LPN. Investigate the cost/time of developing SPN sites in Dplan on an ad hoc basis. (16/09/19). Escalated to Head of Innovation	High	Medium	High		UK Power Networks PM	14/10/2019	
R045	EV Volume Risk to project	The existing Partners are unlikely to provide the volume of vehicles required for WS1 and 2 in the original project timeline. Potential impact to validity of learnings.	Working group has active conversations with new participants with at home and at depot vehicles. Considering extending project pending vehicle availability Slowing development work in order to allow extended or paused programme.	High	High	High		PM	12/11/2019	
R046	Delay in acceptance/analysis of WS3 data	Accepting WS3 data has taken longer than anticipated	Hitachi has implemented a solution to accept and analyse data while main container platform configuration and testing is completed	Low	Medium	High		Platform PM	12/11/2019	
R047	Uber licensing decision	Transport for London has announced that it will not renew the PHV Operator license of Project Partner Uber	Uber is working closely with TfL, is appealing the decision, and will continue to operate in London during the appeal process A significant amount of data has been, and continues to be, collected from Uber EVs. New trial participant process will be extended to WS3 if Uber loses ability to operate in London.	Medium	Medium	Medium		PM	03/12/2019	

11 Material change information

No material changes have been encountered during this reporting period and none are foreseen for the next reporting period.


12 Other

There is no other information to report to Ofgem.

13 Accuracy assurance statement

The project has implemented a project governance structure as outlined in UK Power Networks' innovation policies and procedures. All information produced and held by the project is reviewed and updated when required to ensure quality and accuracy. This report has gone through an internal project review (and a further review within UK Power Networks) to ensure the accuracy of information.

UK Power Networks hereby confirm that this report represents a true, complete and accurate statement on the progress of the Optimise Prime project in its first twelve-month reporting period and an accurate view of UK Power Networks' understanding of the activities for the next reporting period.

Signed 

Name SULEMAN ALI

Position DIRECTOR - SAFETY, STRATEGY & SUPPLY SERVICES

Date 16/12/2019