

Notes on Completion: Please refer to the appropriate NIA Governance Document to assist in the completion of this form. The full completed submission should not exceed 6 pages in total.

Network Licensees must publish the required Project Progress information on the Smarter Networks Portal by 31st July 2014 and each year thereafter. The Network Licensee(s) must publish Project Progress information for each NIA Project that has developed new learning in the preceding relevant year.

## NIA Project Close Down Report Document

### Date of Submission

Jun 2022

### Project Reference

NIA\_WPD\_044

## Project Progress

### Project Title

Wildlife Protection

### Project Reference

NIA\_WPD\_044

### Funding Licensee(s)

WPD - Western Power Distribution (East Midlands) Plc

### Project Start Date

September 2019

### Project Duration

2 years and 7 months

### Nominated Project Contact(s)

Mike Chapman / Sam Rossi Ashton

## Scope

The scope of the project is to carry out research on the interaction of wildlife with OH lines / structures in order to design, develop and produce a suite of UK and Ireland specific mitigation measures and a risk assessment (RA) Software App which will provide member companies / end users with guidance on the most cost-effective way of minimizing wildlife contact.

The output will be proven through a real-life trial which will involve the practical use of the Risk Assessment Software App and mitigation measures on an identified circuit.

The output of the research, development of mitigation measures, Risk Assessment Software App and trial will need to feed into a report which captures all learning and provides end users with appropriate operational and strategic guidance.

## Objectives

1. Understand how wildlife behaves and interacts with overhead lines so as to determine those environments where lines, structures, equipment and configurations are most susceptible to inadvertent wildlife contact.
2. Design, develop and produce a set of detailed mitigation measures to mitigate the risk of wildlife interaction with Electricity Overhead Networks.
3. Identify where materials, plant and equipment could be redesigned or modified cost effectively to make them less susceptible to contact flashover.
4. Develop a Risk Assessment Software App to assist in identifying the current risk and the resultant risk once specified mitigation measures have been put in place.

5. Provision of guidance documents on carrying out a Risk Assessment, specification and purchase of appropriate mitigation measures,

## Success Criteria

1. Production of a research paper that outlines those lines, structures and configurations most susceptible to wildlife contact and in the environments they are sited.
2. Production of a suite of suitable UK and Ireland specific mitigation measures and an accompanying report which details material specification, type test requirements, installation methods and maintenance requirements.
3. Production of a Risk Assessment Software App that could identify the current risk and the resultant risk once specified mitigation measures have been put in place. This includes the production of strategic and functional guidance on how to use the Risk Assessment Software App.
4. Real-life trial of the Risk Assessment Software App, purchase and application of the UK and Ireland specific mitigation measures on a typical 11kV overhead circuit and recommendations using an example circuit. i.e. For a circuit, use the tool to assess the risk, use the report recommendations to determine appropriate mitigation methods, apply the appropriate mitigation measures and use the tool to quantify the risk once effective mitigation methods have been put in place.
5. Production of a functional report that will take the learning from all stages to provide both operational and strategic guidance on carrying out a Risk Assessment, specification and purchase of appropriate mitigation measures, methods of application of those mitigation measures and subsequent maintenance requirements.

## Performance Compared to the Original Project Aims, Objectives and Success Criteria

The project has successfully completed all of its aims, objectives and success criteria:

### Objectives:

- Understand how wildlife behaves and interacts with overhead lines so as to determine those environments where lines, structures, equipment and configurations are most susceptible to inadvertent wildlife contact – complete
  - o The first stage of the project involved carrying out research to understand how wildlife behaves and interacts with overhead lines. The outcome of this with a report documenting all of the findings.
- Design, develop and produce a set of detailed mitigation measures to mitigate the risk of wildlife interaction with Electricity Overhead Networks – complete
  - o The second stage of this project designed developed and produced a set of mitigation methods which were used within the later trial stage of the project.
- Identify where materials, plant and equipment could be redesigned or modified cost effectively to make them less susceptible to contact flashover – complete
  - o The third stage of the project involved writing a technical specification document, outline what future equipment and designs need to look like.
- Develop a Risk Assessment Software App to assist in identifying the current risk and the resultant risk once specified mitigation measures have been put in place – complete
  - o The fourth stage of the project carried out the development of a risk assessment software app, which was circulated with the CEP group members and tested.
- Provision of guidance documents on carrying out a Risk Assessment, specification and purchase of appropriate mitigation measures, methods of application of those mitigation measures and subsequent maintenance requirements – complete
  - o The technical specification document produced during stage three provides guidance on the purchase of mitigation measures, and the app user guide produced during stage 4 documents the risk assessment process.

### Success Criteria:

- Production of a research paper that outlines those lines, structures and configurations most susceptible to wildlife contact and in the environments they are sited – complete
  - o A paper detailing the research carried out on lines, structures and configurations most susceptible to wildlife contact was produced as the outputs of the projects first stage.
- Production of a suite of suitable UK and Ireland specific mitigation measures and an accompanying report which details material specification, type test requirements, installation methods and maintenance requirements – complete
  - o The second stage of this project designed developed and produced a set of mitigation methods which were used within the later trial stage of the project, and would be suited to networks across the UK and Ireland.
- Production of a Risk Assessment Software App that could identify the current risk and the resultant risk once specified mitigation measures have been put in place. This includes the production of strategic and functional guidance on how to use the Risk

## Assessment Software App – complete

- o A Risk Assessment Software App and guidance document was created during the projects fourth stage.
  - Real-life trial of the Risk Assessment Software App, purchase and application of the UK and Ireland specific mitigation measures on a typical 11kV overhead circuit and recommendations using an example circuit. i.e. For a circuit, use the tool to assess the risk, use the report recommendations to determine appropriate mitigation methods, apply the appropriate mitigation measures and use the tool to quantify the risk once effective mitigation methods have been put in place – complete
- o A real life trial was carried out during stage five of the project. This involved application of devices across 15 sites.
- o The Risk Assessment app was also tested by WPD policy, as well as being circulated with the wider CEP group.
  - Production of a functional report that will take the learning from all stages to provide both operational and strategic guidance on carrying out a Risk Assessment, specification and purchase of appropriate mitigation measures, methods of application of those mitigation measures and subsequent maintenance requirements – complete
- o The technical specification document produced during stage three provides guidance on the purchase of mitigation measures, and the app user guide produced during stage 4 documents the risk assessment process.

## Required Modifications to the Planned Approach During the Course of the Project

A change was required in order to accommodate the additional time that document review cycles take between multiple Distribution Network Operators (DNOs). Consequently, the project delivery sequence was rescheduled. This culminated in a six month extension to the project. A change requested was submitted and approved for this in line with WPDs change management approach governance. Additional work was also scoped during the course of this project to carry out an in person workshop between ENA members and wildlife mitigation device manufacturers. This was able to ensure the projects findings and recommendations could be disseminated well to manufacturers, and was made possible due to the donation of trial equipment from manufacturers.

## Lessons Learnt for Future Projects

The key points of learning from the project have been summarised below. Some points are recommendations at this stage and will be progressed with the ENA Members over the coming months. This is with the aim of policy and training changes.

- The accuracy of wildlife / overhead line interaction reporting is not considered to be particularly accurate, as events are not always fully investigated, and it is not always possible to identify a direct root cause of events.
- The effects of wildlife interactions with overhead power lines can have a marked effect upon the populations of some wildlife species
- Network operators already have a large range of options available to them when seeking to improve network performance/system reliability. Many of these solutions can be used to reduce rates of wildlife interaction and improve the outcomes of wildlife interaction
- ENA member organisations do not have established methods or techniques by which they evaluate the effectiveness or value of wildlife interaction mitigation investments
- Overhead lines which are supported by pin insulators in a flat horizontal formation present a particularly high risk to large birds and raptors. Structures such as loop poles or transformer poles which support carry-over jumpers are considered to be the most dangerous
- The conclusions drawn from research studies are deemed to be credible
- Wildlife interactions with HV overhead lines would be considered to be a suitably emotive subject which, if not carefully managed, is likely to generate a high volume of unwanted social media attention, bad publicity and reputational damage directed towards ENA member companies.
- Many of the current processes and procedures used by ENA member organisations did not consider wildlife protection as one of the main priorities when engaging in activities involving overhead lines
- There does not appear to be an electricity supply industry standard for wildlife protection devices, wildlife protection mitigation schemes, or their application to either electrical transmission or distribution systems in Great Britain
- There does not appear to be an electricity industry standard for the design of freestanding transformer poles or cable connected H-poles/Loop poles which takes wildlife interaction into consideration.
- The Wildlife Mitigation Evaluation Assessment tool developed as part of this project should provide an appropriate starting point to enable ENA project member organisations to undertake more detailed organisationally specific analysis.
- Clear conflicts between the mitigation approaches for different species exist – for example wildfowl and birds of prey
- Mitigations identified should be included within any wildlife mitigation decision support tool or 'app' which may be developed in future project works.
- There was not a UK standard for wildlife protection products designed or intended for use within the utility or high voltage electrical distribution sector
- There is an extremely wide range of wildlife products, applications, and materials available, and it has not been possible to identify appropriate product quality or type tests for every product type variant. This makes the task of determining a definitive specification requirement impossible.
- The area of wildlife product type testing required further development.
- ENA member companies have traditionally been guided by the manufacturers and suppliers of wildlife protection products and devices, whose claims historically have often been unsubstantiated

- Wildlife interaction considerations did not feature within the majority of ENA member company's standard overhead construction specifications, and are therefore unlikely to form part of the primary decision making criteria when making investment decisions

Note: The following sections are only required for those projects which have been completed since 1st April 2013, or since the previous Project Progress information was reported.

## The Outcomes of the Project

Stage one of the Wildlife Protection project successfully carried out research on the types of wildlife that interact with overhead networks, the impact their interactions have, before moving on to demonstrating existing measures that are available and the standards in place to support these. This confirmed that there are currently no standards in place within the UK that support protection against wildlife interactions, but there is a clear need for schemes to be in place.

Following this, the project went on to design and test measures for mitigation wildlife interactions on the network, including electrical and non-electrical interactions, and those from the ground as well as in the air. This led to the following main conclusions and recommendations:

- This project has been able to identify a range of cost-effective wildlife mitigations which can reduce both the likelihood and potential effects of wildlife interaction with HV overhead lines.
- The range of wildlife interaction mitigations identified contain both long standing engineering solutions and more modern ecologically based approaches.
- The project found that wildlife protection schemes should be clear about which species they are targeting, and the specifics of their interaction modes.
- The project has been able to develop a risk assessment app, which can support the selection and justification for implementing wildlife protection schemes.
- The approach to wildlife protection schemes needs to become proactive for it to be successful, implemented at construction or asset replacement stages, and would benefit from being supported by a specific national standard document.
- A national standard document would remove the need for networks to be guided by manufactures and suppliers of wildlife protection products and devices, whose claims historically have often been unsubstantiated.

Overall the project can be deemed a success, with significant parts being transferred into our BAU processes both during and following the project.

The project produced a number of reports and outputs during its lifecycle including the research phase report, design solutions report, product specification, trial report, risk assessment app and user guide, and a closedown report. These are available on [www.westernpower.co.uk/projects/wildlife-protection](http://www.westernpower.co.uk/projects/wildlife-protection)

## Data Access

Data from the project is held within the projects reports, which are held on the projects webpage: [www.westernpower.co.uk/projects/wildlife-protection](http://www.westernpower.co.uk/projects/wildlife-protection)

## Foreground IPR

The project has been carried out under the standard NIA Intellectual Property Rights (IPR) conditions, therefore all outputs can be shared.

Reporting was carried out during the course of the project. These reports can be found on the projects webpage: [www.westernpower.co.uk/projects/wildlife-protection](http://www.westernpower.co.uk/projects/wildlife-protection)

The Risk Assessment App and its user guide, which has been discussed within section 5, is available upon request to [wpdinnovation@westernpower.co.uk](mailto:wpdinnovation@westernpower.co.uk)

## Planned Implementation

The outcomes of Wildlife Protection have already begun being rolled out into Business as Usual. The successful trial of the mitigation methods, has provided the learning needed on which devices can be rolled out, how they can be installed and how they will act during their life on the network. For this reason, some of the items deemed most appropriate during the trials are now available within our stores system for use on the network, updates have been made to Overhead Line policies and Standard Techniques to support their use, and other internal communications have been made.

Other changes have already begun to be made to the way we build, replace and refurbish our overhead structures following learning from the project.

This includes:

- Only installing electrical jumper connection to connecting items of electrical plant using covered conductor to significantly reduce the

likelihood of wildlife electrocution.

Review of overhead construction design to make it more wildlife friendly including extending the height of the pole, and leaving extended pole top spaces unfurnished, which would allow birds such as raptors who use the structures upper portion as a vantage point, to land on the pole top without fear of bridging electrical clearances and being electrocuted.

## **Other Comments**

N/A

## **Standards Documents**

Following the projects closure, it is planned that the work carried out will be used to develop a national standard for wildlife protection measures. This will ensure that all network operators have a standard which can be used to purchase wildlife protection devices, and will ensure that manufactures have clear guidance in the design and build of relevant products.