

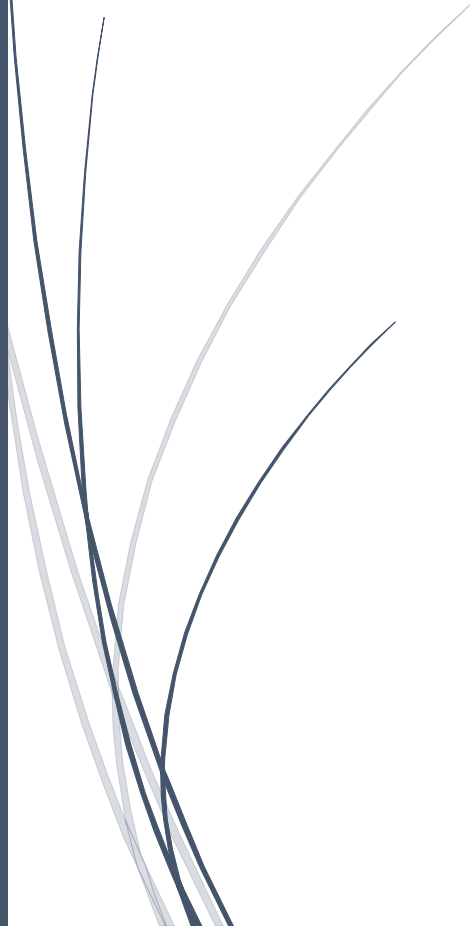


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Bhaile Átha Cliath
Dublin City Council

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Summary Report – ESBN Fluid Filled Cables 2019 - 2023

Protection of Water Bodies Office



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Summary Report

1. Introduction

In June 2019, Dublin City Council was notified by ESB Networks (ESBN) of potential pollution incidences pertaining to leaks from fluid filled cables (FFC), of which approximately 70km of the affected network resides in DCC's administrative area. An incident was defined as a leak greater than 40 litres of fluid per month. Such incidents are reportable to the pertinent Local Authority under the Water Pollution Act 1977.

Underground cables are used to transport electricity and historically were traditionally insulated with fluid to ensure efficient cable operation at the time of their installation (pre-1990). The ESBN advised that leaks occur in FFC's over time due to a variety of reasons, including but not limited to, corrosion, defects, 3rd party interference and ground settlement.

In response to receiving the notification form ESBN in July 2019, Dublin City Council (DCC) and ESB Networks (ESBN) established a steering group to oversee the management and progression of incident response, assessment and remediation. Dublin City Council required the ESBN to identify the scale and volume of incidents, to establish and agree procedures on environmental assessments and to establish robust reporting procedures for historic (pre June 2019) and future incidents (post June 2019), which are complaint with legislative requirements.

In September 2019, ESBN and DCC formally agreed protocols for addressing both 'historic leaks' and 'current & future leaks'. In addition to the incident protocols, a scientific liaison group was convened to establish further scientific understanding of the fluid leaked from the cables which included LAB (Linear Alkyl Benzene) fluid and Mineral Oil.

ESBN committed to undertaking appropriate environmental assessments and corrective actions as required for each location in accordance with the risk based approach set out in the relevant EPA Guidance on the Management of Contaminated Land & Groundwater at Licenced Sites.

2. Outcomes of Steering Group

2.1. Protocols

ESBN established three and five stage protocols to manage the resolution of historic and current/future incidents respectively. A risk-based approach was adopted to assess the potential risks to human health and the environment at each site. The risk-based approach applied is consistent with the guidance noted below which addresses the differing requirements of relevant environmental legislation:

- EPA, Environmental Liabilities Regulations Guidance Document, 2011
- EPA Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed site, 2013.

Furthermore, the ESBN undertook to publish all relevant material on their public website to support transparency and communications of progress.

2.1.1. Historic incident protocol

Historic incidents are those that occurred prior to June 2019. There were 69 historic incidents identified by ESNB in DCC’s administrative area that required investigation.

The historic protocol has three assessment stages which are progressed through as required and were led by suitably qualified contaminated land specialists as outlined in the below figure 1.

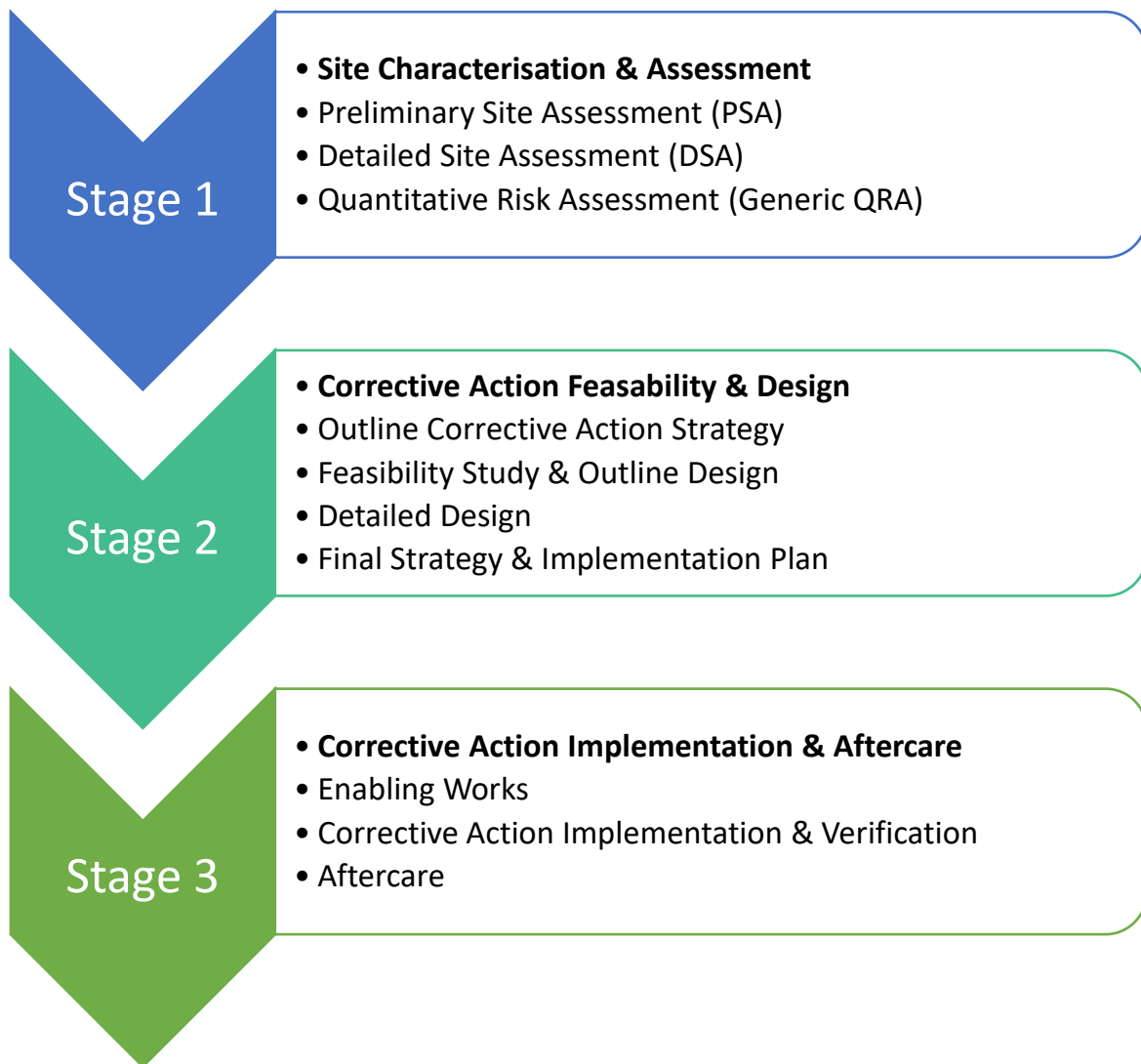


Figure 1: Historic Incident Protocol Stages

All 69 historic sites were assessed as per the aforementioned procedure and were closed out by November 2023. ESNB advised no sites required assessment post Stage 1 due to the low risk level identified either in the PSA or GQRA steps of Stage 1.

2.1.2. Current and Future incident protocol

Current incidents are those that occurred post June 2019 to date. The current and future protocol has five assessment stages which are progressed through as required and are led by suitably qualified contaminated land specialists as outlined in the below figure.

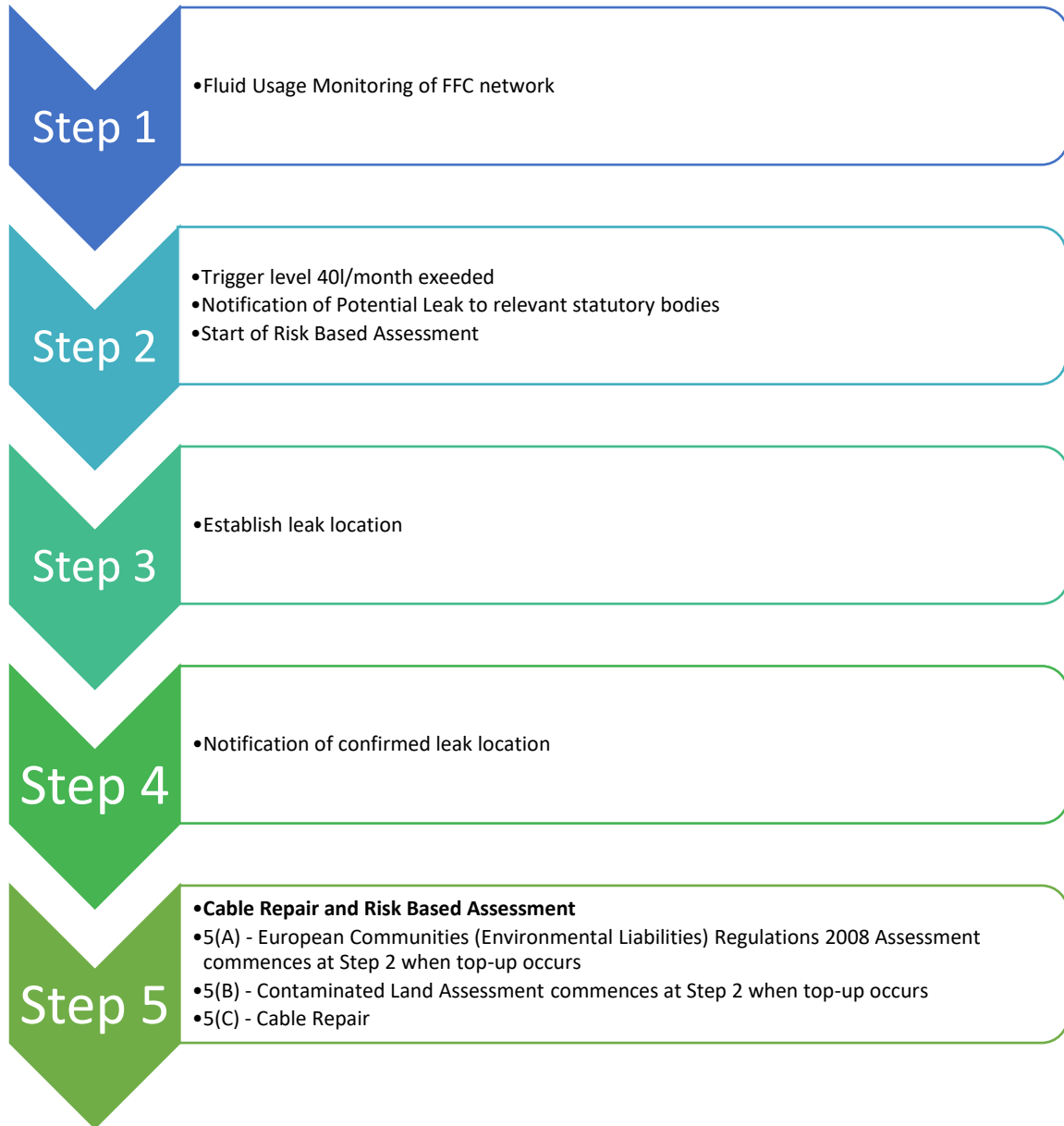


Figure 2: Current and Future Incident Protocol Stages

DCC was notified of twenty-two incidents in accordance with the Current & Future protocol between 2019 and 2023. 17 were repaired and 5 at step 2 awaiting further investigation that is ongoing.

2.2. Biodegradability Assessment

A scientific review group was also established in 2019 to establish further scientific understanding of LAB fluid and Mineral Oil. The scientific review group met on 8 occasions from 2019 to 2021 and consisted of representatives from both ESNB and DCC. While it is well established and accepted that LAB is readily biodegradable in the aerobic, aquatic environment, little or no information is available as to biodegradability in the absence of oxygen.

The review group thus had a particular interest in establishing whether or not either fluid biodegraded in anaerobic environments. The review group agreed that ESNB should get LAB and Mineral Oil samples tested in an independent test laboratory to ascertain if both fluids were biodegradable, and if applicable, what level/class of biodegradability applied.

ESNB engaged CE Geochem to commence laboratory analysis of samples provided to them by ESNB. In late 2021, ESNB presented CE Geochem's report to DCC on the LAB and Mineral Oil sample analysis. The summary conclusions were that both Mineral Oil and LAB are biodegradable in anaerobic conditions. Furthermore, laboratory results suggested the half-life for varying concentrations of mineral oil ranged from 190 to 470 days. The half-life for varying concentrations of LAB ranged from 98 to 654 days in laboratory conditions.

The findings of the laboratory analysis are significant. The identified biodegradation of both LAB and Mineral Oil in anaerobic conditions provided environmental consultants assessing FFC incidents with scientific evidence on the fate of the fluid/oil after a leak has occurred. This leads to a better-informed assessment process, using the risk based approach, in both the Current & Future as well as the Historic Incidents Protocols.

3. Conclusion

Following the satisfactory close out of historic incidents and continued adherence to established protocols the steering group concluded in December 2023. The group attended meetings on a quarterly basis chaired by Dublin City Council.

The current & future protocol remains in good standing and shall be adhered to going forward by ESNB. All environmental risk assessments for both historic and current incidents have been made available by ESNB on their dedicated webpage [here](#).