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6th March 2020

Verde Ref: 52458

**RE: Recommended Scope of Work following completion of a Preliminary Site Assessment Report for Finglas Road (R135), Dublin 11.**

**ESB Site Ref: 22 Finglas – Merville 38kV**

To Whom it May Concern,

Verdé Environmental Consultants (Verde) have prepared this letter to provide detail in relation to future site investigations and risk assessments proposed for the above site. These proposals follow on from the completion of a Preliminary Site Assessment (PSA) report which identified potential environmental impacts associated with a suspected cable fluid leak from a power cable on Finglas Road (R135), Dublin 11 (ESB Ref: 22 Finglas – Merville 38kV) in Verde's updated report dated 6th March 2020.

As you are aware the March 2020 PSA report was completed in response to an ESB electricity cable fluid leak, predominantly comprising a mix of linear alkyl benzenes (LAB) and mineral oil (MO) with an estimated loss volume of 5,845 litres (l) lost to ground from the leak point over a period of one month. The leak was reported to have started in February 2012 and was repaired in March 2012. The known leak point (ESB Ref: 22) is located close to the western boundary of the R135 (Finglas Road), adjacent to a residential care facility (Care Choice). The location is also close (c.30m) to the Merville 38kV substation.

At the time of reporting, Irish Water have examined all available drinking water quality sample data and have concluded that there is no evidence that COPCs from the leak site have infiltrated the local drinking water supply. This evaluation is based on a review of all samples taken from customer-points, between 2014 and 2019; which showed no evidence that the COPCs (PAHs and Benzenes) were present in the water supply at levels above drinking water standards (PAHs: 0.1µg/L; Benzene: 1.0µg/L). These results (which are from samples taken at the customer tap) would not indicate that leaks from oil filled cables have contaminated the drinking water supply for these areas, or at least to

an extent where any contamination arising has resulted in a breach of the parametric value for PAHs and Benzene (Appendix G).

Based on the findings of the site walkover and desk study, consideration of the known cable leak point, identification of contaminants of potential concern (COPC) and their likely fate and transport, a conceptual site model (CSM) was developed. The findings identified that the risk for the majority of the potential pollutant linkages was considered to be low but identified several potential pollutant linkages requiring further investigation and assessment as follows;

- Moderate risk potential for Linear Alkyl Benzene (LAB) and Mineral Oil (MO) contamination migration to the adjacent watercourse; given the leak point's proximity to Bachelors Stream;
- Moderate risk potential for Linear Alkyl Benzene (LAB) and Mineral Oil (MO) contamination migration to the underlying aquifer given the possible connection to shallow groundwater through shallow rock in the area indicated by the High vulnerability;
- Low/Moderate risk potential for Linear Alkyl Benzene (LAB) and Mineral Oil (MO) contamination in soils and or groundwater to migrate through preferential pathways such as service ducts, then volatilisation and inhalation by nearby residents and other nearby building users;
- Low/Moderate risk potential for Linear Alkyl Benzene (LAB) and Mineral Oil (MO) contamination leaching to shallow groundwater given the contaminant properties of low mobility and high sorption to soil, with shallow groundwater unlikely to be a viable groundwater resource in the residential urban setting;
- Low/Moderate risk potential for Linear Alkyl Benzene (LAB) and Mineral Oil (MO) contamination migration to the River Tolka given the existence of a hydrogeological pathway between the leak site and the Bachelors Stream and the River Tolka downstream.

## Proposed Site Investigation

In order to assess the moderate potential risk to the adjacent environmental receptor (Bachelor's Stream), surface water sampling would be carried out along the steam section. This would involve obtaining representative proximal samples as well as upstream and downstream samples of stream waters. In order to appropriately assess the potential risk for COPCs interacting with the stream waters, the same analytical suites will be applied as those applied to soils. Visual and olfactory evidence of contamination will be recorded, particularly NAPL presence as presented by sheens and actual cable oil being present. Samples will also be screened using a photoionisation detector (PID) for volatile hydrocarbon concentrations. In particular samples will be collected where there is visual, olfactory or PID evidence of contamination, from upstream and downstream of the contaminated zone. The water samples will be submitted in an iced coolbox to a UKAS accredited laboratory for analysis.

There is a low/moderate potential Human Health risk from potential LAB volatilisation from soil, groundwater and LNAPL into soil pore spaces (Vapour Phase in unsaturated soils), upward migration into houses and other properties to indoor air and then inhalation. In order to further develop the CSM and determine required remediation, if any, Verde recommend that slit trenches are excavated at leak point or the downgradient area to examine the potential for contamination migration along preferential pathways including the ESB cable route or other service trenches. This site assessment will allow for visual inspection, soil sampling and also tracing contaminant movement along service trenches and in any service trenches leading towards properties. Monitoring for soil, shallow groundwater and air will be assessed and undertaken as required in order to determine any human health risks.

There is a moderate potential risk that a pollutant linkage exists between the known leak point and the underlying shallow groundwater and nearby surface water streams. The findings from the above slit trenches would be used to determine a location for a suitable groundwater monitoring borehole. An investigation borehole would be drilled in proximity to the leak point dependant on the results of the slit trench investigation and sample analysis results. The first will be located as close to the leak point as possible, with the aim of proving the top of bedrock, whether it comprises of a more permeable gravel weathered horizon and also finding shallow groundwater to allow for subsequent sampling and monitoring of groundwater. This well installation would aim to investigate the potential pollutant linkages between the known leak point and the underlying shallow groundwater and nearby surface water streams; which are both currently thought to have a moderate potential risk.

### Additional Precautionary Recommendation

Should the slit trenches identify LAB NAPL next to mains water supply pipes, then drinking water samples should be collected, where access has been permitted, to determine whether LAB has permeated through any plastic pipes to contaminant drinking water. It is envisaged that samples will be collected from the properties closest to the identified NAPL locations. Sampling should be undertaken in accordance with sampling best practice documents such as that produced by the EPA titled “Handbook on implementation for Water Services Authorities for public water supplies”.

It should be noted here that, whilst the current risk rating relating to water supply pipes is currently assessed to be Low, the recommendation to carry out potable water sampling is entirely precautionary in nature. This is not a regular approach but has been included in the event that NAPL is identified during slit trenching investigations.

### Revision of Risk Assessment

Following completion of the above scope of work at the Finglas Road site, Dublin 11 (ESB Ref: 22 Finglas – Merville 38kV), the results should be used to update the Conceptual Site Model and risk assessment in regard to potential risks to human health, water and ecological receptors. This will determine the necessary next steps such as further investigations and assessments potentially including a Detailed Quantitative Risk Assessment (DQRA) and/or remedial measures/corrective actions required to break the plausible pollutant linkages.

Yours sincerely,

[redacted]
**Senior Environmental Consultant**

[redacted]
**Project Director**