Jacobs

PFAS Strategy for HV Cables

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1 Introduction

TII instructed Jacobs to prepare a response to An Coimisiun Pleanála (ACP) to provide further information on the potential to encounter per and polyfluoroalky (PFAS) substances during the construction of the 110kV electricity cables required to support the consented MetroLink development. The planning application submitted by ESB for the high voltage (HV) supply (ABP-317831-23) is still under determination.

The question to be addressed is:

You are requested to submit further information that addresses the potential for encountering per and polyfluoroalky (PFAS) substances in surface waters, groundwater and soils at Dublin Airport and its environs and the consequences for the proper planning and sustainable development of the area, including the potential for significant effects on the environment and/or a European Site.

2 Response to ABP

Potential for PFAS Contamination within the Proposed Development Area

Dublin Airport Authority (daa) published a report in April 2024 (Fehily Timoney 2024[1]) detailing the results of environmental monitoring for perfluorinated compounds (PFAS) undertaken between 2021 and 2023 on behalf of daa, hereafter referred to as "the daa report". This report was completed in April 2024 and identified potential sources of PFAS at the airport. The sources of PFAS relate primarily to historical releases to the environment of PFAS containing firefighting foams. PFAS has been identified in shallow soils and groundwater, and in the deeper groundwater within the bedrock in a number of locations in the vicinity of Dublin Airport.

As part of the MetroLink project planning application and EIAR, a review of the occurrence of PFAS within the vicinity of Dublin Airport was undertaken, based on the findings of the daa report (Fehily Timoney 2024). The review was undertaken in response to a submission from Wild Ireland Defence CLG during the MetroLink oral hearing and is included within the TII Reply to An Bord Pleanála Request for a Response to Wild Ireland Defence CLG & Sabrina Joyce-Kemper Submission (Jacobs IDOM 2025). The review and assessment of PFAS within this response is based on both the daa Report (Fehily Timoney 2024) and the TII response to Wild Ireland Defence CLG & Sabrina Joyce-Kemper Submission (Jacobs IDOM 2025[2]).

[1] Fehily Timoney, 2024, Dublin Airport 2021-2023 Environmental Monitoring Report. 8 April 2024
2021-2023-environmental-monitoring-non-technical-summary.pdf

[2] Jacobs IDOM 2025. MetroLink PFAS Management Strategy for Dublin Airport Report.
Microsoft Word - FINAL Draft Railway Order - MetroLink.docx

Sources of PFAS are present within the Dublin Airport site. A source pathway linkage to surrounding streams and rivers was identified. The surface water drainage system for the airport is connected via pipes and a series of manholes to surface water at various points around the perimeter of the airport. PFAS has been confirmed within surface watercourses within the Proposed Development area for the HV cables, based on monitoring data available from the daa report (Fehily Timoney 2024).

The monitoring data shows the presence of elevated PFAS in the surface water drainage system within the airport boundary, and in downstream surface water monitoring to the east of the airport. Monitoring of the Sluice, Kealy's, Cuckoo and Mayne streams to the east of the airport all show elevated levels of PFAS.

Monitoring of the Santry River south of the airport shows the presence of PFAS but at relatively low levels. West of the airport, monitoring of the Broadmeadow/Ward shows some elevated PFAS in the airside monitoring locations, although downstream monitoring shows generally very low levels of PFAS.

PFAS have been detected in shallow soils and groundwater in the North Apron area of the airport. The daa report suggests that two localised PFAS groundwater plumes result from vertical migration from the surface through the underlying superficial deposits of glacial till to bedrock. PFAS could enter deep groundwater wherever cohesive glacial till deposits are absent, or where bedrock and transition deposits are present at the ground surface. Once in the groundwater, PFAS can be transported both north and south via the transition deposits and via fissures/ fractures within the limestone bedrock.

Potential for Construction Impacts associated with PFAS Contamination within the Proposed Development Area

Construction of the HV cables will not interact with the primary PFAS source areas within Dublin Airport, nor will it contribute further to PFAS loading in the environment.

The risk of PFAS being present in excavated soils is considered to be low, given that the Proposed Development does not extend into Dublin Airport and that no other sources of PFAS contamination have been identified to date along the route.

Table 9.7 of the EIAR for the HV cables Proposed Development (reproduced below) identifies watercourse crossings along the route.

Table 9.7: River/stream Crossings as classified by the EPA

Route Section	Location	EPA Name	River Waterbody Code	EPA Code
Newberry to Ballystruan	Swords Road @ Applegreen Santry	Mayne River	IE_EA_09M030500	09M03
Ballystruan to Forest Little	Holiday Blue Long Term Carpark	Santry River	IE_EA_09S010300	09S01
	Holiday Blue Long Term Carpark	Santry River	IE_EA_09S010300	09S01
	Western edge of the airport road, crosses R108 at Braberstown Road	Dunbro	IE_EA_08W010300	08D11
	Barberstown Road, adjacent to Food Central Drive	Barberstown	IE_EA_08W010300	08B05
	Naul Road junction with Forest Road (L3132)	Sluice	IE_EA_09S071100	09S07
Forrest Little to Belcamp - Option 1	Malahide Road and Limekiln Lane	Cuckoo Stream	IE_EA_09M030500	09C07
	Malahide Road and Parkside Boulevard (Belmayne)	Mayne River	IE_EA_09M030500	09M03
	R139/ entrance to Belcamp Substation	Mayne River	IE_EA_09M030500	09M03
Forrest Little to Belcamp – Option 2	Clonshaugh Road	Cuckoo Stream	IE_EA_09M030500	09C07

Of the six watercourses that intersect the proposed HV cable route, PFAS compounds have been detected in four (Mayne River, Santry River, Sluice and Cuckoo Stream). Given the potential presence of PFAS, no in-stream works are proposed for these watercourse crossings. Alternative methods will be sought such as the

use of existing ducts or crossing using trenchless methods such as horizonal directional drilling (HDD) which involves drilling a borehole beneath the watercourse. By eliminating the requirement for in-stream works, there is no potential interaction with surface water and therefore no potential for interaction with PFAS which may be present in the water or sediments.

The presence of PFAS within groundwater beneath the proposed HV cable route cannot be ruled out. However, given the generally shallow depths of excavation associated with trenching works for the Proposed Development (1.4m below ground level), the risk of encountering groundwater (potentially containing PFAS) is considered to be very low.

The primary locations where groundwater could be encountered during installation of the cables is the directional drilled sections below roads or watercourse crossings where excavation will be to greater depths. HDD works are required for road crossings at Stockhole Lane (Forest Little – Belcamp Option 2) and for the crossing of the M1 (Forest Little – Belcamp Option 1 and Option 2) and will necessitate excavation to greater depth. Given the distance of the road crossings from the known PFAS groundwater plume source areas, the risk of PFAS contamination is considered to be low but again cannot be ruled out.

If PFAS impacted groundwater is present, drilling works could result in the creation of preferential groundwater pathways and distribution of PFAS impacted groundwater (if present). However, using bentonite as a drilling fluid will considerably reduce this risk. Bentonite (a natural clay mineral) will be utilised in the HDD process to stabilise the borehole. It creates a gel-like consistency solidifying around the walls of the hole, preventing collapse but also acting to minimise groundwater ingress. In addition, a continuous duct will also be emplaced in the hole which the HV cable will later be installed through. Thus, given the drilling techniques to be utilised, the risk of creating additional migration pathways and spread of groundwater resulting in distribution of PFAS to groundwater at concentrations above assessment standards where PFAS is not currently present is considered to be low.

Mitigation Measures

Prior to construction and to inform the detailed design, appropriate ground investigation will be undertaken at locations along the proposed HV route to address potential risks where required (e.g. at watercourse and road crossings). The ground investigation will be sufficient to allow detailed risk assessment, the selection of appropriate construction procedures for managing any identified contamination at these locations and development of a Materials Management Strategy to ensure compliance with the Waste Management Act 1996 (as amended) and the Protection of the Environment Act 2023 , as well as any additional mitigation or remedial design that may be required. The measures will be included within the project Construction Environmental Management Plan (CEMP).

The ground investigation will include risk-based location specific PFAS testing of soil and groundwater which will inform further assessment and management actions. PFAS sampling will be conducted primarily near the airport and the Mayne River, Santry River, Sluice and Cuckoo Stream crossings.

Drilling spoils and muds generated by HDD will be contained, sampled and disposed of appropriately. The HDD launch and reception pits will be located approximately 20m from watercourses to minimise any potential for a source–pathway linkage. All drilling spoils will be analysed for PFAS and other potential contaminants prior to disposal at a licensed facility.

The response to Wild Ireland Defence CLG & Sabrina Joyce-Kemper Submission (Jacobs IDOM 2025) included development of a PFAS management strategy if the presence of PFAS is confirmed as part of the MetroLink Project. If the presence of PFAS is confirmed in soil and/ or groundwater the additional protocols included in the management strategy will be implemented as appropriate, which may include the following elements (refer to MetroLink PFAS Management Strategy for Dublin Airport Report, Jacobs IDOM 2025 for further details):

- Site isolation

- Water management during excavation
- Material transport and handling
- Protection during holding and testing
- Air and dust monitoring; and
- Mitigation of exposure to site workers.

Any PFAS-contaminated material will be removed for treatment or licensed disposal in accordance with the MetroLink PFAS Management Strategy.

Given that no instream works are proposed and the surface water mitigation measures prescribed, it is unlikely that an accident of sufficient scale would occur that would negatively impact on aquatic habitats. Therefore, the Proposed Development will not affect the conservation objectives supporting the Qualifying Interests and Special Conservation Interests of any European sites during its construction.