Mr inspector, my name is Dr. Avril Challoner, I am Principal Air Quality and Climate consultant acting on behalf of the applicant.

I aim to alleviate concerns regarding embodied carbon and climate impacts due to the proposed DART+West.

Section 13.3.3.1 of Chapter 13 (Climate) of the EIAR details the method for the calculation of embodied carbon from construction. The section details that embodied construction emissions for the proposed development were calculated using the TII Carbon Assessment Tool (Version 2.1) (TII 2021). The tool is essentially a large database that will provide how many kgCO₂e are emitted per material/activity etc. The tool allows imbodied carbon calculations to be completed for; volumes of materials (concrete, steel, rail track etc), fuel usage, maintenance, waste, pre-construction activities, (i.e. site clearance), transportation of materials, Land Use Change and Vegetation Loss which also includes carbon sinks (i.e. 11 ha of replanting) etc. If materials are not included in the tool and the Proposed Project knows they will require them, they can be added into the tool. The tool enables the designers to understand where the embodied concrete is coming from and by reviewing the database consider where swapping materials can reduce the impact of the project on climate. An example of this within the design was the replacement, where technically feasible, of concrete with concrete containing 30% fly ash replacement. The majority (80%) of concrete is assumed to be RC 32/40MPa which has an embodied carbon of 298 kgCO₂e per m³ with 30% fly ash replacement compared to a standard embodied carbon of 359 kgCO₂e per m^3 , a 17% reduction.

This model has since been updated (See Section 2.2 of the Chapter 13 Updates submitted to the board at the time of the oral hearing). On comparison between the older and newer carbon a number of inbuilt errors within V2.1 of the TII Carbon Tool (TII 2021) were identified. Identification occurred when large discrepancies associated with certain activities were spotted and the team investigated why they were present. These errors not errors in the applicant's use of the tool but issues with backend calculations - specifically in the rail section of the carbon tool. The most significant one, over calculated the maintenance on the rail track calculations by assuming the maintenance (25% replacement) occurs annually over the design life rather than over the maintenance period (40 years) listed in the database. This increased maintenance emissions associated with rail elements significantly. In addition to remedying these issues, the updates to the Climate chapter supplied to the board at the time of the oral hearing also revises the embodied carbon assessment to the new TII online carbon tool which was published in December 2022 (after the submission of the EIAR) alongside considering the residual impact on climate with respect to the significance criteria in the new guidance documents (PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (offline & Greenways) – Overarching Technical Document, and PE-ENV-01105: Climate Assessment of Proposed National Roads - Standard).

In addition to updates to the embodied carbon emissions, an air quality chapter update has also been submitted to board, due to guidance documents and models published by TII since the publication of the EIAR. These air quality model updates also link to the Climate Chapter. The updates to traffic modelling in the EIAR uses the new Roads Emission Modem (REM) published in December 2022 by TII, after the submission of the EIAR. This model updated the fleet from an older worst-case fleet used while awaiting on TII to publish new models, and resulted in lower traffic related emissions due to the Proposed Development.

The total impact on greenhouse gas emissions includes the embodied carbon from construction, maintenance, heat and power for the operation of the station/depot and changes in traffic flow due to the level crossing closures. The EIAR stated that there was a residual 1,273 tonnes CO₂e annually (0.0038% of Irelands 2030 CO₂ targets). When the updates described above are considered, the DART+West is estimated to result in total annualised GHG emissions **savings** of 490 tonnes CO₂e, equivalent to an annualised total of 0.0015% of Ireland's non-ETS 2030 emissions target and 0.0082% of Ireland's carbon sectoral ('Transport) budget for 2030. This saving is achieved while providing a significantly improved public transport service.

The Transport sector has a target to cut transport emissions by 50% by 2030 (compared to 2018 levels), the Climate Action Plan specifically calls out the DART+West as part of the change required to achieve this. The DART+West achieves two of the three key transport actions in the 2023 Climate Action Plans 'Avoid-Shift-Improve' framework. This framework states that we need to:

- developing services, communities, and infrastructure in such a manner as to AVOID the need to travel as much as we do today;
- improving the relative attractiveness of sustainable travel modes such as Public Transport, Cycling and Walking, to SHIFT away from car use; this will facilitate increased use of lower-carbon modes and reduce the percentage of total journeys that are made by private car (modal share) from over 70% (today) to just over 50% in 2030; and
- complement these measures by increasing the proportion of EVs in our car fleet to 30% by 2030, which will IMPROVE the efficiency of the national car fleet; electrification of the freight and public transport sector will also be key.

As Ireland further progresses towards net carbon zero and the percentage of renewables within electricity utilised for rail further increases the long-term impact of the proposed development has the potential to be more significantly beneficial.