Mr inspector, my name is Dr. Avril Challoner, I am Principal Air Quality and Climate consultant acting on behalf of the applicant. Ms Mooney, Mr O'Cellallaigh, and anyone else present, including the inspector, my aim to alleviate some of your concerns regarding traffic impacts on air quality.

I am going to start with a little background on air quality assessments. Air Quality limit values are set for the protection of the health of sensitive populations within society, this includes children, the elderly and the sick. Air Quality traffic modelling is carried out by choosing receptors (usually people's homes or locations where sensitive populations spend extended time like schools, nursing homes, hospitals) and calculating how a change in traffic nearby them will impact the concentration of specific pollutants where they are. The pollutants concentrations will be highest close to the road so we focus on receptors close to roads with the biggest change in traffic - these are considered to be worst-case locations. A selection of worst-case receptors are chosen, with the understanding that if impacts are not significant at these locations, that impacts will be no worse at other receptors. The drop-off in concentrations is considered to be at background levels after 200m from a road – if a receptor is more than 200m from a road guidance states we do not need to model it. When modelling we use both the traffic and a background concentration to get the concentration at a receptor. The background concentration is considered to represent emissions from sources such as; household fires (which a large source of particulate emissions in urban areas), other roads in the area, industrial sources and railways. Significance criteria for impacts consider both the change in concentration at a receptor, and the background concentration. The closer to the limit value, the bigger the impact a change in concentration will result in.

The pollutants we focus on are nitrogen dioxide (NO₂), PM_{10} and $PM_{2.5}$. PM stands for particulate matter ie. Small particles. PM_{10} is particulate matter with an aerodynamic diameter of 10 microns or less, PM_{10} includes $PM_{2.5}$ which is particulate matter with an aerodynamic diameter of 2.5 microns or less. PM_{10} is about 1/5 the width of a human hair and $PM_{2.5}$ is about 1/20 the width of a human hair. Both are inhalable into the lungs and can induce adverse health effects. The reason $PM_{2.5}$ is considered a particular concern as it can reach deeper into humans' lungs than PM_{10} . Air quality can also have other effects on the body, including cardiovascular and nervous system effects.

Further details on the modelling methodology can be found in Section 12.3.5.1 of the EIAR. Operational phase traffic impacts were modelled at sensitive receptor locations were chosen due to their potential to be impacted by the proposed development, these locations included Coolmine Road, Luttrellpark Road and Diswellstown Road, and detailed in Section 12.5.1.7.2 of the EIAR.

On roads where increases in traffic volumes are predicted to occur due to the Proposed Deveopment, such as the Diswellstown Road, the assessment found that concentrations of NO₂, PM_{2.5} and PM₁₀ at modelled receptor locations were, at worst, considered to have small increases in pollutant concentrations. The proposed development is also predicted to have some small decreases in air quality emisisons (i.e. benefits) for areas assessed in proximity to the level crossing closures due to predicted lower traffic volumes on local roads, including Luttrellpark Road and Carpenterstown Road. Further details on the Operational Phase modelling outputs can be found in Section 12.3.5.1 of the EIAR.

Using the assessment criteria outlined in Chapter 12 of the EIAR the impact of the changes in air quality emission proposed development, which takes into account the background pollutant concentrations and the Air Quality limit values which are set for the protection of the health of sensitive populations within society, in terms of NO₂, PM₁₀ and PM_{2.5} are considered negligible.

Updated modelling:

It should be noted that the car fleet modelled in the EIAR is considered an "old" or "dirtier" fleet due to the modelling tool used – this means any impacts are likely to be larger. The reason for using this older model was simply due to it being the one currently available and was inline with guidance. The model did not fully account for the shift to electric vehicles (including indirect emissions from charging) or newer Euro classes, both of which are included in the new TII Roads Emission Model (REM) published in December 2022, after the EIAR was submitted. Modelling using an "older" or "dirtier" fleet which will have higher emissions, provides a "worst-case" impact. The REM uses an Irish specific, more modern fleet. It includes for tailpipe emissions but also particulate emissions from tyre/break wear and tear. In addition to the REM, there are updated significance criteria set out in the December 2022 TII new Guidance documents and standards for the EIAR with respect to Air Quality:

- PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects;
- PE-ENV-01107: Air Quality Assessment Standard for Proposed National Roads.

In order to ensure a robust assessment, traffic was remodelled prior to the oral hearing using the REM and new significance criteria. This remodelling is included as part of the air quality chapter updates submitted at the time of the oral hearing for the Bords concentration. When the traffic has been remodelled using the REM and the new significance criteria as per the TII December 2022 Guidance documents, impacts for the operational phase remain neutral.

WHO QUESTION

The Clean Air Strategy for Ireland published in April 2023 which states a commitment to meeting the WHO air quality guidance, including the interim target value in 2026. Currently these are not the legal limit values in Ireland however it is likely that in the future the WHO standards will be adopted by Ireland and the EU as the legal limit values.

In order to ensure these were considered, a sensitivity check was conducted for the scenario where the Air Quality Limit Values in Ireland were revised to the WHO targets. This sensitivity check found that the significance of impacts remained neutral at all modelled receptors for NO₂, PM₁₀ and PM_{2.5} for the opening year with the exception of three slight adverse impacts (receptors 4, 7 and 51 in modelled Area 2) out of 52 modelled receptors 7 and 51 in modelled Area 2) out of 52 modelled receptors 7 and 51 in modelled Area 2). It should be noted that none of these impacts represent exceedances of the WHO limits. Should the WHO limit values become the legal limit values in Ireland the impact of mitigation put in place in order to achieve them would likely improve air quality. Improvements in background concentrations have not considered as part of the analysis and therefore the slight impacts may be migrated through improvements in baseline air quality as no improvements in future baseline are included within our modelling.

Ms Mooney and Mr O'Cellallaigh I hope my response, and the additional modelling we have carried out based on new models, guidance and air quality strategies published since the submission of the EIAR, alleviates your concerns regarding road traffic air pollution associated with the project.

In addition to the consideration of road traffic, it must be noted that the scheme itself will improve the baseline air quality in other ways and this must be considered by anyone concerned with the effects of air pollution. Background air quality is considered within the significance criteria for impact assessments. While there is an impact of longer car journeys in some areas due to level crossing closures (301kg annually for PM_{10} , 274kg annually for $PM_{2.5}$ and 790kg annually for NO_x), the impact of the change from diesel to electric trains far outweighs it (2,906kg annually for PM_{10} , -3,091kg annually for $PM_{2.5}$ and -96,830kg annually for NO_x).

This saving is achieved while providing a significantly improved public transport service.

The DART+West achieves two of the three key transport actions in the 2023 Climate Action Plans 'Avoid-Shift-Improve' framework. This framework also will improve air quality as both transport air quality emissions and climate emissions are mainly as a result of combustion engines.