

24th October 2022

Technical Clarification – Environmental Statement Chapter 13: Air Quality Land West of Junction 38 of the M4

An assessment of the air quality impacts of the proposed development of a metal processing facility on land west of Junction 38 of the M4, near Margam, was carried out and presented in the Environmental Statement (ES) prepared in support of the planning application (reference: P2021/1255).

In addition to considering stack emissions of certain metals, the assessment predicted the potential impact of additional road traffic emissions from vehicles associated with the operation of the proposed development, on nitrogen dioxide (NO₂) and fine particulate matter (PM₁₀ and PM_{2.5}) concentrations at worse-case, sensitive existing receptors (i.e. existing residences) close to the affected road network. This assessment utilised dispersion modelling software to predict the future concentrations at the receptors, in the opening year of the development, in two scenarios: with and without the proposed development. Traffic flow data for the used in the modelling were provided by the appointed Transport Consultant, Apex Transport Planning Ltd. The predicted changes in concentrations (i.e., the impacts) associated with the proposed development were then categorised according to the methodology set out in the industry standard Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) guidance¹, which allowed the significance of the impacts to be determined using professional judgement.

As set out in Table 6.3 of the EPUK/IAQM guidance, where impacts fall below 1% (when rounded) of the Air Quality Action Level (AQAL) they are always considered to be negligible, irrespective of total pollutant concentrations. The largest predicted impacts at worst-case receptors of NO₂ and fine particulate matter presented in ES Chapter 13 fell

¹ Moorcroft and Barrowcliffe et al (2017) Land-Use Planning & Development Control: Planning For Air Quality v1.2, IAQM, London, Available: <http://iaqm.co.uk/guidance/>.

below 1% of the AQAL; therefore, the impacts associated with additional traffic generation of the proposed development were concluded to be negligible and not significant in terms of air quality effects.

As the magnitude of increases in traffic related pollutants associated with the proposed development were predicted to be below 1% of the AQAL, this conclusion of significance is independent of the baseline concentration, i.e., the assessment would still conclude no significant effects even if the baseline concentration was different. Consequently, any changes in baseline concentrations from those predicted in the assessment, which might not have been accounted for in the traffic and baseline monitoring data e.g., traffic calming measures on the M4, would not alter the conclusions presented in ES Chapter 13.

The assessment also quantified the impacts on ecological receptors but did not conclude significance of effects since IAQM guidance clarifies it is not within the remit of air quality practitioners to do so. Impacts of increased oxides of nitrogen (NO_x) concentrations and nitrogen and acid deposition rates were predicted at several points of the Cynffig Special Area of Conservation (SAC)/ Site of Special Scientific Interest (SSSI) that run directly adjacent to the M4 to the south of the proposed development.

These locations were selected in preference to areas of the SAC/SSSI closer to the development site boundary due to their proximity to a more heavily trafficked road where baseline NO_x concentrations and deposition rates would be greater than those more proximate to the development site boundary. There are no other sources of NO_x emissions within the development site boundary as the metal processing facility will use electric induction furnaces and no combustion will occur (NO_x is a product of combustion). Hence, the development will only contribute to increases in NO_x emissions as a result of development associated traffic and, consequently, it is important the assessment of resultant impact is made at locations where baseline concentrations due to traffic emissions are at their greatest.

With regard to the impacts of stack emissions of certain metals on ecological receptors, there are no statutory or non-statutory guideline values, either in UK legislation or EU legislation, nor are there any World Health Organization (WHO) air quality guidelines for metals in ambient air for ecological receptors. As such, there is no standard/guideline that can be used to assess metal concentrations in ambient air on Cynffig SAC.

The Air Pollution Information System (APIS)² lists the priority pollutants of concern for habitats and ecosystems as being NO_x, sulphur dioxide, ammonia, ozone, nitrogen and acid deposition. Except for emissions of NO_x from development traffic, and the associated contribution to nitrogen and acid deposition rates, which have been assessed and documented in the ES, none of these other pollutants will be emitted from the proposed development.

The only environmental benchmark for metals listed on APIS concerns chromium deposition on arable and semi-natural ecosystems, for which a non-statutory guideline of 1.5 mg/m²/day is specified. This value has been included in the prediction of the impacts of metal deposition in Table 13.27 of the ES, which indicates a maximum impact at any modelled location equivalent to 5.1% of this guideline value. As this is the maximum impact at any point, impacts at Cynffig SAC would be even lower due to the increased distance from the source of emission. All other metals also screened out from further assessment using the maximum deposition rates and other guideline deposition values provided in Environment Agency (EA)/Natural Resources Wales (NRW) guidance.

² APIS. (2022). APIS. Air Pollution Information System Database: <http://www.apis.ac.uk/>