



Chapter 22.0 Air Quality

22.0 Air Quality

22.1 Overview of existing situation

22.1.0.1 The landfall sites of the Project are located within the City of Cardiff Council and Newport City Councils. The Project is also in close proximity to the Vale of Glamorgan.

22.1.0.2 The majority of the western, northern and eastern areas of Cardiff are residential, whilst the main commercial areas are in the centre and to the south. The industrial areas are centred around the docks and to the south of the Cardiff (City of Cardiff Council, 2014). The M4 motorway traverses across the north of the authority area.

22.1.0.3 Currently there are four Air Quality Management Areas (AQMAs) declared within the City of Cardiff (an AQMA is an area where air quality objectives for one or more pollutants are exceeded) as a result of road-traffic emissions. These are located in the following locations and depicted in Figure 22.1 below:

- i. Cardiff city centre (former St Mary Street AQMA, with the addition of Westgate Street in Cardiff City Centre);
- ii. Ely Bridge (a number of residential premises along the A48 Cowbridge Road West, Western Avenue and A4119 through Llandaff Village Cardiff Road);
- iii. Llandaff (centre on Cardiff Road through Llandaff village); and
- iv. Stephenson Court (from north east and north west boundaries of Stephenson Court, north west boundary of Burgess Court, north west and south west and south west boundaries of Four Elms Court, south west corner of Four Elms Court south across Newport road to the junction with Orbit street, west across Newport Road to the south east corner of Stephenson Court) (Defra, accessed 2015).

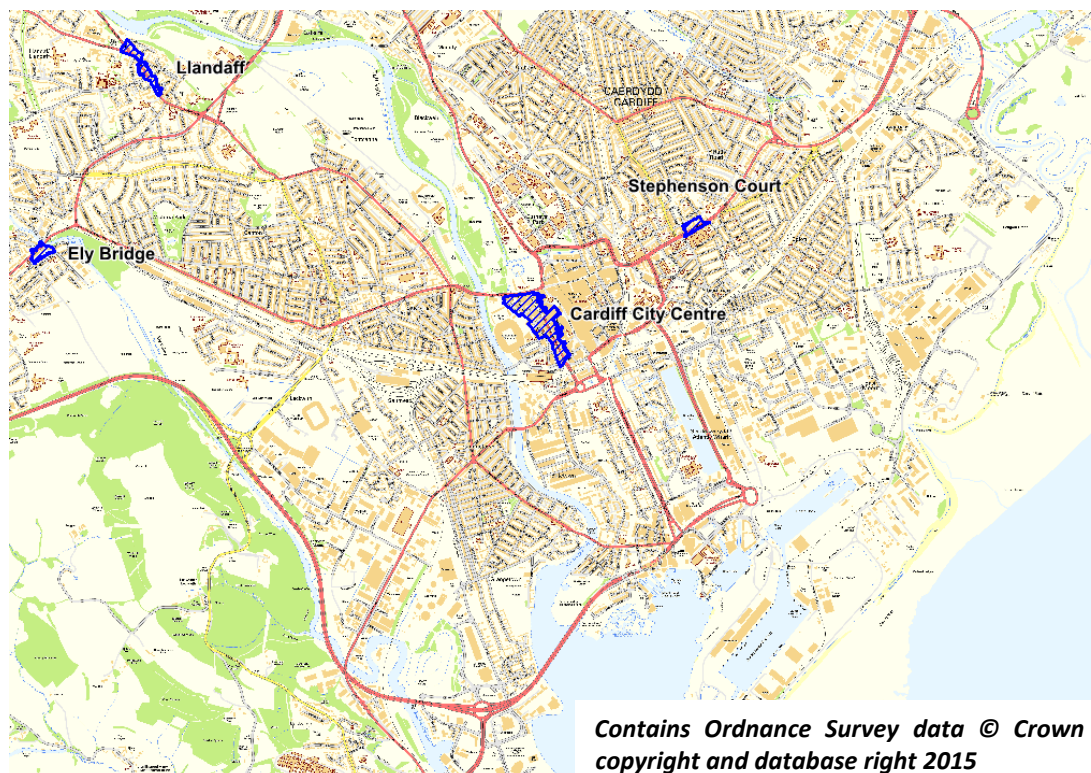


Figure 22.1 City of Cardiff AQMAs (depicted by blue hatching)

- 22.1.0.4 Each of these AQMAs have been declared for the nitrogen dioxide (NO₂) annual average objective (40µg/m³).
- 22.1.0.5 Newport City Council comprises several residential districts, a large docks area and several industrial estates. It is traversed by the M4 Motorway, which is the most significant contributor to poor air quality within the authority (Newport City Council, 2014). The authority currently has nine AQMAs declared, as a result of predicted exceedances of the annual mean objective for NO₂. A major contributor to the pollution in these areas is road traffic. The AQMAs are located in the following locations and depicted in Figure 22.2 below:
- i. Caerleon High Street (a number of properties along either side of the High Street in Caerleon);
 - ii. Caerleon Road (a number of houses on the western side of Caerleon Road, between the junctions with Durham Road and York Road);
 - iii. Glasllwch (an area extending either side of the M4, located south of the Junction 27 off Basseleg Road);
 - iv. Malpas Road (South) (a number of houses along both sides of Malpas Road in the vicinity of the junction with Redland Street);
 - v. Chepstow Road (area incorporating sections of Caerleon Road, Chepstow Road, Clarence Place, Church Road and Eves Well Court);

- vi. Malpas Road (North) (area covering even numbered properties from 350 to 388 Malpas Road, the pavement in front of those properties out to the centre line of the road);
- vii. Royal Oak Hill (a single property adjacent to the M4 motorway just west of where Royal Oak Hill crosses the motorway);
- viii. Shaftesbury/Crindau (an area around Junction 26 of the M4 including part of Malpas Road); and
- ix. St Julian's (an area at the north end of Denbigh Street immediately adjacent to the slip road at Junction 25 of the M4).

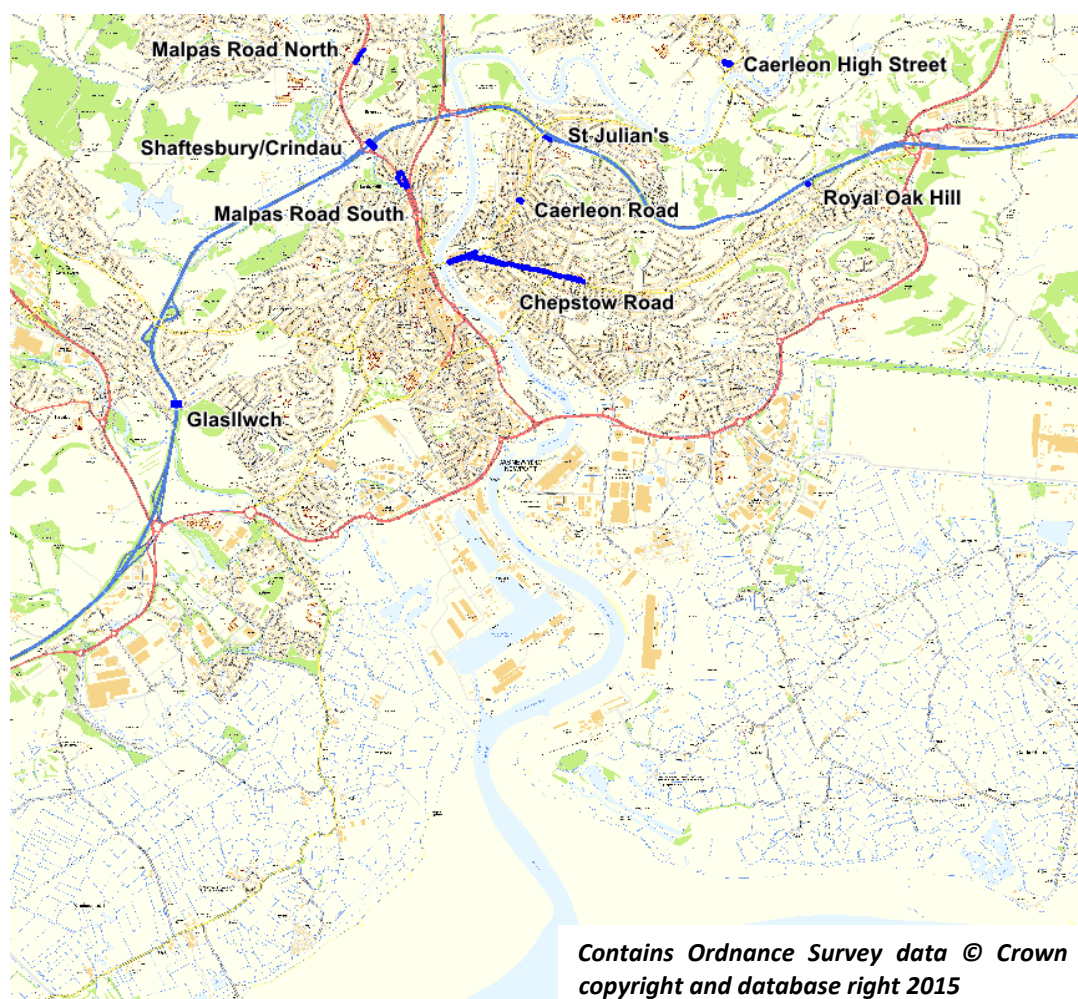


Figure 22.2 Newport City Council AQMAs (depicted by blue hatching)

- 22.1.0.6 The main residential areas in the Vale of Glamorgan are in the south east of the area. The M4 runs along the northern boundary of the authority.
- 22.1.0.7 At present, no AQMAs have been declared in the authority, however, the most recent review and assessment report (Vale of Glamorgan, 2013) states that the monitoring data obtained in 2012 supports recommendations within previous reviews and assessments, to consult on the declaration of an AQMA for a portion

of Windsor Road in Penarth, due to emissions of NO₂ from road traffic. Therefore, an AQMA in this location may be declared in the near future.

22.2 Scope of potential impact to be assessed

22.2.0.1 During the construction phase, the following air quality impacts may arise:

- i. Construction vehicle emissions;
- ii. Construction plant emissions;
- iii. Dust deposition, resulting in the soiling of surfaces; and
- iv. Elevated particulate matter less than 10 microns in diameter (PM₁₀) concentrations, as a result of dust generating activities on site.

22.2.0.2 In addition, material for the breakwater will primarily be brought to site by sea. In Defra's Local Air Quality Management Technical Guidance (Defra, 2009), it recommends detailed assessment of shipping emissions if there are:

- I. between 5,000 and 15,000 movements per year (and exposure within 250 m); or
- II. more than 15,000 movements per year (and exposure within 1 km).

22.2.0.3 Given the predicted number of shipping movements is well below 5000 per year, detailed assessment of shipping emissions would not be required in accordance with the guidance. Shipping emissions will therefore not be considered further.

22.2.0.4 Whilst the use of sea based vessels would reduce the need for Heavy Duty Vehicles (HDVs), there is still the potential for impacts on sensitive receptors within 200m (Highways Agency, 2007) of access roads as a result of construction vehicle emissions. Environmental Protection UK (EPUK) (2010) and the Design Manual for Roads and Bridges (DMRB)⁶ stipulate criteria in relation to when vehicle emissions from construction traffic should be considered as part of an assessment. A change in Heavy Duty Vehicles (HDV) of more than 200 per day for a year or more would require an assessment to determine the impacts. The potential effects of emissions from construction traffic will be considered further once information regarding the construction vehicle numbers is known.

22.2.0.5 Additionally, other consented developments may be in the vicinity of the Project, which may affect local traffic flows. Other large scale development projects in the local area include the M4 Corridor around Newport. Cumulative effects of construction vehicle emissions will therefore also be considered.

22.2.0.6 In terms of construction dust, the Institute of Air Quality Management (IAQM) guidance (2014) stipulates a construction dust assessment should be undertaken where there is:

- i. a 'human receptor' within 350m of the boundary of the site;

- ii. an 'ecological receptor' within 50m of the boundary of the site; or
- iii. either a human or ecological receptor within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s) for large sites, up to 200m from medium sites and 50m from small sites.

22.2.0.7 Given the location of the Project, it is highly likely that there would be human and ecological receptors within the study area stipulated within the IAQM construction dust guidance, therefore a construction dust assessment would be undertaken following confirmation of construction activities and scheduling. Cumulative dust effects would also be considered as part of the assessment.

22.2.0.8 Construction plant emissions, such as any proposed generators, also have the potential to affect sensitive receptors. These would be considered following the receipt of further information regarding the construction activities and type of plant used.

22.2.0.9 Given the nature of the Project, it is considered unlikely that there will be any air quality impacts during the operational phase. However, this would be confirmed following further development of the Project.

22.3 Existing baseline data, consultation and need for survey

22.3.0.1 Data regarding existing air quality will be sought from the City of Cardiff, Newport City and Vale of Glamorgan Councils. It is not anticipated that any baseline air quality monitoring will be required.

22.3.0.2 Initially, details regarding construction vehicle numbers and proposed access routes will be confirmed. Should the vehicle numbers exceed the criteria stipulated above in 22.2.0.4, there may be a requirement for traffic data to inform a detailed assessment.

22.3.0.3 Consultation will be undertaken with the Environmental Health Officers from City of Cardiff, Newport City and Vale of Glamorgan Councils, to obtain the most up to date air quality data and to agree the air quality assessment methodology. Liaison with the traffic teams will also be undertaken in order to discuss traffic data availability and the potential requirement for traffic surveys.

22.4 Proposed assessment methodology

22.4.0.1 In terms of construction vehicle emissions, further assessment would be undertaken should there be a change in HDV of more than 200 per day for a year or more. This would involve using the dispersion model ADMS (Roads) to predict the air quality concentrations at existing sensitive receptors. The model would be used to predict air quality conditions for the following scenarios; baseline (i.e. existing air quality conditions); do-minimum (the future air quality conditions that would exist without the construction of the Scheme); and do-something (the future air quality conditions that would exist with the construction of the

Scheme). Cumulative effects of construction vehicle emissions would also be considered. The modelled results would be verified using local monitoring data and compared against the relevant national Air Quality Strategy (AQS) Objectives. The air quality modelling would be undertaken following the most recent guidance, in particular Defra's Local Air Quality Management Technical Guidance and the EPUK guidance.

22.4.0.2 Construction dust would be assessed following the Institute of Air Quality Management (IAQM) guidance. The assessment steps are as follows:

- i. Step 1 screens the requirement for a more detailed assessment. Should sensitive receptors not be present within the relevant distances then negligible impacts would be expected and further assessment is not necessary;
- ii. Step 2 assesses the risk of potential dust impacts for the proposed construction activities, based on the magnitude of potential dust emissions and the sensitivity of the area to dust impacts;
- iii. Step 3 requires the identification of site specific mitigation measures to reduce potential dust impacts based upon the relevant risk categories identified in Step 2; and
- iv. The final step is to determine whether there are significant effects arising from the construction phase of a proposed development. This is based on professional judgement but takes account of the significance of the effects for each of the potential dust generating activities.

22.4.0.3 Defra's Local Air Quality Management Technical Guidance would be used to determine whether construction plant emissions require further consideration. The methodology to assess the emissions would be decided once information regarding the type of plant proposed has been confirmed.

22.4.0.4 Whilst operational effects are considered unlikely, these would be considered further following confirmation of the Project details.

22.5 References

City of Cardiff Council (2014), 2014 Air Quality Progress Report The City of Cardiff Council

Defra (2009) Local Air Quality Management Technical Guidance (LAQM.TG09)

Defra website (accessed 2015) <http://uk-air.defra.gov.uk/aqma/>

Environmental Protection UK (2010) Development Control: Planning for Air Quality (2010 update)

Highways Agency (2007), Design Manual for Roads and Bridges Volume 11, Section 3, Part 1, HA207/07



Newport City Council (2014), 2014 Air Quality Progress Report for Newport City Council

The Institute of Air Quality Management (2014) Guidance on the Assessment of Dust from Demolition and Construction

Vale of Glamorgan Council (2013) 2013 Air Quality Progress Report for Vale of Glamorgan