

Glyn Rhonwy Pumped Storage Development Consent Order

Deadline 5 – Baseline Air Quality Monitoring Plan



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BASELINE AIR QUALITY MONITORING PLAN

1.1 Introduction

1.1.1 Baseline air quality monitoring will be undertaken in order to identify the existing environmental conditions prior to construction work, and in order to identify any increase in the rate of dust deposition or the concentration of nitrogen dioxide (NO₂) that may arise.

1.1.2 Therefore, baseline air quality monitoring will be undertaken for a minimum of 6-months prior to work going ahead in order to capture a range of environmental and weather conditions in the area, and to ensure that a representative sample of data is collected.

1.1 Methodology

1.1.1 The baseline monitoring will be used to determine the pollutant concentrations prior to any work being undertaken.

- Frisbee dust deposition gauges will be used to measure the average rate of dust deposition for approximate 30-day periods over the baseline period. The deposited dust will also be analysed for character and composition in order to create a record of the types of dust that are currently present. Values will be reported as mg/m²/day values for the mass of undissolved solids.
- Passive diffusion tubes will be used to sample the concentration of nitrogen dioxide, which is a product of engine exhaust. The average concentration for approximate 30-day periods over the baseline period in order to calculate the annual mean concentration. Raw results for the survey period will be annualised and adjusted for laboratory bias in line with current guidance from the Department of Environment and Rural Affairs and reported as an annual mean value in the units of µg/m³.
- Automatic particulate monitoring units will be used to measure the concentration of dust. These instruments may be mounted on posts or

walls and can provide continuous monitoring of PM₁₀, and other size fractions. The equipment can operate continuously and the data can be downloaded remotely for checking and analysis. Results will be reported for PM₁₀ based on averaging periods of 15 minute mean, 24 hour mean and annual mean values in units of µg/m³. Data on other size fractions should be reported where used to inform the analysis of the baseline measurements.

- 1.1.2 Baseline studies will be undertaken in order to determine the ambient pollutant concentrations and dust deposition rates prior to construction work being undertaken.
- 1.1.3 Automatic particulate monitoring units should be located near the boundary of the proposed working areas or near sensitive receptor locations, although the precise location of the units will be subject to the availability of a secure location with reliable electricity supply, and safe access.

Monitoring Locations

- 1.1.4 Proposed locations are listed in Table 2 and illustrated in Figure 1. Some dust deposition equipment and automatic particulate monitors would be located within the grounds of receptor properties, subject to landowners agreement, or where this is not possible, at the nearest point of the fence line around the construction site.

| Table 1: Baseline Air Quality Monitoring Locations | | |
|---|--|--|
| Location | Monitoring Methodology | Reason |
| Glyn Peris guesthouse | <p>Automatic dust monitoring to measure the concentration of atmospheric dust</p> <p>Frisbee gauge monitoring units to measure the rate of deposited dust.</p> <p>Diffusion tubes to measure the concentration of atmospheric Nitrogen Dioxide</p> | <p>The properties to the east of the site are in proximity to the tail pond and tailrace area and the main road.</p> <p>A conveyor route is also proposed to be located near this boundary that is a specific potential source of dust.</p> |
| Lake View Hotel | <p>Automatic dust monitoring to measure the concentration of atmospheric dust</p> <p>Frisbee gauge monitoring units to measure the rate of deposited dust.</p> <p>Diffusion tubes to measure the concentration of atmospheric Nitrogen Dioxide</p> | <p>Monitoring in this area will be used to protect these locations from potential emissions of dust and engine exhaust pollutants.</p> |
| Site access / exit | <p>Automatic dust monitoring to measure the concentration of atmospheric dust</p> <p>Frisbee gauge monitoring units to measure the rate of deposited dust.</p> <p>Diffusion tubes to measure the concentration of atmospheric Nitrogen Dioxide</p> | <p>The main site access point represents a potential significant location for construction dust emissions due to vehicle track-out.</p> <p>It is not specifically near any sensitive locations, but monitoring in this area is a cautious approach to protect receptors near the main access routes from emissions from track-out and engine exhaust pollutants.</p> |

| Table 1: Baseline Air Quality Monitoring Locations | | |
|---|---|---|
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| Tailrace working area | Frisbee gauge monitoring units to measure the rate of deposited dust. Diffusion tubes to measure the concentration of atmospheric Nitrogen Dioxide | The working area from the tail pond to Llyn Padarn will be near commercial, industrial and amenity locations. Monitoring in this area will be used to protect these receptors from emissions during this work. |
| Head pond area near quarry | Frisbee gauge monitoring units to measure the rate of deposited dust. | Monitoring dust near the working areas of potentially significant dust generating activities will be used for the protection of the surrounding land and receptors. |
| Head pond area, near excess spoil mounds | Frisbee gauge monitoring units to measure the rate of deposited dust. | |
| West side of the Tail Pond area | Frisbee gauge monitoring units to measure the rate of deposited dust. | |
| Public Highway through Llanberis | Diffusion tubes to measure the concentration of atmospheric nitrogen dioxide | |

1.2 Meteorological Data

- 1.2.1 Anemometers will be co-located with the automatic dust monitoring equipment in order to simultaneously measure wind direction and speed at the location that the particulate measurements are taken.
- 1.2.2 The information from the anemometers will be used to inform the interpretation and analysis of the recorded baseline data in the areas specifically around the construction works.
- 1.2.3 It is not intended that the meteorological data should be used to determine baseline weather conditions.

1.3 Reporting

- 1.3.1 A summary report will be issued at the end of the baseline monitoring period. This will include:
- Presentation of the results from the measurements undertaken for the 6 month baseline period.
 - Analysis and description of the baseline air pollutant conditions, for dust deposition rates, airborne concentrations of nitrogen dioxide and PM₁₀, experienced at each monitoring location.
 - Recommendations for lower and upper action trigger levels that should be adopted by the Dust Management Plan for use during all future monitoring of air quality, subject to the agreement of technical officers at Gwynedd Council.
- 1.3.2 The purpose of action trigger levels is to assist site managers to employ mitigation in an effective manner such that significant air quality effects are not experienced at sensitive receptor locations. The upper action trigger level is set as a criteria that the Gwynedd Council can judge the performance of the site management against. The lower trigger levels provides site management with a desirable level to work towards achieving, thereby providing a margin of comfort for the achievement of the upper trigger value.