6. Noise and Vibration

6.1 Introduction

The purpose of this section of the EIS Scoping Report is to describe the scope of work and methods to be applied in the identification and assessment of noise and vibration impacts associated with the proposed development. A high level overview of the baseline conditions is included, together with the proposed methodology and a scope of work likely to be required to undertake a detailed assessment of the impact of the proposed development on noise and vibration as part of the EIA.

6.1.1 Policy & Plan Context

The assessment of noise and vibration will be conducted under the relevant legislation and guidance including:

- World Health Organisation (WHO) Guidelines for Community Noise 1999;
- Protection of the Environment Act 2003 as amended, and associated Regulations;
- BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Noise';
- BS 5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Vibration';
- BS 4142:2014 'Methods for rating and assessing industrial and commercial sound';
- Environmental Protection Agency Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (EPA 2016);
- NRA, Guidelines for the Treatment of Noise and Vibration in National Road Schemes (NRA 2004) [now TII]; and
- Local Authority noise and vibration planning guidance.

6.1.2 Study Area

This proposed development covers an extensive study area that extends from Parteen Basin on the River Shannon, directly south of Lough Derg in County Tipperary, through Tipperary and the midland counties of Offaly and Kildare, and terminating in the vicinity of Peamount Reservoir and environs in South County Dublin. The extent of the proposed development, particularly the c.170km treated water pipeline component, requires crossing a significant section of the country. The entirety of the study area will require sensitivity in the siting and design process due to the potential for proximity to a range of sensitive receptors.

It is expected that there may be sensitive receptors located within 500m of elements of the proposed development's infrastructure (abstraction site, water treatment plant, break pressure tank, pipeline and termination point reservoir) including both low density residential dwellings and a number of larger residential settlements.

6.2 Baseline Information

6.2.1 Desktop Study

Extensive work has been completed to date in order to identify the location of the proposed infrastructure sites and preferred pipeline corridor. This was completed as part of the options appraisal which initially supported the Preliminary Options Assessment Report (POAR) and subsequently the Final Options Appraisal Report (FOAR) and assessed proposed sites and proposed pipeline corridors against a range of environmental criteria

including noise and vibration. A desktop review of available data regarding the baseline noise and vibration levels over the study area has been undertaken and will be supplemented with any additional information to support the development of the EIS.

The National Roads Authority document entitled *Guidelines for the Treatment of Noise and Vibration in National Road Schemes* (NRA, 2004) [Note NRA now TII] provides guidance on route selection assessment procedures, the primary aspect of which relates to the proximity of routes to noise sensitive locations. This document, although designed for road schemes, was applied in this instance due to the linear nature of much of the proposed development and the fact that the identification of noise and vibration constraints is a key component in driving the selection process.

Noise and vibration constraints such as the number of sensitive receptors and the presence of cultural heritage areas (which may have more stringent criteria for vibration) have been investigated in the development of the FOAR. Key items of note related to:

- At the Parteen Basin location, in terms of noise and vibration, the area was considered rural/suburban with the larger residential settlements of both Killaloe and Ballina noted. The existing ambient noise climate was considered low with noise sources generally related to traffic from the nearby regional and local roads.
- At the Termination Point Reservoir, in the vicinity of Peamount Reservoir and environs, the existing ambient noise climate in this predominantly rural area was considered low with noise sources generally traffic related or from other anthropogenic sources such as the Casement Aerodrome.
- There were marginal differences in terms of noise and vibration across the pipeline corridors that were considered as part of the FOAR with generally low - very low densities of sensitive receptors across the length of the corridors.

Following the identification of the Preferred Scheme, further more detailed assessment of noise and vibration will be carried out in order to establish a baseline and propose mitigation measures as required.

During the construction phase of the development mitigation measures are likely to consist of the selection of tools and plant items with low inherent potential for noise/vibration generation along with the implementation of good practice construction methods and monitoring of noise/vibration where necessary to ensure compliance with relevant limit values. During the operational phase of the development consideration will be given to noise generating plant items such as pumps and other building services plant items along with noise from vehicles accessing/parking on site. In all instances noise/vibration mitigation measures will be considered where impacts are predicted to be excessive.

6.2.2 Future Survey Needs

The noise criteria for the operational phase plant items will be influenced by the baseline noise levels at nearby sensitive receptors. In order to characterise the existing noise environments of the proposed development, baseline noise monitoring surveys, at identified sensitive receptors in the vicinity of the fixed aboveground infrastructure proposed for the project operational phase, will be completed. The proposed baseline surveys will enable a full and proper impact assessment of the project to be undertaken and to enable suitable mitigation to be designed as needed.

Noise and vibration predictions for the various typical construction activities that will be used in pipeline construction and the construction of the main plant areas will also be assessed.

6.2.3 Consultation

It is considered that consultation on the noise and vibration impact assessment will be undertaken with the following organisations:

- Environmental Protection Agency;
- The Local Authorities where infrastructure for the abstraction, water treatment plant, break pressure tank and termination point reservoir would be situated as well as the relevant Local Authorities along the proposed pipeline route.

Noise and Vibration related comments arising during the consultation phases of the project will also be reviewed and considered within the EIS as relevant.

6.3 Potential Impacts

6.3.1 Potential Construction Phase Impacts

As with similar developments, the highest potential for noise and vibration impact occurs during the construction phase. During this time potential noise and vibration impacts will arise from activities such as:

- Earth moving;
- Rock breaking, piling and tunnelling works;
- General civil and structural engineering works;
- Traffic noise, both near the construction sites due to HGVs and construction vehicles, and potentially remote from the sites caused by traffic diversions; and
- Vibration could impact on sensitive receptors due to piling, possible rock blasting, the use of tunnelling equipment or the use of heavy vibrating compaction machinery. The impact would be dependent on distance between the vibration source and the sensitive receptor.

In order to minimise the impact of noise and vibration during the construction phase a series of mitigation measures will be included in the EIS and will be implemented during the construction phase of the proposed development. Examples of these will be the selection of plant with a low inherent potential for noise/vibration generation, limiting hours during which noisy/vibratory activities are permitted and monitoring of noise/vibration levels at sensitive locations in order to demonstrate compliance with relevant noise/vibration limits.

6.3.2 Potential Operational Phase Impacts

The proposed development will likely include some low level noise at the abstraction site and the termination point site, as well as intermittently along the route of the pipeline. This will be caused by pumping stations and other operational equipment. There is also likely to be a very low impact caused by increased traffic flows on the existing road network.

It is considered unlikely that there will be any significant residual noise or vibration impacts as any operational plant will be required to operate in compliance with standard noise and vibration emissions criteria, the noise limits typically being 55dB(A) during the daytime, 50dB(A) during the evening and 45dB(A) during the night, although the existing ambient and background noise environment at sensitive receptors will be considered in formulating the final noise criteria for the operational phase of the development.

The EIS will outline any required mitigation measures which will need to be incorporated during the design process. Operational design criteria for the appointed contractor will incorporate noise and vibration limits and standard mitigation measures as will be outlined in the EIS.

6.4 Proposed Methodology & Assessment Scope

It is proposed that an assessment of noise and vibration will be carried out in accordance with the EPA's current EIS guidance documents and the following guidance and established best practice, and will be tailored accordingly based on professional judgement and local circumstance:

- Guidelines for the Treatment of Noise and Vibration in National Road Schemes (NRA, 2004) [now TII].

In line with the above guidance, the assessment will cover potential impacts from noise and vibration and will describe the existing conditions and the likely potential impacts associated with the construction and operation of the proposed development. The impact assessment process will involve:

- Assigning the receptor sensitivity;
- Identifying and characterising the magnitude and significance of any potential impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts; and
- Assessing the significance of any residual effects after mitigation.

The noise and vibration assessment to be carried out on the proposed development will include the following elements:

- Review of standards and legislation;
- Identification of noise and vibration issues relevant to the proposed development;
- Review of background noise in the vicinity of the proposed development;
- Assessment of potential noise and vibration impacts of construction activities;
- Assessment of potential impacts of operational phase plant processes on noise and vibration in and around the applicable parts of the proposed development; and
- Assessment of potential impacts of traffic on noise levels in and around the proposed development.

The assessment will take account of Noise Sensitive Locations (NSL's) relevant to the proposed development. Sensitive receptors will comprise places where it would be reasonable to expect people to be exposed to local noise and vibrations. The EPA NG4 definition of an NSL will be used in the assessment, as reproduced below:

NSL – any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels:

The complete list of noise and vibration sensitive receptors within the vicinity of the proposed development will become transparent once the final infrastructure sites and preferred treated water pipeline corridor is selected, thus informing the full study area for the EIA. A series of mitigation measures to minimise any foreseen impacts for both the construction phase and operational phase of the project will be proposed as required.