

Substation Extension, Imperial Park, Newport, Wales

784-B073302



Construction Noise Management Plan

DWD Property and Planning Limited

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1.0 Introduction

1.1 Purpose of this Report

This report provides a Construction Noise Management Plan (CNMP) to support a planning application for the extension of an existing substation development close to Imperial Park, Newport, Wales.

1.2 Responsibility for the Implementation of the Noise Management Plan

The implementation and dissemination of this CNMP will be the responsibility of the Site Manager, supported by other staff. The Site Manager can delegate certain tasks as required, although ultimate responsibility will remain with them.

A nominated deputy will be appointed for all times when the Site Manager is not on site. In such circumstances, it will be the nominated deputy's responsibility to ensure that the requirements of the CNMP are adhered to.

All site staff will receive instructions on how the plan is to be implemented during toolbox talks on site.

This document will be reviewed periodically to ensure that it is fit for purpose and meets the requirements of current guidance.

1.3 Site Location and Context

The development site is located close to Imperial Park, Newport, Wales. The development proposals include the extension of an existing substation development.

The site is bound to the north and east by residential properties on Dunraven Drive, Bronllys Mews and Bronllys Grove.

1.4 Legislative Context

This report is intended to provide information relevant to the local planning authority and their consultees in support of a planning application for the above proposed development. Future Wales: The National Plan 2040 and Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. They are supplemented by a series of Technical Advice Notes (TANs), Technical Advice Note 11 which relates to Noise, Welsh

Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales. The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation. A well-functioning planning system is fundamental for sustainable development and achieving sustainable places. Paragraph 6.7.5 says:

“In taking forward these broad objectives the key planning policy principle is to consider the effects which proposed developments may have on air or soundscape quality and the effects which existing air or soundscape quality may have on proposed developments. Air quality and soundscape influence choice of location and distribution of development and it will be important to consider the relationship of proposed development to existing development and its surrounding area and its potential to exacerbate or create poor air quality or inappropriate soundscapes. The agent of change principle says that a business or person responsible for introducing a change is responsible for managing that change. In practice, for example, this means a developer would have to ensure that solutions to address air quality or noise from nearby pre-existing infrastructure, businesses or venues can be found and implemented as part of ensuring development is acceptable.”

Paragraphs 6.7.6 and 6.7.7 says:

“In proposing new development, planning authorities and developers must, therefore: address any implication arising as a result of its association with, or location within, air quality, noise action planning priority areas or areas where there are sensitive receptors;

- not create areas of poor air quality or inappropriate soundscape; and
- seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes.

To assist decision making it will be important that the most appropriate level of information is provided and it may be necessary for a technical air quality and noise assessment to be undertaken by a suitably qualified and competent person on behalf of the developer.”

Paragraph. 6.7.24 says:

“The potential impacts of noise pollution arising from existing development, be this commercial, industrial, transport-related or cultural venues (such as music venues, theatres or arts centres), must be fully considered to ensure the effects on new development can be adequately controlled to safeguard amenity and any necessary measures and controls should be incorporated as part of the proposed new development. This will help to prevent the risk of restrictions or possible closure of existing premises or adverse impacts on transport infrastructure due to noise and other complaints from occupiers of new developments. It will be important that the most appropriate level of information is provided, and assessment undertaken.”

TAN 11 provides advice on how the planning system can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development or adding unduly to the costs and administrative burdens of business.

1.5 Local & Regional Policy Context

The Newport Local Development Plan 2011-2026 states the following in relation to noise:

“GP2: Development will be permitted where, as applicable: i) there will not be a significant adverse effect on local amenity, including in terms of noise, disturbance, privacy, overbearing, light, odours and air quality;

(...)

GP4: Development proposals should be designed to avoid or reduce transport severance, noise and air pollution;

(...)

GP7: development will not be permitted which would cause or result in unacceptable harm to health because of land contamination, dust, instability or subsidence, air, heat, noise or light pollution, flooding, water pollution, or any other identified risk to environment, local amenity or public health and safety”

1.6 Acoustic Consultants’ Qualifications and Professional Memberships

The lead project Acoustic Consultant is Daisy Flatters. The report has been checked by Joe Nott and verified by Dawit Abraham. Relevant qualifications, membership and experience are summarised in Table 1.2 below.

Table 1.1: Acoustic Consultants' Qualifications & Experience

Name	Education	Experience in Undertaking Noise Assessments (Start date of working in noise & acoustics)	Attained Associate Membership of the Institute of Acoustics (date)	Attained Membership of the Institute of Acoustics (date)
Daisy Flatters	BA(Hons) 2023	Jan 2024	-	-
Joe Nott	BSc 2016	Aug 2016	Aug 2017	-
Dawit Abraham	BSc 2008 MSc 2010	Oct 2010	Jan 2011	Jan 2015

2.0 Assessment Criteria

2.1 Construction Phase: Noise

To determine whether construction noise levels are significant, the method provided in Annex E.2 of BS 5228-1:2009 + A1 2014 has been utilised. On construction sites, noise limits for works are generally set with reference to the need to avoid speech interference in buildings adjacent to the site. Annex E.2 gives advice on maximum levels of construction site noise during daytime hours (taken to be 07:00 to 19:00 hours). The advice is that the noise levels outside the nearest window of the occupied room closest to the site boundary should not exceed:

- 75 dB(A) in urban areas near main roads or in heavy industrial areas;
- 70 dB(A) in rural, suburban, and urban areas away from main roads and industrial noise.

For the purposes of this assessment, due to the development site being in a suburban area, it is considered that the existing noise sensitive properties close to the site should be assessed against the 70 dB(A) criteria.

3.0 Measures To Control Disruption

The following practices are derived from those detailed in BS 5228-1:2009 and those most appropriate to the site are outlined below.

3.1 Construction Operation Times

The proposed timing for construction works which can be heard at the boundary of the site are as follows:

- Monday to Friday: 08:00 – 18:00
- Saturday: 08:00 – 13:00
- Saturday afternoons, Sundays and Bank Holidays: No works permitted.

The proposed construction operating hours presented above are entirely within the daytime period defined within BS 5228-1. However, it should be noted that the construction contractor may seek to operate outside of these times in certain circumstances if there are good reasons to do. Any significant noise producing work outside of the hours presented above will be agreed in advance with the Newport City Council.

3.2 General Best Practice and Site Management

Wherever possible noise will be controlled at source. Site staff will ensure that construction works are carried out in a controlled manner so that noise generation is kept to a minimum. Such measures include:

- a) Site hoarding to be built and maintained to maximise the reduction in noise levels to sensitive buildings and land uses;
- b) Avoid unnecessary revving of engines and switch off equipment when not required;
- c) Keep internal haul routes well maintained and avoid steep gradients;
- d) Use rubber linings in, for example, chutes and dumpers to reduce impact noise;
- e) Minimize drop height and excessive banging of materials when loading/unloading;
- f) Start up plant and vehicles sequentially rather than all together;
- g) Consider concrete pour sizes and plan the start of concrete pours as early as possible within normal working hours to avoid overruns;
- h) Leaflet drops at all existing houses likely to be affected by noisy construction activities notifying them of works in advance and detailing the nature and their likely duration works;

- i) If possible power all plant and equipment by mains electricity or other quieter technology rather than locally powered sources such as generators;
- j) Careful selection of working methods and programme;
- k) Selection of quietest working equipment available (e.g. electric/battery powered equipment which is generally quieter than petrol/diesel powered equipment);
- l) Fit all plant and equipment with appropriate mufflers or silencers of the type recommended by the manufacturer;
- m) Positioning equipment behind physical barriers, i.e. existing features, hoarding, etc., or provision of lined and sealed acoustic covers for equipment that could potentially contribute to a noise nuisance;
- n) Positioning of noise generating equipment, such as any blending plant in areas which minimise noise as far as practicable;
- o) Directing plant noise emissions, including exhausts or engines away from sensitive locations;
- p) Ensuring that regularly maintained and appropriately silenced equipment is used;
- q) Shutting down equipment when not in use, i.e. maintain a 'no idling policy';
- r) Handling all materials in a manner which minimises noise;
- s) No use of vehicle horns unless as an emergency health and safety requirement;
- t) Switch all audible warning systems to the minimum setting required by the Health and Safety Executive;
- u) Limit material and plant loading and unloading to normal working hours;
- v) Employ best practices and follow guidance of British Standard 5228 – Parts 1 and 2.

As far as reasonably practicable, sources of significant noise will be enclosed or screened. The extent to which this can be done depends on the nature of the machine or process to be enclosed and their ventilation requirements. For maximum benefit, screens will be close to the source of noise.

3.3 Plant Activities

The plant and activities to be employed on the site will be reviewed to ensure that they are the quietest available for the required purpose; this is in accordance with best practicable means. Where reasonably practicable, noisy plant or activities will be replaced by less noisy alternatives if noise problems are occurring. Noise from plant and equipment can often be reduced by modification or by the application of improved sound reduction methods, but this

will only be carried out after consultation with the manufacturer. Suppliers of plant will often have ready-made kits available and will often have experience of reducing noise from their plant.

3.4 Working Methods

Where reasonably practicable, quiet working methods will be employed, including use of the most suitable plant, reasonable hours of working for noisy operations, and economy and speed of operations.

3.5 Maintenance

In terms of in-house maintenance, the site will utilise a Computerised Maintenance Management System (CMMS), a software package that includes all the Planned Preventive Maintenance (PPMs) as per the manufacturer's Operation and Maintenance Manual.

Daily/weekly/monthly/quarterly work orders are generated from the system (as appropriate) depending on their frequency and completed by the site staff before they are closed off.

Corrective actions can also be raised for potential anomalies that are identified. Only personnel who are trained and licensed to operate equipment and carry out maintenance will do so.

All plant and equipment will be maintained in accordance with a PPM which will be defined by the manufacturer's requirements. This will ensure that the integrity and operational efficiency of all plant and equipment is maintained and therefore minimise the risk of mechanical failure which may result in increased noise emissions.

All plant and equipment will be inspected on a daily basis by a nominated manager prior to use. The purpose of this inspection is to identify any signs of defects that may affect the integrity and operational efficiency of the plant. Management staff will undertake monthly checks, to ensure all equipment is operating efficiently and without excessive noise. Any defects or damage will be reported to the site Manager and remedied in reasonable time.

In the event that a defect is identified on any item of plant or equipment, the use of the plant/equipment will be suspended until the necessary remedial works have been undertaken. In order to facilitate this, mobile plant will be isolated and the site diary will be updated to outline the operational conditions and availability of all plant and equipment.

Once the necessary remedial works have been undertaken, the site diary will be updated to provide details of the defects and the remedial actions that were undertaken.

3.6 Training

Operatives will be provided with training and instruction to employ appropriate techniques to keep site noise to a minimum and will be effectively supervised to ensure that best working practice in respect of noise reduction is followed. All employees will be advised regularly of the following, as part of their training:

- a) the proper use and maintenance of tools and equipment to minimise noise;
- b) the positioning of machinery on site to reduce the emission of noise to the neighbourhood and to site personnel;
- c) the avoidance of unnecessary noise when carrying out manual operations and when operating plant and equipment;
- d) the protection of persons against noise.

Special attention will be given to the use and maintenance of sound-reduction equipment fitted to power tools and machines.

3.7 Communication and Liaison

Good relations with people living and working in the vicinity of site operations are of paramount importance. Early establishment and maintenance of these relations throughout the duration of site operations, will go some way towards allaying people's fears. It is suggested that good relations can be developed by keeping people informed of progress and by treating complaints fairly and expeditiously.

3.7.1 Recording and Investigating Complaints

All staff on site will be briefed on the complaint procedure and mitigation requirements, and their responsibilities to register and escalate complaints received. All complaints will be investigated immediately by the Site Manager. Any complaints received at the site or via Newport City Council will be logged in accordance with the integrated management system as soon as in practicably possible.

Following the receipt of a complaint, the Principal Construction Contractor or Site Manager will conduct a noise monitoring investigation at the location of the complaint if known and on site to determine the significance of the noise and particular process giving rise to the complaint. If the noise can be directly related to the site or a specific piece of equipment or task, corrective actions will be identified and programmed for remediation.

Where possible, as much information and detail about the complaint will be recorded, whether this is from the relevant authority or complaint direct to site. This information will assist in the investigation and determining the source of the noise. Details of the complaint should include:

- Name of complainant
- Address of affected property
- Date and time of complaint
- Method of notification (i.e. complaint line, email, letter)
- Type of complaint (i.e. noise or vibration)
- Details of complaint
- Any previous or related complaints

If necessary and following any complaints received, the Site Manager will engage and communicate with all identified affected neighbours to understand the possible noise issues. This will include detailing the efforts being undertaken to control noise; and importantly the actions being taken in response to their complaint.

Results of investigations into complaints would be recorded on site and reported back to the complainant or the reporting body if requested. All responses will be through trained and experienced staff and within the timescale agreed with Newport City Council. If required, the Construction Environmental Management Plan and Construction Noise Management Plan shall be updated to reflect any changes made to the management procedures on site following the review and Stakeholders will be informed of the findings of the investigation.

3.7.2 Means of Contact

In general, the longer the duration of activities on a site, the more likely it is that noise from the site will prove to be an issue. In this context, good public relations and communication are important. The hours of working will be planned in advance and disseminated. The site will be readily contactable to outside organisations and to members of the public. The site signage board (placed in a readily visible location) contains the necessary contact details for the Site Manager and liaison officer. There will be a need to adhere strictly to the stated schedule and ensure that the community is informed of their likely durations.

3.8 Continuous Noise Monitoring and Trigger Levels

Continuous noise monitoring will be undertaken at the monitoring location CNM1 as specified in Section 2. The noise monitoring threshold values have been defined using ‘ABC methodology’ to establish a ‘traffic light’ approach to prevent noise levels at nearby properties exceed the criteria set out in Section 2.

Table 3.1: Construction Noise Limits at Continuous Noise Monitor

Alert level	Time Periods	Noise Trigger Limit at CNM1	Resultant Noise Level at R03
Red (<i>at this level all works to cease immediately, investigate cause of exceedance and use alternative methods where appropriate</i>)	07:00 – 19:00	>77.4 dB(A) $L_{Aeq,T}$	>70 dB(A) $L_{Aeq,T}$
Amber (<i>continual monitoring and investigation of alternative methods where appropriate</i>)	07:00 – 19:00	>57.4.0 dB(A) $L_{A90,T}$	>50.0 dB(A) $L_{A90,T}$
Green (<i>no action required</i>)	07:00 – 19:00	=<57.4 dB(A) $L_{A90,T}$	=<50.0 dB(A) $L_{A90,T}$

Note the ‘Red’ limit would result in cessation of construction work at the site as construction noise levels in excess of 70 dB(A) are likely to cause disruption to nearby sensitive receptors.

Automatic alerts will be sent through to Tetra Tech staff when designated boundary noise trigger levels are breached or near to exceedance. Tetra Tech staff will then remotely analyse noise levels and sound files. This will be quickly followed by informing the Site Manager of the situation. Alerts can be set-up to be sent to site representatives if required.

3.8.1 Start-up (investigative) Monitoring

It is proposed, subject to agreement with Newport City Council, that as a precautionary measure, short-term (10-15 minutes) start-up noise measurements could be undertaken at CNM1 at the beginning of each phase (or new location) of key, identified works and with the

introduction of each piece of equipment/method being used, to identify whether the threshold criteria are likely to be exceeded. If the 'Amber' criteria are likely to be exceeded, additional mitigation/change of equipment/methods will be required, and additional monitoring will be undertaken until the measured noise levels remain within the 'Green' criteria.

3.8.2 Ongoing Noise Monitoring

If the 'Amber' criteria are not likely to be exceeded (following the start-up monitoring) then the ongoing continuous monitoring will continue at the 2 monitoring locations only whilst the key works are within 50m of the receptor locations, or as otherwise agreed with the Council. Figure 3.1 below presents the proposed Noise monitoring location.

Figure 3.1: Continuous Noise Monitoring Locations



4.0 Conclusion

This report provides a Construction Noise Management Plan (CNMP) to support a planning application for the extension of an existing substation development close to Imperial Park, Newport, Wales.

This Construction Noise Management Plan is designed to be completed throughout the construction phase and for different activities that would be conducted during this phase of the development.

'ABC methodology' has been used to establish a 'traffic light' approach for noise monitoring and control has been proposed to ensure that no significant disturbance to the closest sensitive receptors is experienced during the construction phase of this development.

Appendices

Appendix A – Acoustic Terminology

Acoustic Terminology

- dB** Sound levels from any source can be measured in frequency bands in order to provide detailed information about the spectral content of the noise, i.e. whether it is high-pitched, low-pitched, or with no distinct tonal character. These measurements are usually undertaken in octave or third octave frequency bands. If these values are summed logarithmically, a single dB figure is obtained. This is usually not very helpful as it simply describes the total amount of acoustic energy measured and does not take any account of the ear's ability to hear certain frequencies more readily than others.
- dB(A)** Instead, the dBA figure is used, as this is found to relate better to the loudness of the sound heard. The dBA figure is obtained by subtracting an appropriate correction, which represents the variation in the ear's ability to hear different frequencies, from the individual octave or third octave band values, before summing them logarithmically. As a result the single dBA value provides a good representation of how loud a sound is.
- L_{Aeq}** Since almost all sounds vary or fluctuate with time it is helpful, instead of having an instantaneous value to describe the noise event, to have an average of the total acoustic energy experienced over its duration. The L_{Aeq, 07:00 – 23:00} for example, describes the equivalent continuous noise level over the 16-hour period between 7 am and 11 pm. During this time period the L_{pA} at any particular time is likely to have been either greater or lower than the L_{Aeq, 07:00 – 23:00}.
- L_{Amin}** The L_{Amin} is the quietest instantaneous noise level. This is usually the quietest 125 milliseconds measured during any given period of time.
- L_{Amax}** The L_{Amax} is the loudest instantaneous noise level. This is usually the loudest 125 milliseconds measured during any given period of time.
- L_n** Another method of describing, with a single value, a noise level which varies over a given time period is, instead of considering the average amount of acoustic energy, to consider the length of time for which a particular noise level is exceeded. If a level of x dBA is exceeded for say, 6 minutes within one hour, then that level can be described as being exceeded for 10% of the total measurement period. This is denoted as the L_{A10, 1 hr} = x dB.
- The L_{A10} index is often used in the description of road traffic noise, whilst the L_{A90}, the noise level exceeded for 90% of the measurement period, is the usual descriptor for underlying background noise. L_{A1} and L_{Amax} are common descriptors of construction noise.
- R_w** The *weighted sound reduction index* determined using the above measurement procedure, but weighted in accordance with the procedures set down in BS EN ISO 717-1. Partitioning and building board manufacturers commonly use this index to describe the inherent sound insulation performance of their products.

Appendix B – References

British Standards Institute (BSI). (2009). BS 5228-1:2009+A1:2014. *Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise*. United Kingdom.

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