

Havant Thicket Reservoir

Noise & Vibration Management Plan

Phase 1 - Northern Access Route and B2149 Junction Works

01/09/2022 | Rev 1.1

Document Reference : HTR-Phase 1 - Northern Access Route and B2149 Junction-NVMP-v1.1



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1.0 Introduction

In 2020, planning applications (reference APP/20/00990 and 51680/001) were submitted to Havant Borough Council (HBC) and East Hampshire District Council (EHDC) for permission to develop a reservoir for raw water storage. Planning permission was subsequently granted in 2021 subject to Conditions. The Decision includes full permission for a new road junction off the B2149 to facilitate access north of the reservoir site and an outline permission for an access route from the northern junction to the location of the future visitor car park in the north-west of the reservoir site (herein referred to as the Northern Access Route). Whilst planning consent was received from two authorities, the wording of the decision notices is identical and therefore the same Conditions apply to both permissions.

The Northern Access Route construction work package forms the Phase 1 works of the project. However, for purposes of environmental management, the B2149 Junction is also considered within the Phase 1 Noise and Vibration Management Plan. This NVMP has been prepared by Future Water MJJV in support of Phase 1 of the proposed Havant Thicket Reservoir project (herein referred to as the Scheme). This Management Plan includes an assessment of the noise and vibration likely to be caused by this phase of the proposed works, and sets out the systems and controls that will be adopted during Phase 1 of construction.

Havant Borough Council and East Hampshire District Council, as Local Planning Authorities, granted Planning Permission in October 2021 for the Scheme in accordance with the Town and Country Planning Act 1990 (as amended) and subject to compliance with several conditions, including:

Construction noise and vibration

9. No phase of the development approved under Condition 4 shall commence until a construction noise and vibration management plan, including a targeted scheme wide construction noise and vibration monitoring and reporting programme, has been submitted to, and approved in writing by, the Local Planning Authority. The development shall be carried out in accordance with the approved details.

Reason: To ensure that construction noise and vibration is managed effectively so that levels do not regularly exceed the threshold for significant impacts.

10. No phase of the development approved under Condition 4 shall commence until a revised and updated assessment of potential noise and vibration arising during construction shall be prepared in accordance with BS 5228-1:2009+A1:2014. The assessments shall include likely eligibility for noise insulation or temporary re housing and shall be submitted to and approved in writing by the Local Planning Authority and construction carried out in accordance with the agreed recommendations.

Reason: To minimise potential noise impacts on nearby sensitive receptors.

(Havant BC permission ref APP/20/00990)

This document outlines the measures to be taken to reduce the generation of noise and vibration at Havant Thicket Reservoir during the Works. If not adequately controlled, noise and vibration from the works may affect local amenity. This could have a detrimental effect on people's health including the workforce and the local community.

The works currently within the Phase 1 works scope are set out below:

Northern Access Route

- Erect fencing to prevent access to the works area

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- If required in the specific section, remove existing ancient woodland topsoil from the ground and take to storage for re-use. This process is to be in accordance with the established Soil Management Plan
- Lay geotextile and place type 3 sub-base as required
- Install timber edging
- Install Cellweb and infill with stone
- Place geotextile layer
- Top with 150mm type 3 sub-base
- Place general sub-soil fill to shoulders
- Top shoulders with ancient woodland topsoil

B2149 Junction:

- Set up traffic management: 2-way temporary lights & establish works compound.
- Reduced level excavation of slip lanes using excavator. Stockpiled material to be disposed of offsite.
- Excavate to form new ditches and install drainage.
- Install new gullies, check dams and construct headwalls.
- Place type 1 sub-base to formation level. Type 4 recycled sub-base can be used under the Hampshire County Council specification if it is available at the time required.
- Lay new PCC kerbs on ready-mix concrete bed.
- Install road closure.
- Plane off existing surfacing. Planings to be disposed of, off site.
- Install new cross carriageway drainage.
- Form new islands in carriageway.
- Lay new carriageway surfacing.
- Apply white lining and install new cat's eyes.
- Install new signage.
- Landscaping.

This Noise & Vibration Management Plan covers the management of potential noise & vibration impacts as a result of the construction activities involved with this Phase of the project. The site-specific EN-f-001 Aspects & Impacts Register has been used to identify aspects of the works likely to produce noise and vibration impacts. This Plan is a strategic document intended to guide the development of Risk Assessments and Method Statements (RAMS). These RAMS will contain the detailed approach to managing noise and vibration for each of the work activities and will be subject to discussion and agreement with the relevant Local Authority prior to work commencing in each relevant area.

All staff and sub-contractors will be made aware of the requirements of this Plan. It will be reinforced during Site Inductions and in Toolbox Talks.

The Noise & Vibration Management Plan includes:

- Liaison arrangements with regulators and local people
- Potential receptor sites
- Potential activities causing noise or vibration nuisance
- Noise & vibration mitigation measures
- Noise & vibration monitoring
- Plan of noise & vibration receptor sites

Record of Environmental Actions and Commitments

The planning permissions were granted on the basis of a number of environmental actions and commitments made in the Environmental Statement which accompanied the planning applications. The Record of Environmental Actions and Commitments (REAC) captures these actions which are required to be adhered to, at the pre-construction, construction and operation stages. **Table 1** below details those REAC commitments that are required to be adhered to during construction and which are set out within this document.

Table 1 REAC Commitments

REAC Commitment ID	Objective / Requirement <i>[refer to REAC for full description]</i>	Where Addressed
NV1	To limit and control noise emissions during construction to avoid direct and indirect impacts on Community and ecological receptors. <i>[noise management commitments]</i>	This document – Section 8.1 Noise and vibration mitigation measures
NV2	To limit and control noise emissions during construction to avoid direct and indirect impacts on Community and ecological receptors. <i>[noise screens around particularly noisy activities close to receptors]</i>	n/a – relates to screening works close to receptors
NV3	Avoid night-time impacts <i>[planning night works, use of screens]</i>	This document – Section 8.6 working hours
NV4	Reassess Noise and Vibration Impacts <i>[based on known methods, plant and programme]</i>	This document – Section 7 based on Phase 1 work plans
NV5	Noise and vibration monitoring <i>[targeted monitoring for works close to sensitive receptors]</i>	n/a – relates to targeted monitoring of works close to receptors
NV6	To limit and control noise emissions during construction to avoid direct and indirect impacts on Community and ecological receptors. <i>[threshold noise levels and duration for noise insulation or temporary rehousing]</i>	This document – Section 8.3 Noise insulation or re-housing

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2.0 Project Information

Project Name	Havant Thicket Reservoir Main Reservoir Works
Project Number	C1294
Client	Portsmouth Water
Principal Contractor	Future Water MJJV Ltd
Person Responsible for Updating this Noise & Vibration Management Plan	Geraint Lloyd
Role in the Project	Contract Manager
Site Address	Land at Swanmore Road, Havant
Programme	The B2149 junction work is programmed for August – early November 2022. The Northern Access Route work is programmed for early November 2022 – mid January 2023

3.0 Distribution & Review

3.1 Distribution

This Noise & Vibration Management Plan must be kept on site at all times. The controlled copy, held by *Geraint Lloyd* must be available for members of the Jones Bros workforce, principal contractor (where Jones Bros is a subcontractor), subcontractors and the client.

The controlled copy of this Noise & Vibration Management Plan is held by:

Name	Position	Company
Geraint Lloyd	Contract Manager	Future Water MJJV Ltd

Each subcontractor must be familiar with the control measures and procedures outlined in this Plan.

Uncontrolled copies of this Plan have been distributed to the following:

Name	Position	Company
Dan Argles	Construction Manager	Future Water MJJV Ltd
Stephen Blunt	Environmental Manager	Future Water MJJV Ltd

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3.2 Review

This Noise & Vibration Plan shall be reviewed as often as is required to ensure that it reflects the progress of the project and in any event, not less than every three months.

Date	Name	Nature of Changes	Signed
08/08/22	Stephen Blunt	Initial Draft for Phase 1 works	
10/08/22	Stephen Blunt	Clarifying application to Phase 1 works. Issue as v1.0	
01/09/22	Stephen Blunt	Adjusted with comment from Design Guardian. Issue as v1.1	

4.0 Potential Receptors of Noise and Vibration

The Havant Thicket Northern Access Works are remote from human receptors for any prolonged noise or vibration effects. Persons who could be exposed to noise or vibration for short periods include:

- Workforce (operatives and staff who are protected by workplace controls including PPE)
- General Public using Forestry England Track/Public Rights of Way (noise only)

The Havant Thicket reservoir site has residential properties to the West, South and East of the site. Properties at the north-eastern corner of Swanmore Road are approximately 1,000m from the closest point of the Access Route (where it terminates). Houses near the B2149 – Castle Road junction are approximately 1,100m from the B2149 Northern Access works, at the closest point. These properties and residents are potential receptors for any noise pollution created on site but in view of the distance and intervening woodlands it is considered that the risk of noticeable noise at these locations is extremely low.

The prevailing wind direction in this area is from West to East.

The receptor sites for noise are shown on the plan within Appendix 2.

5.0 Responsibilities & Liaison Arrangements with Regulators and Local People

5.1 Liaison with Regulators

This Noise and Vibration Management Plan was submitted for approval by the relevant Local Planning Authorities before commencement of the works. If required, a regular meeting schedule will be agreed for the duration of the contract.

The Future Water point of contact with the Pollution Team Leader on this contract is Stephen Blunt.

Local Authority	Project Boundary of Jurisdiction	Name of Officer	Tel
Havant Borough Council	Reservoir site	Charlotte Adcock	023 9244 6019
East Hampshire District Council	Reservoir site	Charlotte Adcock	01730 234360

5.2 Liaison with Local People

The Project Team will work closely with the Client to alleviate the community's concerns about noise & vibration nuisance on this project. Angela Spinks will attend any Community meetings to review the work to date, discuss the results of noise & vibration monitoring, provide a look-ahead of activities prior to the next meeting and to receive complaints/compliments.

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Letter drops providing appropriate information will be completed by Portsmouth Water. All works will be programmed and letter drops and communications via social media through Portsmouth Water.

Local people will be given at least 14 days' notice of works that are likely to cause disruption. The information forwarded within the notification correspondence will include the following details:

- Type of work to be undertaken;
- Working hours;
- Reason for the works;
- Anticipated duration of works (no. of days, with start and end dates);
- Actions and methods we will adopt to reduce disruption;
- Helpline number for enquiries, complaints and compliments.

In addition, at locations immediately adjacent to the project / site / permanent location there will be direct discussions with the households concerned prior to the work beginning. This will be done by the Public Liaison Officer (PLO) for the project / site / permanent location.

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6.0 Potential Receptor Sites

The receptor sites for both noise and vibration nuisance are summarised in the following table and shown in the plan in Appendix 2.

No.	Location of Works*	Works Activity*	Receptor Sites	Noise, Vibration or Both?	Local Authority
RS1	Northern Access, southern extent near Swanmore Road	Transport of materials, placing and compacting	Residential properties facing Swanmore Road, incl upper floors overlooking site. c1,000m south of works	Noise	Havant Borough
n/a	Northern Access Point	Transport use of Northern Access	Remote from residential properties on B2149 Manor Lodge Road, 1100m S of access	Noise	East Hampshire District

7.0 Identification of Potential Activities Causing Noise or Vibration Disturbance

7.1 Assessment of Potential Impact

All works will comply with the recommendations of BS5228-1 and BS5228-2: Code of Practice for Noise and Vibration Control on Construction and Open Sites.

The potential noise impact was assessed and reported within the Environmental Statement Chapter 12. The chapter (Appendix A12.3) concluded that noise levels during the period of Access route construction (assumed in the ES to be 2021 Q3) would be below 50dB(A) at receptors on the B2149 and just below 65dB(A) at Swanmore Road. In that assessment, other concurrent activities include Site setup (main compound) and Haul route construction, both of which would have been closer to Swanmore Road than the Northern Access Route. The assumed plant was much larger than the plant now proposed, and so noise levels at Swanmore Road are expected to be considerably lower than shown in the ES.

If, however, the proposed working methods are changed and it becomes likely that noise and vibration levels set by the local authority (refer to sections 8.2 and 8.3 of this Plan) will be breached, then an acoustics consultant will be engaged to assess the likelihood of noise nuisance and advise on appropriate control measures in consultation with the local authority. Compliance monitoring will also be undertaken, and the risk assessments and method statements will identify if levels are likely to be breached.

7.2 Noise Levels

For each work activity, the noise levels will be assessed by a member of the project team. This will be assessed based on knowledge of the type and number of plant to be used for various activities. The activities listed will not necessarily occur continuously or simultaneously but in stages with peaks of activity separated by periods of relative inactivity. Noise from standard construction plant is of short duration therefore impact is minimised.

7.3 Sound Pressure Levels of Plant

The following equipment will be used during the Phase 1 works. It is listed here with the sound pressure levels obtained from BS 5228-1: Code of Practice for Noise and Vibration Control on Construction and Open Sites.

Plant assumed in ES Appx A12.1	Plant proposed by FW	Ref ¹	L _{Aeq} , dB ²
3x crawler dozer, 354kW 48t		C6.28	85
	Not used		
Rigid HGV		C6.23	82 *
	Rigid HGV	C6.23	82 *
1x tracked excavator 300kW, 71t		C2.2	77

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	1 x 8t excavator	C4.67	74
	1x 3t excavator	C4.68	65
Road roller 22t		C5.19	80 *
	Sit-on roller 1.5t (Bomag 60)	C5.28	77
	Medium plate compactor	C5.29	82
6x Articulated dump truck 309kW, 40t		C9.22	89 *
	Forward tipping dumper 6t	C4.6	79 *
¹ BS 5228-1 Annex C			
² Activity Laeq ('drive-by' peak where shown*)			

7.4 Activities Likely to Generate the Most Noise

By listing the plant involved in each construction activity (with its sound pressure level), a rough estimate can be made of the overall noise level of that activity. An estimated noise level for activities using more than one piece of plant can be made using the following table taken from BS 5228-1: Code of Practice for Noise and Vibration Control on Construction and Open Sites. This table shows by how much the sound pressure level should be increased when more than one piece of plant is working on an activity.

Difference between the two levels db(A)	Addition to the higher level
0	3
1	3
2	2
3	2
4	1
5	1
6	1
7	1
8	1
9	1
10 and over	0

For example: if a 40t tracked excavator (77 $L_{aeq,1hr}$) and a dump truck (81 $L_{aeq,1hr}$) were working together on an earthworks activity, the cumulative noise level can be estimated by looking at the difference between the levels (4 $L_{aeq,1hr}$). The table indicates that for a difference in levels of 4, 1 needs to be added to the higher figure (81 + 1 = 82 $L_{aeq,1hr}$).

We can roughly predict that this activity will generate a sound pressure level of 82 $L_{aeq,1hr}$.

Appendix 2 contains the Receptor Sites and Activity Matrix which highlights the activities likely to generate the most noise during the Phase 1 works.

Work to improve the access from the B2149 would generate significant noise, similar to road repairs, intermittently during this activity at the access point. Works affecting the existing highway are expected to take 14 weeks, using temporary lights and a period of full closure. The activity would then progress along the Forestry England track away from the B2149 towards the future compound location at the southern end of the track. The intensity of activity and combination of plant in use at any given time would vary considerably, but as a

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worst case it has been assumed that all activities coincide and no 'on-time' reduction has been assessed. The combined source noise is therefore 87dB as a worst case, experienced for short periods if at all.

Attenuation over 1000m over soft ground is approximately 48dB (BS5228-1 Fig F.2) and so the noise experienced at Swanmore Road or at Manor Lodge Road receptors from this source would be below 40dB. This would be insignificant in relation to existing baseline noise levels of 50dB L_{Aeq} in Havant and 60 dB L_{Aeq} in Rowland's Castle reported in the ES Ch12 (Table 12-11).

7.5 Access Routes

All vehicles delivering materials and components will use the agreed access routes as defined in the Planning conditions. All delivery drivers will be provided with a plan to indicate the access routes they must use to reach the location of the B2149 Northern Access point. This will be taken from the Traffic Management Plan. Work to improve the Northern Access and its junction with the B2149 will be completed in advance of the main works, so that all materials delivery, workforce and visitor vehicles will then use this access to and from the public road network.

8.0 Noise & Vibration Management

The Control of Pollution Act and Noise and Statutory Nuisance Act contain powers to control noise emissions and to require the employment of the best practicable means for preventing or counteracting the effect of noise. Well defined noise control procedures will be implemented for all construction plant equipment and all site activities. Jones Bros will comply with BS 5228-1 and BS5228-2: Code of Practice for Noise and Vibration Control on Construction and Open Sites.

8.1 Noise & Vibration Mitigation Measures

Best practical means will be sought to minimise noise & vibration nuisance by:

- Designing out noise nuisance by considering low construction noise alternatives
- Designing out vibration nuisance by considering low vibration construction alternatives
- Liaison with the Environmental Health Officers (EHOs) prior to construction starting
- Liaison with local people prior to construction starting
- Continual liaison with local people and EHOs, especially when plans change
- Only plant which complies with the relevant EU/UK noise limits applicable to that equipment or is in no way noisier than would be expected from the noise levels quoted in BS 5228: 2009+A1:2014 Part 1 will be used. This includes all vehicles and mechanical plant used for the purpose of the works being fitted with effective exhaust silencers and maintained in good and efficient working order;
- All compressors and generators being 'sound reduced' models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use, and all ancillary pneumatic percussive tools will be fitted with mufflers or suppressors of the type recommended by the manufacturers and will be kept in a good state of repair; Strictly enforcing controlled working hours (See 8.5)
- Deploying acoustic screening where appropriate, eg around temporary fixed plant and generators, at earliest opportunity and positioning plant with directional noise characteristics so as to minimise noise at adjacent properties, as far as practicable;
- Implementing one-way systems for traffic movement to minimise reversing alarms
- Avoid any reversing on site as far as reasonably practicable – if reversing is required, broadband low impact reversing alarms.
- Using natural features and buildings to minimise noise from operations where possible
- Siting mobile equipment at suitable distances from receptors to minimise nuisances
- Enforcing the 'switch off when not in use' initiative
- Ensuring that all staff and operatives are briefed on the requirement to minimise nuisance from site activities, via tool box talks etc. Briefing includes locations of sensitive receptors (Appendix 1);

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- Impact noise shall be reduced as far as reasonably practicable by careful handling of materials, minimising drop heights when loading, avoiding body and tailgate slap when tipping
- Engine compartments will be closed when equipment is in use and when undertaking inspections/maintenance activities etc
- Large plant shall be tracked slowly over uneven ground when close to properties
- Anti-vibration mountings will be fitted to rotating / impacting equipment where practicable
- Undertake vibration causing activities as far away from sensitive receptors as practicable
- Haul roads to be kept as smooth as possible and carefully maintained to reduce vibration impacts caused by heavy plant

The site-specific mitigation measures employed will depend on the individual circumstances of each worksite and will be specified in the relevant Risk Assessment and Method Statement.

8.2 Noise Limits

In line with good working practice, construction noise levels have been predicted and compared with the threshold levels outlined below. The prediction indicates that exceedances of the threshold levels are extremely unlikely.

Normal working hours (as planning conditions):

Period	Sound level	Duration of works for potential impacts
Monday to Friday 07.30 to 18.00 Saturday 07.30 to 13.00	L Aeq T 65dB	40 days in a 6 month period or 10 days in a 15 day period
Saturday 13.00 to 20.00	L Aeq T 55dB	

Outside normal working hours:

Night time works are not proposed, however there is potential for works at night very exceptional circumstances.

Period	Sound level	Duration of works for potential impacts
Monday to Friday 18:00 to 07.30 Saturday 20.00 to Monday 07.30	L Aeq T 50dB	40 days in a 6 month period or 10 days in a 15 day period

Any Other Relevant Conditions

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It is possible that, in exceptional situations, there may be a requirement for work that is significantly above these limits. If this is the case, the Project team will discuss these with the local Environmental Health Officer to see if agreements can be reached.

Local residents shall be given a minimum of 14 days' notice of such exceptional situations via (Letter Drop/Meeting).

The planning conditions attached to Decision Notice 51680/001 and APP/20/00990 require that this construction noise and vibration management plan, based on a revised assessment of potential noise and vibration arising during construction, is to be submitted to and approved by the Local Planning Authority before the development commences. Monitoring of noise during the preliminary site works will provide further information that can be used to review and refine this plan.

8.3 Noise insulation or re-housing

This assessment concludes, in 8.2, that exceedances of the threshold levels are extremely unlikely. No properties would therefore be eligible for noise insulation, and there would be no requirement for the temporary re-housing of residents.

8.4 Vibration Limits

The Environmental Statement for the project assessed likely vibration from vibratory rollers during earth compaction works, as this operation is the most likely to produce ground-borne vibration. Significant vibration impact at a distance greater than 20m from such works was considered unlikely. The Northern Access works are at least 1,000m from receptors, and so vibration effects can be ruled out.

8.5 Noise & Vibration Monitoring

The predicted noise and vibration from the Northern Access works experienced at receptors is well below the agreed limit (section 8.2) of 65dB, as a result of the distance attenuation. Exceedance of the limit is extremely unlikely, and so no monitoring during the Phase 1 works is proposed. The requirement for monitoring during future phases of construction will be considered and agreed with the relevant authorities prior to commencement.

8.6 Working Hours

Construction activity will normally be confined to 07.30– 18.00 hours (Monday to Friday), 08.00– 13.00 (Saturday), in accordance with the Conditions of the planning permission.

Any requirement for working outside these hours will be agreed in advance with the local authority and the Project Manager.

8.7 Out of Hours Running of Plant

In certain cases, specific items of plant may be required to be left running overnight or over weekends, outside of usual site working hours. Wherever feasible, items of plant

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selected for such out of hours tasks should have minimal noise and vibration impacts on the environment (e.g. selection of a super-silent pump). For further information on control of pollution for Plant, please see the site specific EN-f-015 Pollution Control Plan.

No Out of Hours running is expected on the Northern Access works.

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Appendices

APPENDIX 1 - PLAN OF WORKS AND SENSITIVE NOISE RECEPTORS



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APPENDIX 2 – RECEPTOR SITES & ACTIVITY MATRIX

RECEPTOR SITES AND ACTIVITY MATRIX

Activity \ Receptor Sites	Manor Lodge Road	Swanmore Road	
Excavation and removal of materials	X	X	
Transport of materials, placing and compacting	X	X	
Highway surfacing and kerbs	X		