

March 2025

# Glen Earrach Pumped Storage Hydro

## Environmental Impact Assessment Report

Volume 5: Appendices  
Appendix 14.3: Acoustic Model Input Data

Glen Earrach Energy Ltd

Quality information

Prepared by	Checked by	Verified by	Approved by
James Lennon BSc (Hons) MSc AMIOA	Alex Southern BSc (Hons) PhD MIOA	Alex Southern BSc (Hons) PhD MIOA	John Daly
Acoustic Consultant	Associate Acoustic Consultant	Associate Acoustic Consultant	Associate Director Town Planning

Issue History

Issue	Issue date	Details	Authorized	Name	Position
1	March 2025	Submission	DL	David Lee	Technical Director – Renewable Energy

© 2025 AECOM Limited. All Rights Reserved.

This document has been prepared by AECOM Limited (“AECOM”) for sole use of our Client (**Glen Earrach Energy Limited**) in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

## Table of Contents

1.	Sound Level Prediction Inputs .....	1
1.1	Preconstruction and Enabling; and Construction Phase Plant.....	1
1.2	Construction Equipment Sound Levels.....	5
1.3	Operational Phase Plant and Equipment Sound Levels .....	6

## Tables

Table 1	List of construction plant and equipment required for each task.....	1
Table 2	Assumed sound power levels based on data provided in BS5228-1 .....	5

# 1. Sound Level Prediction Inputs

## 1.1 Preconstruction and Enabling; and Construction Phase Plant

1.1.1 The following table has been used as a worst-case estimate of the quantity of plant and equipment required to undertake each task at the pre-construction and construction stages.

**Table 1 List of construction plant and equipment required for each task**

Phase	Construction Stage	Location	Construction Details	Comments / Technical Specifications
0.1	Pre-Construction & Enabling	FLS Track	Access Track - Existing	"1x Road Sweeper 2x Grader 4x Excavator 2x Roller 4x Tipper 2x Harvester 4x Chainsaw 4x Forestry Wagon"
0.1	Pre-Construction & Enabling	Affric Kintail Way	Core Path Rerouting	"2x Grader 2x Excavator (Small) 2x Roller 4x Tipper 2x Harvester 4x Chainsaw 4x Forestry Wagon"
0.1	Pre-Construction & Enabling	North of River Coiltie	Borrow Pit Search Area 01	"1x Bulldozer 1x Crusher 2x Excavator 3x Lighting Rigs 3x Generators (for Lighting Rigs) 1x Screening Equipment 1x Tanks (Fuel & Water) 1x Wash Units 1x Weight Bridge 1x Wash"
0.2	Pre-Construction & Enabling	To River Coiltie Crossing	Access Track - New	"1x Road Sweeper 1x Grader 2x Excavator 1x Roller 2x Tipper 1x Harvester 2x Chainsaw 2x Forestry Wagon"
0.3	Pre-Construction & Enabling	TC01 (CC)	Compound (Temporary)	"1x Excavator 1x Bulldozer 1x Loader 2x Generator 1x Roller Compactor 1x Dumper"
0.4	Pre-Construction & Enabling	Coiltie Crossing	Watercourse Crossings	"2x Excavator 2x Concrete Vibrator 2x Mobile Crane 2x Loader 2x Concrete Wagons 1x Dumper"

Phase	Construction Stage	Location	Construction Details	Comments / Technical Specifications
0.5	Pre-Construction & Enabling	To PC07 (Tunnel Portal 1)	Access Track - New	"2x Grader 4x Excavator 2x Roller 4x Tipper"
0.5	Pre-Construction & Enabling	Main Haul Road	Watercourse Crossings	"1x Excavator 1x Grader 1x Loader 1x Roller 1x Dumper 1x Hiab"
0.5	Pre-Construction & Enabling	TC02 - TC03 (CC)	Compound (Temporary)	"1x Excavator 1x Bulldozer 1x Loader 2x Generator 1x Roller Compactor 1x Dumper"
0.6	Pre-Construction & Enabling	TC05 (WA)	Compound (Temporary)	"Earthworks: 1x Bulldozer 1x Crusher 2x Excavator 3x Lighting Rigs 2x Loaders 2x Pumps 2x Screening Equipment 2x Tanks (Fuel / Water) 1x Weigh Bridge 1x Conveyors 1x Wash Units  Accommodation Setup: 1x Hiab (Delivery and Lifting) 2x Small Mobile Crane"
0.6	Pre-Construction & Enabling	TC06 (WA)	Compound (Temporary)	"1x Excavator 1x Bulldozer 1x Loader 2x Generator 1x Roller Compactor 1x Dumper"
0.7	Pre-Construction & Enabling	PC07 (Tunnel Portal 1)	Compound (Permanent)	"2x Excavator 2x Bulldozer 2x Loader 6x Generator (2 for Lighting Rigs) 2x Welfare Unit 2x Lighting Rigs 3x Tanks (Fuel / Water) 1x Screening Equipment 2x Vibrators"
0.8	Pre-Construction & Enabling	Main Access Tunnel	Tunnels	"1x Jumbo 2x Loader 4x Dump Trucks (10T Dump Truck or similar) 1x Pumps 1x Concrete Wagon 1x Tanks (Fuel / Water) 2x Lighting Rigs 2x Generator (for Lighting Rigs) "
0.9	Pre-Construction & Enabling	LCW Access	Access Track - New	"1x Road Sweeper 2x Grader 4x Excavator 2x Roller"

Phase	Construction Stage	Location	Construction Details	Comments / Technical Specifications
				4x Tipper 2x Harvester 4x Forestry Wagon"
1.0	Construction	Main Haul Road	Access Track - New	"3x Grader 6x Excavator 3x Roller 6x Tipper"
1.0	Construction	Main Haul Road	Watercourse Crossings	"2x Excavator 2x Grader 2x Loader 2x Roller 2x Dumper 2x Hiab"
1.0	Construction	TC09, TC10, TC11	Compound (Temporary)	"1x Excavator 1x Bulldozer 1x Loader 2x Generator 1x Roller Compactor 1x Dumper"
1.1	Construction	PC08, PC13 (Tunnel Portals 2 - 4)	Compound (Permanent)	"4x Excavator 4x Bulldozer 4x Loader 8x Generator 4x Roller Compactor 4x Dumper"
1.2	Construction	PC12, PC14 (Valve House, Vent Shaft)	Compound (Permanent)	"2x Excavator 2x Bulldozer 2x Loader 4x Generator 2x Roller Compactor 2x Dumper"
1.3	Construction	Headpond	Borrow Pit	"2x Bulldozer 2x Crusher 3x Excavator 3x Jumbo 6x Lighting Rigs 3x Loaders 2x Pumps 2x Screening Equipment 2x Tanks (Fuel / Water) 4x Wash Units 1x Weigh Bridge 2x Screening Equipment 2x Conveyors"
1.3	Construction	Headpond	Embankment / Spillway	"6x Bulldozers 6x Drill Rigs 22x Dumpers 6x Excavators 4x Formers 2x Lighting Rigs 2x Pumps 3x Rollers 4x Tanks (Fuel / Water) 8x Vibrators"
1.4	Construction	LCW		"2x Generators (on Jack up Barges) 2x Jack up Barges (Concrete Batching Plants) 1x Water-based Crane (Piling and Driving) 1x Water-based Crane (Preparatory Works) 4x Excavators"

Phase	Construction Stage	Location	Construction Details	Comments / Technical Specifications
				1x Conveyors 1x Tower Crane"
1.5	Construction	"Powerhouse Complex Gate Shaft Cavern"	Caverns	"2x Tower Crane 12x Dumpers 4x Wagon Drills 12x Excavators 4x Graders 4x Conveyors 6x Concrete Wagons 2x Hydraulic Drills"
1.6	Construction	PC04 (GIS Switchyard)	Compound (Permanent)	"2x Excavator 2x Bulldozer 2x Loader 2x Generator 1x Roller Compactor 1x Dumper 2x Lighting Rigs 2x Mobile Crane 3x Scissor Lift"
1.7	Construction	"Cable Tunnels Gate Shaft Tunnel"	Tunnels	"4x Jumbo 8x Loader 16x Dumper 4x Pumps 4x Concrete Wagons 4x Tanks (Water / Fuel) 10x Lighting Rigs "
1.8	Construction	UCW	Earthworks & Diffusers	"2x Tower Cranes 4x Hydraulic Dills 4x Wagon drills 12x excavators 4x graders 12x dump trailers 8x loaders 2x Generators 4x Compressors 1x Batching Plant 1x Crusher plant 1x Screening 2x Pumps 2x Submersible Pumps"
2.1	Post Construction	TC05 (WA)	Reinstatement	

Source: Provided by the Glen Earrach project team

## 1.2 Construction Equipment Sound Levels

- 1.2.1 The following table presents the assigned sound power levels to each named item of construction plant based on identifying a similar piece of equipment from BS5228-1 appendices.
- 1.2.2 The on-time of all plant items was taken as 100% over the working period, i.e. 10 hours in the weekday, 4 hours in Saturday morning. In practice the on-time would be less as not all equipment would be active simultaneously all the time.

**Table 2 Assumed sound power levels based on data provided in BS5228-1**

Plant Name	dB L <sub>WA</sub>	BS5228 Plant Reference
Batching Plant	108	BS 5228: Tab D.6 #11
Bulldozer	106	BS 5228: Tab C.6 #28
Chainsaw	114	BS 5228: Tab D.2 #14
Compressors	103	BS 5228: Tab C.3 #19
Concrete Vibrator	99	BS 5228: Tab C.4 #36
Concrete Wagon	110	BS 5228: Tab C.8 #18
Conveyors	105	BS5228: Tab C.10 #20
Crane 1 – Piling and Driving	115	BS 5228: Tab C.3 #16
Crane 2 – Preparatory works	98	BS 5228: Tab C.4 #52
Crawler Crane	98	BS 5228: Tab C.4 #52
Crusher	112	BS 5228: Tab C.9 #14
Dozer	106	BS 5228: Tab C.6 #28
Drill Rigs	114	BS 5228: Tab C.9 #1
Dumper	104	BS 5228: Tab C.5 #16
Excavator	110	BS 5228: Tab C.1 #12
Excavator (Small)	101	BS 5228: Tab C.2 #24
Forestry wagon	106	BS 5228: Tab C.9 #22
Generator	88	BS 5228: Tab C.4 #84
Grader	114	BS 5228: Tab C.6 #31
Harvester	114	BS 5228: Tab C.5 #14
Hiab	110	BS 5228: Tab C.4 #45
Hydraulic Breaker	116	BS 5228: Tab C.6 #31
Hydraulic Drills	113	BS 5228: Tab C.6 #35
Jumbo (Tunnelling Drill)	104	BS 5228: Tab C.3 #15
Loader	98	BS 5228: Tab C.4 #52
Mobile Crane	98	BS 5228: Tab C.4 #52
Pumps	112	BS 5228: Tab C.11 #1
Road Sweeper	104	BS 5228: Tab C.4 #90
Roller	101	BS 5228: Tab C.5 #19
Scissor Lift	106	BS 5228: Tab C.4 #59
Screening	109	BS 5228: Tab C.10 #14
Shotcrete Pump	0	n/a (below ground)
Single HGV Movement on Access Track	108	BS 5228: Tab C.4 #84
Small Mobile Crane	98	BS 5228: Tab C.4 #52
Submersible Pumps	90	BS 5228: Tab C.8 #23



Plant Name	dB L <sub>WA</sub>	BS5228 Plant Reference
Tipper	107	BS 5228: Tab C.8 #20
Tower Crane	112	BS 5228: Tab C.4 #49
Vibrators	99	BS 5228: Tab C.4 #36
Water-based Crane	112	BS 5228: Tab C.4 #49
40t Dumper	116	BS 5228: Tab C.6 #16

## 1.3 Operational Phase Plant and Equipment Sound Levels

- 1.3.1 Operational sound levels have been established by on not exceeding L<sub>A</sub> 80 dB at 1 metre from the GIS switchyard.
- 1.3.2 No other operational sound sources have been identified above ground and therefore have not been assessed.

