



## **Cambois Connection – Onshore Scheme**

### **Environmental Statement Volume 3**

#### **Technical Appendix 13.2: Construction Plant Sound Levels**



# Cambois Connection Onshore Scheme

## Technical Appendix 13.2: Construction Plant Sound Levels

### SSE Renewables

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## 1.0 Construction Phases

This appendix contains a list of indicative plant based on professional judgement gained from experience of similar developments that are at a further stage of development. Based on this list, the combined sound power level (SWL), measured in decibels (dB), has been calculated for each construction activity considering the number of plant and associated on-times, as shown in Table A and Table B.

**Table A: Combined sound power levels – construction plant for landfall and onshore ECC, dB**

Activity	Combined Sound Power Level (SWL), dB
1. Establish Access and TCC (including trenchless drilling compounds)	120
2. Site Preparation, Including Fencing, Haul Road Construction and Topsoil Strip	120
3. Transition Joint Bay Excavation	116
4. Transition Joint Bay Wall and Base Construction	114
5. Connection of Cables in Transition Bays	115
6. Roof and Backfill over Transition Bay	118
7. Trench Excavation and duct installation	118
8. Trench Backfill	119
9. Joint Bay Excavation	116
10. Joint Bay Base Construction	114
11. Pulling and Connection of Cables	114
12. Backfill over Joint Bay	118
13. TCC Operations	109
14. Trenchless Drilling Compound Operations (including piling)	116

**Table B: Combined sound power levels – construction plant for substation options, dB**

Activity	Combined Sound Power Level (SWL), dB
1. Ground Works	123
2. Building Foundation	119
3. Access Road and Carparks	116
4. Building Fabric and High Voltage Plant	118

## 2.0 Sound Power Levels Per Phase

Table C to Table Z outline the plant that may be used in each construction phase of the development, including the sound power level of each item of plant, the number that is anticipated, the percentage on time of these, and the resultant sound power level of the plant.

It should be noted that these are reasonable worst-case scenarios for the types and number of plant – during detailed design, as the construction methodology is finalised, there is potential for these plant lists to be refined further.



**Table C: Plant utilised in construction phase – Establish Access and Temporary Construction Compound (including Trenchless Drilling compounds)**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
D6 Dozer	109	1	100	109
30T excavator	103	2	100	106
20T Dumper	109	3	100	114
Smooth Drum vibro road roller	103	1	100	103
21T excavator	106	1	100	106
5T Forward Tipping Dumper	106	1	100	106
Loading shovel	108	1	100	108
Tractor & fencing kit	108	1	100	108
Tractor & trailer	107	1	70	105
Tractor & Fuel bowser (or self-propelled)	117	1	10	107
Tractor & Water bowser (for dust suppression)	111	1	25	105
Grader	114	1	100	114
Telehandler	107	1	70	105
Mobile self-contained welfare unit	94	1	25	88
Mobile generator	102	2	25	99
Temporary lighting	93	6	50	98
Road surface paver & roller	112	1	25	106
Logarithmic sum				120



**Table D: Plant utilised in construction phase – Site Preparation, Including Fencing, Haul Road Construction and Topsoil Strip**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
D6 Dozer	109	1	100	109
30T excavator	103	2	100	106
20T Dumper	109	3	100	114
Smooth Drum vibro road roller	103	1	100	103
21T excavator	106	1	100	106
5T Forward Tipping Dumper	106	1	100	106
Loading shovel	108	1	100	108
Tractor & fencing kit	108	1	100	108
Tractor & trailer	107	1	70	105
Tractor & Fuel bowser (or self-propelled)	117	1	10	107
Tractor & Water bowser (for dust suppression)	111	1	25	105
Grader	114	1	100	114
Telehandler	107	1	70	105
Mobile self-contained welfare unit	94	1	25	88
Mobile generator	102	2	25	99
Temporary lighting	93	12	25	98
Logarithmic sum				120





**Table E: Plant utilised in construction phase – Transition Joint Bay Excavation**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
30T excavator	103	1	100	103
20T Dumper	109	2	100	112
Smooth Drum vibro roller	103	1	10	93
21T excavator	106	1	50	103
5T Forward Tipping Dumper	106	1	50	103
Tractor & Fuel bowser (or self-propelled)	117	1	10	107
Tractor & Water bowser (for dust suppression)	111	1	25	105
Mobile self-contained welfare unit	94	1	25	88
Mobile generator	102	2	25	99
Temporary lighting	93	4	25	93
Pump	106	2	100	109
Piling Rig	116	1	10	106
Logarithmic sum				116



**Table F: Plant utilised in construction phase – Transition Bay Wall and Base Construction**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
Tractor & trailer	107	1	50	104
Tractor & Fuel bowser (or self-propelled)	117	1	10	107
Tractor & Water bowser (for dust suppression)	111	1	25	105
Mobile concrete pump / concrete mixer truck	108	1	50	105
Telehandler	107	1	50	104
Mobile self-contained welfare unit	94	1	25	88
Mobile generator	102	2	50	102
Temporary lighting	93	4	25	93
Pump	106	2	100	109
Logarithmic sum				114

**Table G: Plant utilised in construction phase – Connection of Cables in Transition Bays**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
Tractor & trailer	107	1	50	104
Tractor & Fuel bowser (or self-propelled)	117	1	10	107
Tractor & Water bowser (for dust suppression)	111	1	25	105
Mobile crane	110	1	25	104
Cable laying tracked crane	103	1	25	97
Telehandler	107	1	50	104
Mobile self-contained welfare unit	94	1	20	87
Crawler Crane	103	1	25	97
Mobile generator	102	2	100	105
Temporary lighting	93	4	50	96
Pump	106	2	100	109
Logarithmic sum				115



**Table H: Plant utilised in construction phase – Roof and Backfill over Transition Joint Bay**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
D6 Dozer	109	1	100	109
30T excavator	103	1	100	103
20T Dumper	109	2	100	112
21T excavator	106	1	100	106
5T Forward Tipping Dumper	106	1	100	106
Loading shovel	108	1	100	108
Trench Roller	101	1	75	100
Tractor & trailer	107	1	25	101
Tractor & Fuel bowser (or self-propelled)	117	1	10	107
Tractor & Water bowser (for dust suppression)	111	1	25	105
Cement mixer	89	1	25	83
Mobile crane	110	1	25	104
Pre-cast concrete truck	111	1	5	98
Telehandler	107	1	25	101
Mobile self-contained welfare unit	94	1	25	88
Mobile generator	102	2	25	99
Temporary lighting	93	4	25	93
Pump	106	2	100	109
Logarithmic sum				118



**Table I: Plant utilised in construction phase – Trench Excavation and Duct Installation**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
30T excavator	103	2	100	106
20T Dumper	109	2	100	112
21T excavator	106	2	100	109
5T Forward Tipping Dumper	106	2	100	109
Loading shovel	108	2	50	108
Trench Roller	101	2	50	101
Tractor & trailer	107	1	50	104
Tractor & Fuel bowser (or self-propelled)	117	1	10	107
Tractor & Water bowser (for dust suppression)	111	1	25	105
Telehandler	107	1	50	104
Mobile self-contained welfare unit	94	1	25	88
Crawler Crane	103	1	10	93
Mobile generator	102	2	25	99
Temporary lighting	93	8	25	96
Pump	106	2	100	109
Logarithmic sum				118



**Table J: Plant utilised in construction phase – Trench Backfill**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
30T excavator	103	2	100	106
20T Dumper	109	2	100	112
21T excavator	106	2	100	109
5T Forward Tipping Dumper	106	2	100	109
Loading shovel	108	2	100	111
Trench Roller	101	2	75	103
Tractor & trailer	107	1	25	101
Tractor & Fuel bowser (or self-propelled)	117	1	10	107
Tractor & Water bowser (for dust suppression)	111	1	25	105
Telehandler	107	1	25	101
Mobile self-contained welfare unit	94	1	25	88
Mobile generator	102	2	25	99
Temporary lighting	93	8	25	96
Pump	106	2	100	109
Logarithmic sum				119



**Table K: Plant utilised in construction phase – Joint Bay Excavation**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
30T excavator	103	2	100	106
20T Dumper	109	2	100	112
Smooth drum vibro roller	103	1	10	93
21T excavator	106	1	50	103
5T Forward Tipping Dumper	106	1	50	103
Tractor & Fuel bowser (or self-propelled)	117	1	10	107
Tractor & Water bowser (for dust suppression)	111	1	25	105
Mobile self-contained welfare unit	94	1	25	88
Mobile generator	102	2	25	99
Temporary lighting	93	4	25	93
Pump	106	2	100	109
Logarithmic sum				116

**Table L: Plant utilised in construction phase – Jointing Bay Base Construction**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
Tractor & trailer	107	1	50	104
Tractor & Fuel bowser (or self-propelled)	117	1	10	107
Tractor & Water bowser (for dust suppression)	111	1	25	105
Mobile concrete pump / cement mixer truck	108	1	50	105
Telehandler	107	1	50	104
Mobile self-contained welfare unit	94	1	25	88
Mobile generator	102	2	50	102
Temporary lighting	93	4	25	93
Pump	106	2	100	109
Logarithmic sum				114



**Table M: Plant utilised in construction phase – Pulling and Connection of Cables**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
Tractor & Fuel bowser (or self-propelled)	117	1	10	107
Tractor & cable drum trailer	108	1	50	105
Cable winch	111	1	50	108
Mobile self-contained welfare unit	94	1	25	88
Mobile generator	102	2	25	99
Temporary lighting	93	4	25	93
Pump	106	2	100	109
Logarithmic sum				114

**Table N: Plant utilised in construction phase – Backfill over Jointing Bay**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
D6 Dozer	109	2	100	112
30T excavator	103	2	100	106
20T Dumper	109	2	100	112
21T excavator	106	1	100	106
5T Forward Tipping Dumper	106	1	100	106
Loading shovel	108	1	100	108
Trench Roller	101	1	75	100
Tractor & Fuel bowser (or self-propelled)	117	1	10	107
Tractor & Water bowser (for dust suppression)	111	1	25	105
Mobile self-contained welfare unit	94	1	25	88
Mobile generator	102	2	25	99
Temporary lighting	93	4	25	93
Pump	106	2	100	109
Logarithmic sum				118



**Table O: Plant utilised in construction phase – Trench Route Reinstatement / Topsoil Reinstatement**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
D6 Dozer	109	2	100	112
30T excavator	103	2	100	106
20T Dumper	109	2	100	112
Smooth Drum vibro roller	103	1	50	100
21T excavator	106	1	100	106
5T Forward Tipping Dumper	106	1	100	106
Loading shovel	108	2	100	111
Tractor & Fuel bowser (or self-propelled)	117	1	10	107
Tractor & Water bowser (for dust suppression)	111	1	25	105
Mobile self-contained welfare unit	94	1	25	88
Mobile generator	102	2	25	99
Temporary lighting	93	8	25	96
Logarithmic sum				118





**Table P: Plant utilised in construction phase – Haul Road Removal and Removal of Fencing and Reinstatement**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
D6 Dozer	109	2	100	112
30T excavator	103	2	100	106
20T Dumper	109	2	100	112
Smooth Drum vibro roller	103	1	50	100
21T excavator	106	1	100	106
5T Forward Tipping Dumper	106	1	100	106
Loading shovel	108	2	100	111
Tractor & fencing kit	108	1	50	105
Tractor & trailer	107	1	50	104
Tractor & Fuel bowser (or self-propelled)	117	1	10	107
Tractor & Water bowser (for dust suppression)	111	1	25	105
Tractor & soil tiller, roller, seeder	108	1	25	102
Mobile self-contained welfare unit	94	2	25	91
Mobile generator	102	2	25	99
Temporary lighting	93	12	25	98
Logarithmic sum				119



**Table Q: Plant utilised in construction phase – Temporary Construction Compound and Access Road Removal (including Trenchless Drilling compounds)**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
D6 Dozer	109	2	100	112
30T excavator	103	2	100	106
20T Dumper	109	2	100	112
Smooth Drum vibro roller	103	1	50	100
21T excavator	106	1	100	106
5T Forward Tipping Dumper	106	1	100	106
Loading shovel	108	2	100	111
Tractor & fencing kit	108	1	50	105
Tractor & trailer	107	1	50	104
Tractor & Fuel bowser (or self-propelled)	117	1	10	107
Tractor & Water bowser (for dust suppression)	111	1	25	105
Tractor & soil tiller, roller, seeder	108	1	25	102
Mobile self-contained welfare unit	94	2	25	91
Mobile generator	102	2	25	99
Temporary lighting	93	6	25	95
Logarithmic sum				119

**Table R: Plant utilised in construction phase – Landfall Operations**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
21T excavator	106	1	10	96
Cable winch	111	1	10	101
Temporary lighting	93	4	25	93
Pump	106	2	50	106
Logarithmic sum				108



**Table S: Plant utilised in construction phase – Unlicensed Works (Assumed Plant Requirements)**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
21T excavator	106	1	25	100
5T Forward Tipping Dumper	106	1	25	100
Trench Roller	101	1	10	91
Mobile crane	110	1	25	104
Mobile generator	102	1	25	96
Temporary lighting	93	1	25	87
Pump	106	1	25	100
Logarithmic sum				108

**Table T: Plant utilised in construction phase – Temporary Construction Compound Operations**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
Generator	102	2	100	105
Telehandler	107	1	75	106
Road Sweeper	104	1	10	94
Logarithmic sum				109



**Table U: Plant utilised in Trenchless Crossing Compound Operations – Daytime**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
Generator	102	1	100	102
Telehandler	107	2	75	109
Vibratory Piling Rig	116	1	10	106
Directional Drill Generator	105	1	100	105
Mounting supports for directional drill (hydraulic hammer)	115	1	25	109
Mud Pump	108	1	100	108
Mixing Tank	103	1	100	103
Cuttings / Recycling Tank	108	1	100	108
Logarithmic sum				116

**Table V: Plant utilised in Trenchless Crossing Compound Operations – Night-Time (where applicable)**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
Generator	102	1	100	102
Telehandler	107	2	75	109
Directional Drill Generator	105	1	100	105
Mud Pump	108	1	100	108
Mixing Tank	103	1	100	103
Cuttings / Recycling Tank	108	1	100	108
Logarithmic sum				114



**Table W: Plant utilised in substation construction phase – Groundworks**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
Excavator (earthworks)	102	6	100	110
Excavator (hydraulic breaker)	113	4	100	119
Dozer	107	4	75	112
Air compressor	100	4	100	106
Dump truck	105	8	70	112
Generator	100	2	100	103
Crusher	116	2	80	118
Logarithmic sum				123

**Table X: Plant utilised in substation construction phase – Building foundation works**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
Percussive piling rig	116	1	100	116
Tracked drilling rig with hydraulic drifter	82	1	100	82
Crane mounted auger	79	1	100	79
Mini piling rig	76	2	100	79
Compressor for mini piling	75	1	100	75
Dump truck	105	4	50	108
Truck mixer with pump	103	2	10	96
Excavator (earthworks)	102	3	80	106
Grinder	108	5	50	112
Compressor	100	2	100	103
Generator	100	2	100	103
Logarithmic sum				119



**Table Y: Plant utilised in substation construction phase – Access road and car parking works road works**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
Excavator	102	2	100	105
Dump truck	105	4	70	109
Asphalt spreader with support lorry	106	1	100	106
Vibratory roller	106	2	70	107
Grader	112	1	100	112
Logarithmic sum				116

**Table Z: Plant utilised in substation construction phase – Building fabrication and HV Plant Installation**

Vehicle / Equipment	Sound Power Level, dB(A)	Indicative Number	Estimated Percentage of Operation During Activity	Resultant Sound Power Level, dB(A)
Mobile crane	102	1	50	99
Lorry	103	3	25	102
MEWP	78	2	75	80
Dump truck	105	4	10	101
Compressor	100	1	100	100
Forklift truck	105	2	50	105
Grinder	108	5	50	112
Pneumatic chipper/drill	114	3	50	116
Scaffolding	100	1	25	94
Logarithmic sum				118



