APPENDIX 12-3

NOISE MODELLING ASSUMPTIONS AND PARAMETERS

APPENDIX 12-4. NOISE MODELLING PARAMETERS

Prediction calculations for turbine noise have been conducted in accordance with ISO 9613: *Acoustics – Attenuation of sound during propagation outdoors, Part 2: General method of calculation*, 1996. Guidance in terms of the calculation settings has been obtained from the *Institute of Acoustics (IOA) Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise* (2013) and its associated supplementary guidance notes (IOA GPG).

A revised edition of ISO 9613 was published in 2024 (ISO 9613-2:2024 Acoustics - Attenuation of sound during propagation outdoors Part 2: Engineering method for the prediction of sound pressure levels outdoors), providing more generalised parameters definitions. The IOA GPG adopts a slightly more conservative approach to terrain screening and is only applicable when using ISO 9613-2:1996. For this reason, the noise prediction calculations in this assessment have been undertaken using ISO 9613-2:1996 together with the IOA GPG parameters. The IOA is currently reviewing the GPG to clarify the use of the superseded standard in relation to the newer ISO revision.

This appendix provides supplementary information to the EIAR chapter in relation to calculation inputs and assumptions relevant to the noise predictions presented in Chapter 12 of the EIAR.

Ground Effect:	Ground effect is the result of sound reflected by the ground interfering with the sound propagating directly from source to receiver. The prediction of ground effects is inherently complex and depend on source height receiver height propagation height between the source and receiver and the ground conditions. The ground conditions are described according to a variable defined as G, which varies between 0.0 for hard ground (including paving, ice concrete) and 1.0 for soft ground (includes ground covered by grass trees or other vegetation). Noise predictions have been carried out using a source height corresponding to the hub height of the proposed turbines, a receiver height of 4m and a ground effect factor of G=0.5.
Geometrical Divergence	This term relates to the spherical spreading in the free-field from a point sound source resulting in an attenuation depending on distance according to the following equation: $A_{geo} = 10\log(d) - 11$ dB where d = distance from the source A wind turbine may be considered as a point source beyond a distance corresponding to one rotor diameter.
Atmospheric Adsorption	Sound propagation through the atmosphere is attenuated by the conversion of the sound energy into heat. This attenuation is dependent on the temperature and relative humidity of the air through which the sound is travelling and is frequency dependent with increasing attenuation towards higher frequencies.

House ID	X ITM	Y ITM	House ID	X ITM	Y ITM
H001	669010	722571	H1508	682784	727049
H002	665959	721629	H1509	682751	727045
H003	666572	721653	H1510	683282	726919
H004	665984	721584	H1511	683285	726914
H005	663725	723372	H1512	683286	726909
H006	671285	728404	H1513	683374	726867
H007	670002	722624	H1514	683383	726883
H008	669987	722611	H1515	683371	726911
H009	669858	722556	H1516	683368	726923
H010	664367	721343	H1517	683360	726940
H011	663994	723085	H1518	683348	726968
H012	666578	721602	H1519	683344	726979
H013	667567	721497	H1520	683314	726986
H014	665328	729135	H1521	682925	727183
H015	665082	730011	H1522	682898	727177
H016	670149	722703	H1523	682875	727175
H017	667862	721409	H1524	682871	727175
H018	667862	721409	H1525	682853	727172
H019	667862	721409	H1526	682831	727170
H020	668452	729256	H1527	682824	727171
H021	669858	722544	H1528	682989	727160
H022	662086	726173	H1529	683055	727171
H023	670172	722707	H1530	682561	727030
H024	666052	721730	H1531	682538	727012
H025	671307	728632	H1532	682602	727088
H026	671328	728417	H1533	682602	727088
H027	671321	728594	H1534	682609	727140
H028	671332	728534	H1535	683236	727058
H029	667752	721389	H1536	683273	726940
H030	666610	721528	H1537	683275	726933
H031	666071	721674	H1538	683278	726930
H032	666006	721453	H1539	683492	726616
H033	662069	725991	H1540	683439	726514
H034	669863	722493	H1541	682899	727124
H035	671242	728891	H1542	682714	727044
H036	666008	721424	H1543	682768	727046
H037	664599	721022	H1544	682756	727084
H038	671359	728505	H1545	682705	727080
H039	666596	721503	H1546	682739	727045
H040	671372	728476	H1547	683254	727005
H041	671375	728444	H1548	683274	726965
H042	669718	729242	H1549	683275	726959
H043	670339	729425	H1550	683271	726945
H044	665560	729238	H1551	683281	726925
H045	671343	728701	H1552	683367	726858
H046	671333	728741	H1553	683379	726893
H047	665588	729243	H1554	683356	726949
H048	665280	729205	H1555	683327	726984
H049	670225	729428	H1556	682805	727166
H050	666028	721388	H1557	682892	727177
H051	671392	728376	H1558	682848	727172
H052	665105	729795	H1559	683027	727158
H053	671398	728411	H1560	683027	727158
H055	666580	721479	H1561	683080	727173
H056	664329	721215	H1562	683203	727150
H057	666022	721352	H1563	683203	727150
H058	670234	729442	H1564	683040	727086

House ID	X ITM	Y ITM	House ID	X ITM	Y ITM
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H061	670495	723872	H1566	682658	727084
H062	668343	730132	H1567	683215	727127
H063	671412	728506	H1568	683275	727066
H064	665278	729239	H1569	683377	726689
H065	661991	726017	H1570	683314	726703
H066	666073	721414	H1571	683018	727157
H067	670226	729461	H1572	682978	727123
H068	664999	729904	H1573	682979	727118
H069	671425	728489	H1574	682980	727109
H070	666569	721452	H1575	682981	727103
H071	668318	730444	H1576	682667	727169
H072	665036	729832	H1577	682663	727174
H073	668362	730160	H1578	682657	727182
H074	668355	730028	H1579	682652	727186
H075	670186	729465	H1580	682645	727196
H076	665011	729863	H1581	683242	727046
H077	666040	721311	H1582	683249	727049
H078	665998	721242	H1583	683390	726815
H079	666016	721258	H1584	682908	727037
H080	668377	730188	H1585	682510	727145
H081	670157	729474	H1586	682517	727146
H082	666575	721421	H1587	682527	727146
H083	663588	723270	H1588	682534	727147
H084	666075	721337	H1589	682544	727148
H085	661965	725932	H1590	682551	727148
H086	669734	729328	H1591	682561	727149
H087	666020	721233	H1592	682568	727150
H088	670129	729483	H1593	682577	727151
H089	662467	724446	H1594	682772	727169
H090	671107	729251	H1595	682772	727169
H091	671469	728281	H1596	682772	727169
H092	666555	721396	H1597	682765	727168
H093	671325	727869	H1598	682756	727168
H094	669697	729355	H1599	682750	727168
H095	668345	730546	H1600	682740	727166
H096	661941	725904	H1601	682735	727166
H097	661926	725967	H1602	682724	727165
H098	671348	727889	H1603	682718	727164
H099	670087	729503	H1604	682509	727180
H100	669737	729361	H1605	682516	727181
H101	670295	722570	H1606	682526	727181
H102	671485	728265	H1607	682532	727181
H103	665018	729736	H1608	683213	727135
H104	664896	729940	H1609	683215	727127
H105	671383	727927	H1610	683217	727121
H106	665287	729337	H1611	683220	727114
H107	666535	721370	H1612	683225	727098
H108	664608	720833	H1613	683225	727098
H109	671416	727956	H1614	683225	727098
H110	661913	725881	H1615	683180	727083

House ID	X ITM	Y ITM	House ID	X ITM	Y ITM
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H112	671275	727715	H1617	683222	727108
H113	669592	722236	H1618	683178	727083
H114	669699	729412	H1619	683178	727083
H115	669997	729525	H1620	683223	727097
H116	668474	730242	H1621	683215	727094
H117	669974	729523	H1622	683208	727090
H118	669745	729419	H1623	683216	727092
H119	669950	729521	H1624	683228	727097
H120	665098	731234	H1625	683214	727023
H121	671480	728018	H1626	683214	727033
H122	668727	721427	H1627	682542	727181
H123	669916	729511	H1628	682549	727182
H124	665055	729596	H1629	682559	727182
H125	671404	727850	H1630	682566	727183
H126	669701	729434	H1631	682575	727185
H127	666514	721328	H1632	682797	727168
H128	670032	729566	H1633	683007	727172
H129	668488	730326	H1634	683007	727171
H130	669882	729511	H1635	683235	727249
H131	666108	721159	H1636	683237	727239
H132	668487	730377	H1637	682813	727206
H133	666043	721071	H1638	682802	727220
H134	669748	729445	H1639	682681	727211
H135	671509	728027	H1640	682677	727218
H136	671475	727935	H1641	682755	727207
H137	669992	729568	H1642	682751	727218
H138	669853	729511	H1643	682722	727206
H139	662386	724297	H1644	683078	727242
H140	669979	729569	H1645	683080	727238
H141	666494	721305	H1646	683083	727232
H142	671501	727969	H1647	683085	727227
H143	664920	729701	H1648	683087	727218
H144	669947	729570	H1649	683090	727212
H145	666045	721037	H1650	683092	727204
H146	669748	729473	H1651	683057	727214
H147	669935	729569	H1652	683092	727209
H148	668495	721214	H1653	683269	727251
H149	669808	729522	H1654	683241	727213
H150	669901	729570	H1655	683241	727213
H151	671545	728011	H1656	682909	727217
H152	671357	727674	H1657	682875	727200
H153	669890	729569	H1658	683000	727202
H154	669752	729499	H1659	682851	727226
H155	668290	721123	H1660	682993	727215
H156	668543	730330	H1661	682642	727201
H157	670238	729668	H1662	682643	727214
H158	668322	721127	H1663	683044	727207
H159	664626	720692	H1664	683038	727207
H160	669858	729574	H1665	683029	727205
H161	669845	729574	H1666	683023	727204

House ID	X ITM	Y ITM	House ID	X ITM	Y ITM
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H163	668451	721151	H1668	682976	727203
H164	668563	730373	H1669	683568	726378
H165	669750	729532	H1670	683558	726399
H166	666117	721040	H1671	683563	726441
H167	671199	729414	H1674	672832	726184
H168	664842	720600	H1675	672836	726018
H169	669809	729572	H1677	672034	723823
H170	669799	729572	H1679	673835	725789
H171	666456	721243	H1680	673457	726328
H172	671632	728128	H1681	673429	726151
H173	666112	721006	H1682	673415	726176
H174	671494	729097	H1683	673455	726061
H175	669765	729573	H1684	673299	726130
H176	668480	730729	H1685	674285	725902
H177	666071	720941	H1686	674311	726014
H178	668722	721261	H1687	674411	726282
H179	669754	729573	H1688	674397	726323
H180	671679	728627	H1689	674283	726200
H181	668869	721372	H1690	674056	726341
H182	668891	721393	H1691	673288	725669
H183	666432	721220	H1692	673333	725694
H184	671691	728583	H1693	673357	725602
H185	663505	722877	H1694	674049	726078
H186	671682	728659	H1695	673981	726043
H187	671668	728140	H1696	674325	726051
H188	668488	721111	H1697	674366	726194
H189	668944	721438	H1698	673152	726239
H190	666073	720919	H1699	673295	725853
H191	668785	721286	H1700	673327	725820
H192	662222	724386	H1701	673327	725741
H193	666122	720967	H1702	674117	726229
H194	671706	728348	H1703	674007	726145
H195	671685	728692	H1704	673964	725959
H196	668771	721266	H1705	673949	725908
H197	671306	729394	H1706	673801	725621
H198	671683	728725	H1707	673781	725588
H199	668457	721084	H1708	673850	725713
H200	671711	728309	H1709	673939	725848
H201	668416	721067	H1710	673616	725433
H202	668437	721075	H1711	673334	725770
H203	668394	721059	H1712	673152	726176
H204	669375	721784	H1713	673447	726078
H205	666066	720887	H1714	673059	726241
H206	671713	728278	H1715	674418	726238
H207	668578	721127	H1716	674298	725951
H208	668815	721281	H1717	674266	725851
H209	671699	728148	H1718	674015	726215
H210	671686	728782	H1719	673975	726021
H211	664794	729649	H1720	673759	725562
H212	668639	730408	H1721	673748	725427

House ID	X ITM	Y ITM	House ID	X ITM	Y ITM
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H216	665318	720494	H1725	673292	725636
H217	666085	720858	H1726	673306	725469
H218	671391	729371	H1727	673285	725377
H219	666394	721168	H1728	673192	726030
H220	666909	720977	H1729	673179	726090
H221	671291	729481	H1730	672954	726133
H222	669155	721605	H1731	673144	726147
H223	668157	720942	H1732	673057	726214
H224	671429	729361	H1733	673082	726157
H225	671275	729511	H1734	672876	726180
H226	671775	728583	H1735	672930	726179
H227	671786	728475	H1736	673978	725750
H228	668694	730402	H1737	674266	726117
H229	671350	729455	H1738	674377	726054
H230	671264	729534	H1739	674039	726053
H231	666331	721108	H1740	674333	726152
H232	666376	721142	H1741	673698	725586
H233	666854	720953	H1742	673301	725952
H234	662013	724492	H1743	673349	725427
H235	669200	721602	H1744	673241	726116
H236	664150	728824	H1745	673360	726114
H237	669698	729679	H1746	673988	725790
H238	668677	730566	H1747	674306	725987
H239	668110	720902	H1748	673269	725640
H240	666789	720951	H1749	674013	725914
H241	666106	720797	H1750	673364	725884
H242	671811	728311	H1751	673732	725632
H243	669707	721937	H1752	674012	726184
H244	668735	730400	H1753	674002	726117
H245	666751	720944	H1754	673993	726084
H246	666370	721101	H1755	673260	725822
H247	669920	729802	H1756	673079	726273
H248	670955	723847	H1757	673938	725881
H249	669706	729713	H1758	672912	726133
H250	671308	729554	H1759	673395	725968
H251	669744	721954	H1760	673492	725960
H252	664044	720878	H1761	673433	726116
H253	664015	720909	H1762	673417	726227
H254	669699	721900	H1763	673425	726331
H255	663993	720931	H1764	673496	726328
H256	669171	721501	H1765	674030	725999
H257	670988	723781	H1766	674011	725967
H258	671613	727649	H1767	674003	725894
H259	671003	723738	H1768	673898	725742
H260	665386	720396	H1769	673716	725509
H261	666705	720934	H1770	673681	725480
H262	669891	729818	H1771	673807	725468
H263	671532	729355	H1772	673874	725500

House ID	X ITM	Y ITM	House ID	X ITM	Y ITM
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H267	661698	725518	H1776	674439	726057
H268	669958	729845	H1777	674264	726155
H269	671020	723709	H1778	674436	726157
H270	664809	731370	H1779	673117	726316
H271	671480	729425	H1780	673139	726069
H272	663538	721516	H1781	673421	725715
H273	671862	728321	H1782	673435	725821
H274	668111	720846	H1783	673327	725793
H275	666139	720752	H1784	673375	725855
H276	663905	720999	H1785	673459	726025
H277	671863	728264	H1786	673241	725890
H278	664275	729001	H1787	673313	725925
H279	671811	728003	H1788	673323	725977
H280	669898	729844	H1789	673358	726074
H281	671048	723186	H1790	673331	726039
H282	671053	723213	H1791	673310	726107
H283	669705	729761	H1792	673156	726207
H284	668790	730391	H1793	673348	726172
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H286	669779	721924	H1795	673936	725788
H287	669741	721876	H1796	673762	725678
H288	671708	727729	H1797	673841	725484
H289	664659	729574	H1798	673779	725438
H291	671514	729430	H1799	674328	726128
H292	666664	720905	H1800	674036	726288
H293	671697	727699	H1801	673005	726132
H294	671725	727745	H1802	673438	725757
H295	671892	728326	H1803	673386	725882
H296	671755	727800	H1804	673331	726010
H297	670926	724098	H1805	673325	726072
H298	666529	720946	H1806	673152	726108
H300	671782	727854	H1807	673470	725988
H301	663855	721023	H1808	673413	726193
H302	671090	723388	H1809	674040	726036
H303	669772	729820	H1810	674001	725920
H304	669917	729877	H1811	673992	725856
H305	666123	720694	H1812	673891	725811
H306	665486	720364	H1813	673987	725831
H307	671899	728266	H1814	674351	725963
H308	665288	720323	H1815	673676	726306
H310	671091	723242	H1816	673321	726090
H311	669688	729792	H1817	673356	725477
H312	668736	730711	H1818	673845	726008
H313	668812	730456	H1819	673283	725581
H314	663946	720873	H1820	674400	725945
H315	663967	720844	H1821	673313	725552
H316	663920	720899	H1822	673294	725550
H317	669682	721768	H1823	673166	726038

House ID	X ITM	Y ITM	House ID	X ITM	Y ITM
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H320	663901	720916	H1825	674289	726057
H321	671781	727789	H1826	673684	725651
H322	669898	729896	H1827	673352	725541
H323	671923	728341	H1828	673318	725903
H324	661630	725478	H1829	674351	726284
H325	669720	721789	H1830	672790	726979
H326	671107	723633	H1831	672589	727140
H327	665734	720415	H1832	672837	726967
H328	671846	727924	H1833	672718	726754
H329	663869	720940	H1834	672727	726930
H330	666669	720857	H1835	672625	727112
H331	669261	721468	H1836	672819	726908
H332	668162	720780	H1837	672694	727151
H333	661889	724419	H1838	672573	727166
H334	663250	722891	H1839	674328	726461
H335	671949	728333	H1840	674197	726457
H336	669299	721474	H1841	673821	726374
H337	663742	721101	H1842	673955	727014
H338	668148	720756	H1843	674276	726370
H339	661484	725790	H1844	673978	726385
H340	669784	721809	H1845	673771	726365
H341	669908	729941	H1846	673704	726353
H342	663192	722010	H1847	673310	726853
H343	661468	725822	H1848	672936	726944
H344	665549	720310	H1849	673611	727142
H345	671597	729462	H1850	673563	727334
H346	669987	721884	H1851	673542	727133
H347	661789	724506	H1852	673510	727183
H348	671979	728367	H1853	673954	726973
H349	668124	720732	H1854	673896	727012
H350	664556	729558	H1855	673253	727665
H351	669912	729965	H1856	673456	727387
H352	669897	721850	H1857	674111	727031
H353	671183	723413	H1858	673982	726971
H354	668106	720716	H1859	674038	727038
H355	666275	720702	H1860	673394	727463
H356	669692	729892	H1861	673997	727182
H357	671189	723346	H1862	673027	726909
H358	672000	728332	H1863	673929	726588
H359	671801	729224	H1864	673862	726375
H360	661408	725915	H1865	674121	726388
H361	669910	729988	H1866	674090	726454
H362	670043	721859	H1867	673924	727015
H363	666409	720832	H1868	673935	726963
H364	670017	725002	H1869	673994	727012
H365	670033	725056	H1870	674341	726403
H366	666317	720715	H1871	674399	726458
H367	670028	725012	H1872	674283	726465
H368	663710	721019	H1873	674254	726453
H369	670057	724985	H1874	674132	726456

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H372	669684	729924	H1877	673527	726809
H373	671916	727828	H1878	673905	726611
H374	666372	720758	H1879	673651	726803
H375	671224	723368	H1880	673820	726722
H376	668914	730559	H1881	673262	727548
H377	663653	721101	H1882	673266	727531
H378	671857	729190	H1883	673548	727114
H379	663145	722874	H1884	673728	726942
H380	671809	729279	H1885	673753	726982
H381	669877	730009	H1886	673828	726989
H382	672038	728343	H1887	673615	726348
H383	669985	721810	H1888	673676	726350
H384	669865	730012	H1889	673950	726384
H385	669907	721788	H1890	673219	726401
H386	666416	720783	H1891	673261	726379
H387	671824	727598	H1892	673307	726385
H388	669849	730017	H1893	674378	726406
H389	669680	729951	H1894	674248	726403
H390	671839	729269	H1895	673246	726850
H391	669839	730019	H1896	673328	727526
H392	663561	721189	H1897	673852	726951
H393	671937	727798	H1898	673875	726961
H394	668123	720650	H1899	673196	726397
H395	666454	720796	H1900	673325	726389
H396	671817	729318	H1901	673608	726412
H397	669938	730055	H1902	673737	726361
H398	669824	730020	H1903	673262	726391
H399	668028	720638	H1904	673592	727180
H400	669815	730021	H1905	672870	726908
H401	669882	721751	H1906	674063	726520
H402	668874	730801	H1907	673708	727018
H403	666266	720590	H1908	673678	727007
H404	663683	720968	H1909	681598	725825
H405	669800	730021	H1910	681315	725578
H406	671886	729217	H1911	682137	725981
H407	671860	727608	H1912	682167	725963
H408	668994	730364	H1913	681534	725761
H409	670103	725025	H1914	681568	725791
H410	663310	721468	H1915	681344	725622
H411	672077	728347	H1916	682134	724203
H412	669790	730020	H1917	682239	724256
H413	669000	730345	H1918	682205	724342
H414	661725	724415	H1919	682173	724157
H415	669774	730019	H1920	682200	724240
H416	669765	730018	H1921	682102	726339
H417	668893	730789	H1922	682024	726232
H418	669010	730321	H1923	681655	725883
H419	669684	729986	H1924	681680	725912
H420	668070	720620	H1925	681723	725969

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H423	669566	721462	H1928	682095	726002
H424	663415	721298	H1929	682251	725864
H425	670148	725389	H1930	681690	726091
H426	661298	726215	H1931	681707	725939
H427	669024	730289	H1932	681788	725960
H428	661296	726245	H1933	682313	725759
H429	668953	730659	H1934	681781	725953
H430	663511	721183	H1935	681671	726297
H431	661293	726276	H1936	682314	724286
H432	671927	729201	H1937	681999	726202
H433	672100	728292	H1938	682239	725919
H434	671915	727650	H1939	681626	726279
H435	667998	720600	H1940	683820	724990
H436	661288	726310	H1941	682932	724808
H437	670518	724862	H1942	684220	725342
H438	669692	730015	H1943	684158	725319
H439	664748	731667	H1944	684093	725517
H440	661667	724449	H1945	682739	725343
H441	663070	721894	H1946	684412	726136
H442	667985	720590	H1947	683565	724300
H443	661284	726340	H1948	683531	724228
H444	661289	726416	H1949	683412	724899
H445	668026	720583	H1950	683800	725977
H446	661336	725709	H1951	683838	725845
H447	661336	725709	H1952	683899	725645
H448	661280	726387	H1953	683796	723866
H449	669580	721434	H1954	683082	724744
H450	669580	721434	H1955	683365	724898
H451	669580	721434	H1956	683875	725669
H452	669580	721434	H1957	683918	725597
H453	669580	721434	H1958	685048	724872
H454	669580	721434	H1959	684425	725514
H455	672121	728297	H1960	684426	725728
H456	669780	730068	H1961	684569	725839
H457	663111	721744	H1962	682705	724667
H458	667965	720578	H1963	682739	724540
H459	668018	720576	H1964	683646	726225
H460	671321	723380	H1965	683296	724893
H461	665850	720248	H1966	682689	724631
H462	671973	729168	H1967	683513	724244
H463	670486	724913	H1968	683376	726218
H464	669062	730277	H1969	683741	723785
H465	669704	730048	H1970	683902	725579
H466	670598	724841	H1971	683798	726010
H467	663237	721469	H1972	683465	724891
H468	671982	729163	H1973	684721	725022
H469	661277	726466	H1974	684657	725028
H470	671727	729578	H1975	684594	724699
H471	661280	726527	H1976	684567	725076

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H475	669784	730099	H1980	683158	724763
H476	663640	720884	H1981	683065	724754
H477	669883	730134	H1982	682983	724855
H478	669086	730236	H1983	683768	724978
H479	671991	727685	H1984	682795	724602
H480	668986	730747	H1985	682693	724591
H481	671762	729556	H1986	682446	724295
H482	662974	722113	H1987	684514	725095
H483	669625	730040	H1988	683747	723992
H484	661309	726717	H1989	683708	724076
H485	671968	727618	H1990	683594	724261
H486	667818	720544	H1991	683202	724128
H487	672164	728299	H1992	683284	724573
H488	669726	730093	H1993	683301	724636
H489	663009	721905	H1994	683144	724686
H490	670571	724901	H1995	682673	724530
H491	671563	729785	H1996	682923	724152
H492	669675	730083	H1997	682655	725538
H493	670556	724923	H1998	682479	725434
H494	672044	729133	H1999	682479	725226
H495	661561	724496	H2000	682879	724694
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H498	667955	720513	H2003	684248	725308
H499	669653	730087	H2004	684201	725369
H500	669860	730165	H2005	684290	725442
H501	663715	720713	H2006	684068	725552
H502	672028	727664	H2007	683811	725907
H503	662925	722172	H2008	683802	725944
H504	661336	725479	H2009	683622	726064
H505	663283	729099	H2010	683665	726188
H506	667941	720501	H2011	683616	726285
H507	672035	727644	H2012	685227	725450
H508	663300	729117	H2013	684130	725351
H509	661328	725455	H2014	683840	725811
H510	672216	728309	H2015	683629	726259
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H513	669708	730147	H2018	682876	725077
H514	670251	725749	H2019	682876	725077
H515	671678	729749	H2020	683137	724783
H516	669654	730125	H2021	683105	724716
H517	670494	725015	H2022	682358	725760
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H519	663248	729115	H2024	682674	724522
H520	664580	731670	H2025	682435	725693
H521	670280	725555	H2026	682789	724826
H522	666257	720376	H2027	682405	724497

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H526	662948	728999	H2031	681741	726794
H527	672105	729142	H2032	681808	726802
H528	670287	725207	H2033	681929	726691
H529	671675	729780	H2034	682250	726409
H530	663666	720689	H2035	682252	726711
H531	666258	720356	H2036	681995	727199
H532	672132	729091	H2037	682339	726731
H533	665955	720165	H2038	682299	726855
H534	661302	725424	H2039	682330	726871
H535	672238	728677	H2040	682123	726945
H536	666258	720351	H2041	681677	726788
H537	662069	723511	H2042	681908	726570
H538	663240	729140	H2043	682058	726654
H539	665863	720118	H2044	681760	726483
H540	670450	725074	H2045	682078	726965
H541	662028	723557	H2046	682042	726739
H542	670309	725565	H2047	682851	726680
H543	662450	728634	H2048	682835	726938
H544	672259	728316	H2049	682830	726932
H545	672155	729080	H2050	682775	726924
H546	663359	721093	H2051	682783	726919
H547	670320	725212	H2052	682790	726914
H548	671664	729831	H2053	682798	726907
H549	672236	728856	H2054	682807	726902
H550	667774	731991	H2055	682819	726892
H551	663230	729169	H2056	682825	726881
H552	663652	720639	H2057	682830	726872
H553	666262	720309	H2058	682840	726850
H554	670334	725617	H2059	682849	726839
H555	664192	731217	H2060	682861	726836
H556	672266	728110	H2061	682898	726929
H557	663268	729189	H2062	682892	726924
H558	662844	722712	H2063	682885	726916
H559	672102	727596	H2064	682878	726911
H560	670336	725656	H2065	682867	726906
H561	670427	725129	H2066	682858	726900
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H563	666263	720298	H2068	682949	726980
H564	672250	728879	H2069	682960	726971
H565	671490	723501	H2070	682967	726963
H566	671658	729870	H2071	682977	726954
H567	672199	729063	H2072	682984	726947
H568	662824	722152	H2073	682996	726938
H569	672063	727496	H2074	683003	726931
H570	661249	725141	H2075	683013	726920
H571	672232	728980	H2076	683020	726915
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H573	667642	732048	H2078	683053	726906

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H576	663230	729197	H2081	683060	726942
H577	672296	728700	H2082	683056	726951
H578	663340	729231	H2083	683050	726965
H579	667273	720412	H2084	683045	726973
H580	671558	729978	H2085	682863	727029
H581	663332	721051	H2086	682872	727016
H582	667235	720407	H2087	682875	727007
H583	667199	720405	H2088	682883	726994
H584	665959	720088	H2089	682886	726984
H585	671505	723606	H2090	682677	727017
H586	670369	725231	H2091	682682	727004
H587	667073	720401	H2092	682688	726991
H588	667174	720402	H2093	682693	726980
H589	670393	725176	H2094	682704	726970
H590	670548	726504	H2095	682717	726965
H591	672234	729035	H2096	682731	726959
H592	667325	720409	H2097	682741	726954
H593	667391	720417	H2098	682753	726946
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H595	667107	720395	H2100	682769	726932
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H597	666033	720115	H2102	682832	726982
H598	672265	728949	H2103	682819	726980
H599	672306	728768	H2104	682804	726976
H600	671654	729918	H2105	682792	726971
H601	667033	720389	H2106	682780	726970
H602	665979	720079	H2107	682826	727019
H603	666272	720252	H2108	682810	727012
H604	672319	728744	H2109	682789	727008
H605	672130	727549	H2110	682772	727007
H606	671548	730012	H2111	682940	727026
H607	667426	720406	H2112	682935	727010
H608	672206	729168	H2113	683121	726749
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H610	671536	723323	H2115	683098	726750
H611	672341	728637	H2116	683085	726750
H612	669584	730232	H2117	683074	726754
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H614	666049	720094	H2119	683052	726755
H615	666000	720068	H2120	683040	726756
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H617	667820	732062	H2122	683019	726753
H618	663956	730679	H2123	683005	726752
H619	667560	720383	H2124	682997	726752
H620	672150	727530	H2125	682984	726754
H621	661136	726844	H2126	682972	726752
H622	667553	732122	H2127	682962	726759
H623	669257	730582	H2128	682975	726784
H624	667671	720354	H2129	682985	726788

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H628	662741	722234	H2133	683029	726786
H629	663307	720995	H2134	683042	726786
H630	667827	720331	H2135	683053	726786
H631	667250	720350	H2136	683063	726786
H632	669654	730291	H2137	683075	726784
H633	667201	720346	H2138	683086	726785
H634	671561	723630	H2139	683101	726783
H635	667744	732101	H2140	683142	726782
H636	667146	720343	H2141	683136	726797
H637	667107	720342	H2142	683128	726813
H638	662923	729146	H2143	683121	726828
H639	667284	720348	H2144	683114	726843
H640	667491	720376	H2145	683106	726859
H641	667075	720340	H2146	683099	726873
H642	671571	723570	H2147	683089	726890
H643	667503	732143	H2148	683053	726864
H644	670316	726258	H2149	683039	726854
H645	667655	720341	H2150	683029	726849
H646	669866	730372	H2151	683019	726844
H647	666034	720049	H2152	683007	726839
H648	671619	730019	H2153	682997	726833
H649	669720	730328	H2154	682987	726830
H650	669545	730273	H2155	682978	726827
H651	667774	732106	H2156	682966	726821
H652	672347	728873	H2157	682956	726816
H653	667795	732106	H2158	682945	726811
H654	670315	726237	H2159	682934	726806
H655	667831	732108	H2160	682920	726806
H656	667636	720322	H2161	682912	726803
H657	667998	732058	H2162	682900	726803
H658	669937	730414	H2163	682891	726799
H659	662714	722664	H2164	682878	726797
H660	672123	727384	H2165	682867	726795
H661	661336	724423	H2166	682856	726794
H662	667500	720341	H2167	682846	726792
H663	667876	732106	H2168	682855	726758
H664	669952	730425	H2169	682863	726746
H665	672391	728794	H2170	682654	726736
H666	671512	730135	H2171	682683	726727
H667	669671	730345	H2172	682818	726743
H668	662099	728444	H2173	682827	726755
H669	667912	732103	H2174	682778	726766
H670	672403	728773	H2175	682768	726756
H671	667568	720314	H2176	682728	726765
H672	667237	732197	H2177	682735	726776
H673	670353	726154	H2178	682743	726785
H674	669880	730423	H2179	682752	726793
H675	670370	726115	H2180	682759	726803

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H679	672209	727486	H2184	682712	726805
H680	669845	730420	H2185	682705	726797
H681	672162	727399	H2186	682697	726787
H682	670352	726176	H2187	682688	726778
H683	670403	726032	H2188	682647	726790
H684	667494	720317	H2189	682655	726799
H685	667957	732107	H2190	682664	726806
H686	669809	730413	H2191	682671	726816
H687	663226	720982	H2192	682679	726825
H688	667218	732209	H2193	682688	726834
H689	670420	725990	H2194	682695	726841
H690	663177	721034	H2195	682703	726851
H691	669333	730584	H2196	682718	726880
H692	670393	726249	H2197	682727	726887
H693	661762	723602	H2198	682734	726898
H694	663854	730598	H2199	682741	726907
H695	669256	730874	H2200	682747	726919
H696	667559	720289	H2201	682766	726883
H697	667449	720295	H2202	682776	726877
H698	672439	728719	H2203	682785	726868
H699	668136	732055	H2204	682791	726858
H700	672421	728839	H2205	682794	726844
H701	670472	725841	H2206	682793	726833
H702	669506	730342	H2207	682799	726822
H703	667411	732228	H2208	682898	726975
H704	672453	728686	H2209	682907	726968
H705	670099	730498	H2210	682916	726961
H706	661076	725407	H2211	682924	726955
H707	662135	728578	H2212	682933	726947
H708	672235	727474	H2213	682941	726940
H709	669724	730414	H2214	682947	726930
H710	661198	724614	H2215	682953	726920
H711	670045	730495	H2216	682960	726911
H712	666045	719963	H2217	682972	726907
H713	661127	724844	H2218	683011	726889
H714	668180	732055	H2219	683004	726884
H715	667255	732245	H2220	682992	726881
H716	667141	732238	H2221	682983	726877
H717	667377	732246	H2222	682976	726872
H718	671665	723632	H2223	682967	726869
H719	668068	732111	H2224	682957	726864
H720	669368	730601	H2225	682949	726860
H721	663740	729464	H2226	682939	726856
H722	668216	732051	H2227	682931	726853
H723	670426	726117	H2228	682921	726849
H724	670405	726175	H2229	682913	726845
H725	670476	725958	H2230	682901	726842
H726	667461	720261	H2231	682893	726840

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H729	670457	726035	H2234	682835	726860
H730	670445	726075	H2235	682966	726684
H731	666234	720041	H2236	682928	726687
H732	670471	725988	H2237	682410	726700
H733	668250	732044	H2238	682629	727015
H734	667519	720256	H2239	682623	727006
H735	669307	730857	H2240	682617	726999
H736	667225	732261	H2241	682610	726991
H737	670141	730538	H2242	682603	726984
H738	667053	732253	H2243	682595	726977
H739	661093	724859	H2244	682587	726970
H740	670507	725913	H2245	682618	726955
H741	672478	728818	H2246	682632	726946
H742	667449	720240	H2247	683271	726716
H743	670021	730532	H2248	683177	726781
H744	666211	720002	H2249	683166	726803
H745	663806	730712	H2250	683157	726825
H746	661122	724700	H2251	682817	726669
H747	668298	732044	H2252	682717	726661
H748	672492	728778	H2253	682695	726711
H749	661128	724666	H2254	682890	726687
H750	667505	720233	H2255	682633	726743
H751	661133	724643	H2256	682463	726909
H752	672282	727443	H2257	682359	726533
H753	666098	719927	H2258	683080	726996
H754	661083	724797	H2259	683063	727032
H755	661138	724612	H2260	682867	726946
H756	672527	728581	H2261	682850	726938
H757	667428	720217	H2262	682610	726751
H758	666385	732488	H2263	682589	726756
H759	670065	730560	H2264	682502	726749
H760	672512	728750	H2265	682379	726676
H761	667054	732285	H2266	682397	726818
H762	672537	728503	H2267	682464	726805
H763	670174	730582	H2268	682499	726960
H764	667103	732297	H2269	683366	727151
H765	670092	730575	H2270	683139	726683
H766	672529	728725	H2271	682858	726943
H767	668229	732113	H2272	683122	726891
H768	662982	721111	H2273	683112	726909
H769	670102	730583	H2274	683107	726929
H770	670590	725710	H2275	683093	726965
H771	667018	732300	H2276	683086	726980
H772	671726	723724	H2277	683070	727014
H773	666262	719984	H2278	682522	726761
H774	666262	719984	H2279	682362	726959
H775	672544	728699	H2280	682522	726981
H776	661071	724705	H2281	683254	726713
H777	661668	723544	H2282	683230	726654

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H780	669414	730752	H2285	683150	726720
H781	670414	730618	H2286	682876	726955
H782	668370	732062	H2287	683348	727133
H783	661208	724341	H2288	683100	726944
H784	661080	724659	H2289	683513	726764
H785	667939	720135	H2290	683014	726690
H786	666380	720043	H2291	683165	726670
H787	666380	720043	H2292	682908	727037
H788	671736	723773	H2293	683087	726686
H789	667496	720182	H2294	683140	726746
H790	661105	724565	H2295	682454	726992
H791	672568	728657	H2296	682576	726953
H792	672577	728532	H2297	682571	726945
H793	672579	728503	H2298	682565	726936
H794	670203	730622	H2299	682559	726928
H795	670603	725788	H2300	682593	726911
H796	668403	732060	H2301	682597	726907
H797	667981	720123	H2302	682603	726899
H798	670239	730628	H2303	682608	726895
H799	666998	732325	H2304	682630	726886
H800	672585	728469	H2305	682634	726891
H801	660957	726989	H2306	682639	726899
H802	666934	732346	H2307	682643	726903
H803	663724	730653	H2308	682704	726918
H804	670694	721516	H2309	682700	726913
H805	670599	725875	H2310	682695	726905
H806	668293	732135	H2311	682691	726901
H807	668005	720109	H2312	682664	726866
H808	661096	724526	H2313	682661	726861
H809	671770	723734	H2314	682656	726853
H810	667442	720143	H2315	682652	726849
H811	662505	722351	H2316	682646	726841
H812	662506	722279	H2317	682643	726836
H813	667875	720094	H2318	682637	726828
H814	671777	723785	H2319	682634	726824
H815	668449	732072	H2320	682628	726816
H816	670499	730665	H2321	682624	726812
H817	672615	728584	H2322	682581	726921
H818	670299	730670	H2323	682586	726917
H819	672623	728434	H2324	682624	726879
H820	661569	723592	H2325	682711	726926
H821	667847	720082	H2326	682674	726878
H822	661160	724304	H2327	682674	726878
H823	667365	720111	H2328	682671	726873
H824	672632	728414	H2329	682671	726873
H825	670321	730681	H2330	682659	726975
H826	667952	720073	H2331	682653	726968
H827	663363	720450	H2332	682596	726803
H828	672633	728534	H2333	682596	726803

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H830	668359	732149	H2335	682596	726803
H831	670197	730682	H2336	683281	727820
H832	667818	720069	H2337	683171	727939
H833	669446	730900	H2338	682834	727293
H834	670343	730694	H2339	682723	727310
H835	663659	730533	H2340	682723	727310
H836	661515	723648	H2341	682948	727280
H837	661849	728458	H2342	683021	727444
H838	670652	725911	H2343	683012	727441
H839	663124	729519	H2344	683001	727431
H840	670218	730698	H2345	682993	727428
H841	667791	720056	H2346	682981	727421
H842	662884	721065	H2347	682972	727416
H843	670365	730708	H2348	682959	727441
H844	670649	725965	H2349	682968	727447
H845	661098	724349	H2350	682977	727455
H846	667345	720070	H2351	682987	727458
H847	670262	730714	H2352	682998	727461
H848	660898	727055	H2353	683005	727465
H849	667309	720064	H2354	682750	727234
H850	671949	730106	H2355	682748	727241
H851	661477	723666	H2356	682745	727253
H852	671847	723723	H2357	682742	727262
H853	661037	724459	H2358	682738	727277
H854	663642	730093	H2359	682709	727262
H855	667268	720051	H2360	682710	727251
H856	670388	730731	H2361	682714	727238
H857	668369	732191	H2362	682715	727229
H858	661073	724357	H2363	682674	727239
H859	672400	727330	H2364	682671	727246
H860	670296	730734	H2365	682668	727266
H861	666952	732447	H2366	682667	727275
H862	663685	729817	H2367	682681	727291
H863	670680	721397	H2368	682688	727294
H864	667850	720019	H2369	682701	727300
H865	662894	720997	H2370	682707	727304
H866	667060	720033	H2371	682793	727326
H867	670407	730743	H2372	682787	727336
H868	672695	728358	H2373	682780	727344
H869	671103	726242	H2374	682776	727349
H870	668452	732163	H2375	682768	727356
H871	661444	723682	H2376	682762	727363
H872	660990	724525	H2377	682754	727369
H873	671186	721758	H2378	682750	727377
H874	670682	725991	H2379	682742	727383
H875	667188	720026	H2380	682737	727391
H876	667149	720021	H2381	682731	727399
H877	669576	730679	H2382	682724	727405
H878	672703	728301	H2383	682718	727412
H879	670701	725943	H2384	682710	727417

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H882	666932	732483	H2387	682691	727438
H883	666383	719879	H2388	682683	727445
H884	667677	720011	H2389	682678	727451
H885	661024	724394	H2390	682671	727458
H886	672426	727314	H2391	682698	727386
H887	669557	730787	H2392	682691	727375
H888	660984	724490	H2393	682676	727377
H889	667809	719994	H2394	682673	727365
H890	660874	724875	H2395	682658	727368
H891	670701	726008	H2396	682652	727357
H892	666380	719864	H2397	682637	727356
H893	663201	720516	H2398	682620	727343
H894	670429	730776	H2399	682614	727337
H895	666905	732514	H2400	682606	727321
H896	669390	731235	H2401	682591	727297
H897	666548	732648	H2402	682595	727287
H898	661456	723591	H2403	682590	727272
H899	667648	720000	H2404	682598	727264
H900	666379	719857	H2405	682594	727253
H901	661019	724357	H2406	682599	727242
H902	672730	728267	H2407	682600	727231
H903	668478	732193	H2408	682600	727231
H904	671549	730480	H2409	682633	727265
H905	670836	726131	H2410	682632	727274
H906	663302	729657	H2411	682635	727288
H907	667354	720001	H2412	682638	727296
H908	670952	726154	H2413	682649	727307
H909	666379	719844	H2414	682652	727317
H910	661390	723694	H2415	682667	727319
H911	666416	719865	H2416	682673	727328
H912	670732	725967	H2417	682687	727329
H913	667408	720001	H2418	682693	727337
H914	661417	723630	H2419	682710	727344
H915	667612	719988	H2420	682710	727344
H916	666381	719837	H2421	682635	727249
H917	670912	726136	H2422	682668	727405
H918	670521	721252	H2423	682673	727399
H919	671905	723835	H2424	682632	727343
H920	666413	719851	H2425	682611	727378
H921	666887	732552	H2426	682621	727379
H922	672754	728375	H2427	682960	727413
H923	668576	732156	H2428	682950	727410
H924	670727	726033	H2429	682939	727404
H925	666646	720018	H2430	682933	727398
H926	672756	728352	H2431	682948	727434
H927	667573	719982	H2432	682939	727432
H928	670470	730807	H2433	682928	727425
H929	666707	720003	H2434	682919	727421
H930	666415	719843	H2435	683005	727714

House ID	X ITM	Y ITM	House ID	X ITM	Y ITM
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H933	666646	720013	H2438	682954	727594
H934	663163	720507	H2439	682945	727596
H935	666495	719894	H2440	682941	727586
H936	666643	720007	H2441	682933	727588
H937	666387	719819	H2442	682928	727578
H938	661716	728456	H2443	682919	727581
H939	666643	720001	H2444	682915	727572
H940	666640	719995	H2445	682906	727573
H941	667550	719973	H2446	682903	727565
H942	666705	719991	H2447	682895	727566
H943	666419	719833	H2448	682890	727556
H944	666774	719978	H2449	682881	727559
H945	666640	719991	H2450	682875	727551
H946	670758	725988	H2451	682867	727554
H947	666785	719976	H2452	682861	727544
H948	666796	719974	H2453	682854	727546
H949	666749	719980	H2454	682848	727536
H950	666742	719981	H2455	682840	727539
H951	666737	719982	H2456	682838	727524
H952	666760	719978	H2457	682830	727525
H953	666765	719977	H2458	682961	727565
H954	666806	719971	H2459	682970	727553
H955	666753	719978	H2460	682973	727547
H956	666816	719969	H2461	682978	727540
H957	666827	719966	H2462	682981	727535
H958	672450	727230	H2463	682987	727528
H959	671474	730567	H2464	682990	727522
H960	666393	719808	H2465	682980	727493
H961	662342	722595	H2466	682976	727482
H962	666423	719825	H2467	682967	727485
H963	666640	719982	H2468	682961	727476
H964	663158	720481	H2469	682952	727480
H965	672779	728321	H2470	682942	727474
H966	666637	719976	H2471	682936	727479
H967	671943	723794	H2472	682925	727482
H968	670823	726081	H2473	682921	727488
H969	667523	719964	H2474	682916	727495
H970	666704	719977	H2475	682913	727501
H971	666632	719969	H2476	682909	727509
H972	671942	723814	H2477	682906	727514
H973	666521	719884	H2478	682809	727521
H974	670776	726071	H2479	682806	727513
H975	670406	730839	H2480	682796	727514
H976	662775	720993	H2481	682793	727506
H977	671276	730668	H2482	682783	727508
H978	666633	719962	H2483	682781	727499
H979	670907	726090	H2484	682770	727500
H980	671008	726114	H2485	682766	727492
H981	667373	719947	H2486	682756	727493

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H983	670496	730842	H2488	682743	727487
H984	666700	719965	H2489	682740	727478
H985	666625	719947	H2490	682730	727479
H986	666620	719940	H2491	682726	727471
H987	672788	728195	H2492	682712	727465
H988	666742	719954	H2493	682704	727466
H989	661672	728450	H2494	682735	727433
H990	667442	719945	H2495	682744	727431
H991	666549	719881	H2496	682747	727443
H992	666619	719933	H2497	682755	727441
H993	666809	719941	H2498	682759	727452
H994	667313	719929	H2499	682767	727449
H995	666449	719810	H2500	682772	727459
H996	666445	719807	H2501	682780	727456
H997	660963	724305	H2502	682785	727465
H998	666429	719796	H2503	682794	727464
H999	666438	719801	H2504	682805	727477
H1000	666434	719799	H2505	682658	727762
H1001	666740	719947	H2506	683240	727685
H1002	666459	719814	H2507	683300	727777
H1003	662665	721122	H2508	682988	727640
H1004	666615	719925	H2509	682990	727636
H1005	666405	719779	H2510	682992	727631
H1006	660997	724228	H2511	682993	727626
H1007	666399	719775	H2512	682995	727621
H1008	666412	719783	H2513	682997	727616
H1009	666422	719789	H2514	682999	727609
H1010	666418	719786	H2515	683001	727604
H1011	666466	719816	H2516	683002	727599
H1012	666391	719768	H2517	683004	727595
H1013	661683	728492	H2518	683006	727590
H1014	666697	719950	H2519	683008	727585
H1015	666387	719764	H2520	682859	727393
H1016	662302	722310	H2521	682868	727398
H1017	666614	719919	H2522	682883	727405
H1018	666477	719819	H2523	682891	727409
H1019	668540	732248	H2524	682903	727415
H1020	666563	719877	H2525	682910	727418
H1021	666807	719930	H2526	682949	727369
H1022	670799	726000	H2527	682955	727378
H1023	666738	719938	H2528	682971	727387
H1024	666484	719819	H2529	682943	727342
H1025	666382	719755	H2530	682948	727333
H1026	667385	719923	H2531	682969	727346
H1027	666380	719749	H2532	682977	727335
H1028	666599	719896	H2533	682987	727341
H1029	666694	719940	H2534	682997	727349
H1030	666737	719932	H2535	683005	727355
H1031	666606	719898	H2536	682966	727383
H1032	671985	723797	H2537	682963	727354

House ID	X ITM	Y ITM	House ID	X ITM	Y ITM
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H1034	666496	719818	H2539	683040	727513
H1035	666804	719919	H2540	683040	727513
H1036	662285	722441	H2541	683036	727543
H1037	670593	730869	H2542	683036	727543
H1038	666376	719739	H2543	683036	727543
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H1040	666502	719814	H2545	683036	727543
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H1047	666455	719775	H2552	682576	727351
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H1057	669629	730974	H2562	682808	727435
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H1078	666730	719901	H2583	682801	727470
H1079	666603	719858	H2584	682716	727473
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H1081	666409	719726	H2586	682992	727512
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H1083	666798	719888	H2588	682985	727497

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H1088	666373	719699	H2593	683037	727310
H1089	671617	722018	H2594	683032	727313
H1090	666728	719893	H2595	683030	727305
H1091	666496	719772	H2596	683021	727304
H1092	666406	719714	H2597	683018	727297
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H1094	663116	720394	H2599	683010	727290
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H1099	666726	719886	H2604	683061	727290
H1100	660971	724143	H2605	683063	727286
H1101	666794	719876	H2606	683066	727280
H1102	666645	719869	H2607	683067	727275
H1103	666653	719871	H2608	683070	727269
H1104	666495	719758	H2609	683072	727263
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H1107	672034	723823	H2612	683025	727477
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H1120	665731	726734	H2625	683227	727350
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H1123	666717	732767	H2628	683227	727350
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H1125	671890	728422	H2630	683196	727308
H1126	672542	726325	H2631	683219	727317
H1127	672493	726322	H2632	683230	727322
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H1130	673457	726328	H2635	683277	727329
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H1132	673059	726241	H2637	683269	727263
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H1139	675944	726538	H2644	683196	727466
H1140	675944	726538	H2645	683201	727472
H1141	674328	726461	H2646	683203	727473
H1142	674197	726457	H2647	683220	727481
H1143	673821	726374	H2648	683223	727478
H1144	674506	726376	H2649	683228	727474
H1145	675192	726465	H2650	683235	727467
H1146	675195	726564	H2651	683239	727461
H1147	675679	726511	H2652	683235	727445
H1148	674276	726370	H2653	683231	727441
H1149	673978	726385	H2654	683229	727439
H1150	676022	726529	H2655	683221	727429
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H1157	676329	726620	H2662	683206	727504
H1158	675958	726586	H2663	683208	727521
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H1163	676054	726493	H2668	683151	727465
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H1170	676539	726544	H2675	683097	727362
H1171	676566	726546	H2676	683087	727416
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H1175	676052	726680	H2680	683046	727505
H1176	676056	726669	H2681	683029	727556
H1177	676061	726658	H2682	683023	727569
H1178	675980	726660	H2683	682988	727738
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H1183	675994	726619	H2688	683169	727657
H1184	675983	726618	H2689	683193	727648
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H1188	676139	726636	H2693	683157	727579
H1189	676138	726645	H2694	683064	727546
H1190	676100	726667	H2695	683099	727471
H1191	676097	726675	H2696	682866	727263
H1192	676091	726688	H2697	682807	727273
H1193	677300	726707	H2698	682829	727248
H1194	675948	726493	H2699	683487	727209
H1195	676151	726551	H2700	682967	727856
H1196	676169	726517	H2701	682530	727766
H1197	676244	726555	H2702	683416	727884
H1198	676257	726530	H2703	683450	727839
H1199	676729	726735	H2704	683438	727914
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H1202	675818	726658	H2707	683150	727438
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H1215	676083	726550	H2720	682978	727763
H1216	675890	726580	H2721	683056	727590
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H1218	675876	726484	H2723	683066	727537
H1219	676037	726540	H2724	683071	727530
H1220	676054	726550	H2725	683072	727525
H1221	676054	726550	H2726	683077	727516
H1222	676054	726550	H2727	683082	727508
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H1230	676075	726518	H2735	683139	727491
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H1234	676300	726703	H2739	682678	727806
H1235	676260	726698	H2740	683300	727719
H1236	675867	726516	H2741	683488	727881

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H1240	675970	726520	H2745	683210	727516
H1241	675970	726520	H2746	682726	727797
H1242	675970	726520	H2747	682641	727221
H1243	675970	726520	H2748	682639	727230
H1244	675970	726520	H2749	682636	727235
H1245	675970	726520	H2750	683228	727863
H1246	675718	726534	H2751	683070	727554
H1247	674988	726463	H2752	682840	727328
H1248	675230	726525	H2753	682848	727342
H1249	674720	726435	H2754	682857	727348
H1250	675778	726519	H2755	682865	727334
H1251	675838	726518	H2756	682868	727330
H1252	675818	726530	H2757	682871	727322
H1253	676215	726549	H2758	682874	727317
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H1257	676046	726598	H2762	682889	727295
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H1259	675920	726584	H2764	683025	727366
H1260	675784	726571	H2765	683016	727373
H1261	675674	726567	H2766	683010	727377
H1262	674605	726429	H2767	682987	727392
H1263	674467	726423	H2768	682994	727397
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H1270	674132	726456	H2775	683046	727426
H1271	673615	726348	H2776	683085	727421
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H1273	673950	726384	H2778	683091	727406
H1274	676681	726698	H2779	682494	727235
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H1276	673261	726379	H2781	682511	727236
H1277	673307	726385	H2782	682517	727237
H1278	676004	726493	H2783	682527	727239
H1279	675927	726534	H2784	682533	727239
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H1281	676436	726633	H2786	682550	727241
H1282	675224	726612	H2787	682487	727293
H1283	674641	726431	H2788	682494	727262
H1284	674378	726406	H2789	682488	727302
H1285	674248	726403	H2790	682488	727285
H1286	675938	726519	H2791	682494	727272
H1287	676190	726563	H2792	682492	727277

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H1290	673608	726412	H2795	682493	727266
H1291	675732	726607	H2796	682483	727329
H1292	676262	726561	H2797	682488	727333
H1293	673737	726361	H2798	682493	727331
H1294	676695	726706	H2799	682498	727334
H1295	673262	726391	H2800	682510	727332
H1296	674063	726520	H2801	682516	727329
H1297	675851	726659	H2802	682524	727322
H1298	675858	726659	H2803	682531	727319
H1299	675868	726658	H2804	682534	727301
H1300	675875	726658	H2805	682535	727294
H1301	675885	726658	H2806	682537	727285
H1302	675893	726658	H2807	682538	727279
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H1304	676176	726661	H2809	682541	727262
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H1315	675528	726575	H2820	683856	727797
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H1318	675561	726577	H2823	683589	727803
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H1336	675609	726606	H2841	683596	727855
H1337	675608	726612	H2842	683645	727918
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H1342	675553	726609	H2847	683892	727192
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H1346	675519	726606	H2851	683927	727469
H1347	675512	726606	H2852	684460	727280
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H1356	680431	726875	H2861	683575	726685
H1357	680598	726908	H2862	683532	727771
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H1365	679287	726878	H2870	683766	727341
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H1368	680938	727008	H2873	684037	727189
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H1371	679097	726850	H2876	684177	726856
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H1373	679692	726951	H2878	684128	726906
H1374	679690	726972	H2879	683893	727691
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H1376	680171	726938	H2881	683913	727522
H1377	680273	726884	H2882	683893	727851
H1378	680272	726975	H2883	683786	727902
H1379	680361	726882	H2884	683812	727856
H1380	680522	726978	H2885	683542	727815
H1381	680465	726910	H2886	685116	726402
H1382	679895	726925	H2887	685102	726989
H1383	679905	726845	H2888	684883	727036
H1384	679726	726916	H2889	674677	727088
H1385	679737	726833	H2890	679993	726800
H1386	679521	726783	H2891	682843	727697
H1387	679576	726779	H2892	665805	719415
H1388	679522	726818	H2893	662559	722735
H1389	679473	726896	H2894	661524	723557

House ID	X ITM	Y ITM	House ID	X ITM	Y ITM
H1390	679315	726880	H2895	660648	728250
H1391	679012	726737	H2896	641864	721523
H1392	678919	726826	H2897	641772	721487
H1393	678850	726761	H2898	641786	721536
H1394	678443	726725	H2899	641802	721572
H1395	679964	726851	H2900	641616	721415
H1396	679362	726884	H2901	641676	721407
H1397	679230	726809	H2902	641554	721495
H1398	678671	726750	H2903	668497	729153
H1399	680118	726878	H2904	668445	728713
H1400	680325	726887	H2905	684932	726778
H1401	679926	726919	H2906	675903	721948
H1402	679873	726845	H2907	643910	724208
H1403	680863	727007	H2908	643947	724196
H1404	680900	727009	H2909	643970	724189
H1405	680083	726953	H2910	643996	724187
H1406	681432	726991	H2911	644018	724187
H1407	681714	726996	H2912	644055	724186
H1408	681925	727095	H2913	644028	724129
H1409	681664	726992	H2914	644056	724241
H1410	681695	726999	H2915	644083	724235
H1411	681797	727075	H2916	644105	724225
H1412	681628	726989	H2917	644140	724222
H1413	681803	726958	H2918	644165	724209
H1414	681416	726955	H2919	644167	724238
H1415	681771	726966	H2920	644170	724271
H1416	682206	727028	H2921	644170	724289
H1417	682206	727028	H2922	644170	724300
H1418	681830	727023	H2923	644162	724324
H1419	682210	727166	H2924	644208	724307
H1420	681132	726967	H2925	644217	724311
H1421	681256	726973	H2926	644225	724311
H1422	681449	727029	H2927	644233	724312
H1423	681653	727076	H2928	644241	724316
H1424	681703	727072	H2929	644251	724318
H1425	681735	727003	H2930	644261	724318
H1426	681765	727007	H2931	644268	724317
H1427	681808	727009	H2932	644279	724320
H1428	682086	727040	H2933	644286	724319
H1429	681321	726956	H2934	644298	724319
H1430	681357	726960	H2935	644305	724318
H1431	681728	727062	H2936	644314	724317
H1432	681373	727095	H2937	644321	724318
H1433	681863	726998	H2938	644330	724283
H1434	681863	726998	H2939	644322	724284
H1435	681598	726989	H2940	644307	724282
H1436	682670	727042	H2941	644300	724283
H1437	682915	727081	H2942	644271	724284
H1438	682910	727089	H2943	644263	724283
H1439	682833	727104	H2944	644253	724282
H1440	682835	727094	H2945	644246	724279

House ID	X ITM	Y ITM	House ID	X ITM	Y ITM
H1441	682839	727079	H2946	644229	724274
H1442	682843	727073	H2947	644223	724270
H1443	682852	727060	H2948	644187	724192
H1444	682853	727050	H2949	644213	724233
H1445	682860	727038	H2950	644249	724250
H1446	682673	727030	H2951	644256	724250
H1447	682949	727113	H2952	644269	724252
H1448	682940	727045	H2953	644275	724251
H1449	682943	727080	H2954	644304	724235
H1450	683123	727127	H2955	644310	724238
H1451	682636	727026	H2956	644318	724242
H1452	682577	727045	H2957	644327	724247
H1453	682823	727189	H2958	644337	724249
H1454	682643	727043	H2959	644345	724252
H1455	682683	727078	H2960	644356	724257
H1456	683426	726572	H2961	644236	724211
H1457	682943	727179	H2962	644257	724218
H1458	682759	727192	H2963	644239	724185
H1459	682725	727189	H2964	644156	724154
H1460	682688	727152	H2965	644142	724156
H1461	682683	727157	H2966	644122	724104
H1462	682676	727161	H2967	644101	724084
H1463	682612	727198	H2968	644153	724052
H1464	682614	727191	H2969	644208	724117
H1465	682617	727184	H2970	644152	724015
H1466	682617	727180	H2971	644210	724080
H1467	682620	727173	H2972	644209	724052
H1468	682863	727098	H2973	644207	724031
H1469	682487	727046	H2974	644160	723991
H1470	683008	727155	H2975	644248	724083
H1471	682881	727098	H2976	644248	724075
H1472	682795	727184	H2977	644250	724063
H1473	683201	727064	H2978	644249	724057
H1474	682436	727070	H2979	644210	724053
H1475	682430	727028	H2980	644207	724030
H1476	683238	727186	H2981	644249	724046
H1477	682736	727082	H2982	644249	724036
H1478	682791	727085	H2983	644250	724027
H1479	682776	727084	H2984	644249	724018
H1480	682723	727082	H2985	644285	724078
H1481	682726	727042	H2986	644285	724071
H1482	683107	727176	H2987	644286	724059
H1483	683107	727176	H2988	644286	724052
H1484	683107	727176	H2989	644285	724042
H1485	683107	727176	H2990	644284	724035
H1486	683107	727176	H2991	644286	724024
H1487	683107	727176	H2992	644286	724014
H1488	683107	727176	H2993	644285	724004
H1489	683107	727176	H2994	644286	723996
H1490	683123	727195	H2995	644293	723980
H1491	683123	727195	H2996	644261	723971

House ID	X ITM	Y ITM	House ID	X ITM	Y ITM
H1492	683123	727195	H2997	644253	723970
H1493	683168	727176	H2998	644242	723968
H1494	683168	727176	H2999	644234	723967
H1495	683145	727127	H3000	644213	723961
H1496	683053	727060	H3001	644162	723972
H1497	682983	727045	H3002	644166	723955
H1498	682982	727082	H3003	644171	723938
H1499	683014	727107	H3004	644176	723920
H1500	683014	727107	H3005	644183	723891
H1501	683014	727107	H3006	644212	723936
H1502	683014	727107	H3007	644232	723930
H1503	683014	727107	H3008	644240	723931
H1504	683014	727107	H3009	644252	723935
H1505	682933	727110	H3010	644258	723935
H1506	682701	727044	H3011	644322	724181
H1507	682804	727051	H3014	671917	727574

The atmospheric attenuation outlined in Table A12-1 were used for all calculations in accordance with the guidance outlined in the IOA GPG. No meteorological corrections were applied to all calculations.

Topographic Screening

In the IOA GPG, section 4.3.11 the following is stated: "*Topographic screening effects of the terrain (ISO 9613-2, Equation 12) should be limited to a reduction of no more than 2 dB, and then only if there is no direct line of sight between the highest point on the turbine rotor and the receiver location.*" The modelling software takes account of these limitations on the degree of screening from terrain. The "valley correction" from section 4.3.9 of the IOA GPG is also applied where relevant.

The atmospheric attenuation outlined in Table A12-1 were used for all calculations in accordance with the guidance outlined in the IOA GPG. No meteorological corrections were applied to all calculations.

Table A12-1 Atmospheric Attenuation Assumed for Noise Calculations (dB per km)

Temp (°C)	% Humidity	Octave Band Centre Frequencies (Hz)							
		63	125	250	500	1k	2k	4k	8k
10	70	0.12	0.41	1.04	1.92	3.66	9.70	33.06	118.4

Propagation Effects

The effect of any barrier between the noise source and the receiver position is that noise will be reduced according to the relative heights of the source, receiver and barrier and the frequency spectrum of the noise. For calculation of wind turbine noise, barrier and ground corrections have been applied in accordance with of ISO 9613-2 and IOA GPG parameters in terrain screening and valley correction.

The noise prediction calculations have been undertaken using OSI ground topography data to account for propagation effects. The noise prediction software, iNoise, described in Section 12.5.4.1 of the EIAR incorporates the setting outlined in this appendix.

Table A12-2 list detail of the receptors used in the noise model and considered in the assessment.

Table A12-2 Coordinates (ITM) for Noise Sensitive Locations (NSLs)

Table A12-3 to Table 12-5 presents the proposed and other wind turbines locations in Irish Transverse Mercator coordinates system.

Table A12-3 Ballydermot Turbines Coordinates

Turbine ID	ITM X	ITM Y	Tip Height
T01	669,577	723,417	200 m
T02	667,966	722,318	200 m
T03	668,652	722,904	200 m
T04	667,122	722,389	200 m
T12	665,675	722,587	200 m
T13	664,725	722,393	200 m
T14	665,129	721,837	200 m
T19	663,527	724,680	200 m
T20	663,228	725,279	200 m
T22	663,076	726,129	200 m
T23	665,568	728,222	200 m
T26	663,924	727,245	200 m
T27	666,654	728,789	200 m
T28	667,453	728,387	200 m
T29	667,535	729,311	200 m
T30	667,317	730,151	200 m
T31	666,424	729,892	200 m
T32	665,913	730,395	200 m
T46	669,561	728,266	200 m
T05	666,811	722,918	220 m
T06	667,272	723,632	220 m
T07	666,843	724,155	220 m
T08	666,062	723,362	220 m
T09	665,993	724,419	220 m
T10	665,722	725,145	220 m
T11	665,245	723,070	220 m
T15	664,797	723,510	220 m
T16	664,366	723,995	220 m
T17	664,368	724,900	220 m
T18	665,151	724,290	220 m
T21	664,020	725,419	220 m
T24	664,901	727,516	220 m
T25	664,557	726,842	220 m
T33	668,791	723,754	220 m
T34	668,234	724,133	220 m
T35	667,696	724,705	220 m
T36	667,700	725,703	220 m
T37	668,428	725,406	220 m
T38	666,932	725,059	220 m
T39	666,484	725,794	220 m

Turbine ID	ITM X	ITM Y	Tip Height
T40	667,297	726,306	220 m
T41	666,699	726,708	220 m
T42	667,233	727,483	220 m
T43	668,319	727,108	220 m
T44	668,927	727,701	220 m
T45	668,094	727,874	220 m

Table A12-4 Cushaling Turbine Coordinates

Turbine ID	ITM X	ITM Y	Tip Height
T1	666,213	727,536	185
T2	662,133	727,484	185
T3	662,744	727,418	185
T4	663,192	727,014	185
T5	663,911	726,407	185
T6	664,548	726,128	185
T7	665,275	726,190	185
T8	665,807	726,637	185
T9	665,964	727,102	185

Table A12-5 Cloncreen Turbine Coordinates

Turbine ID	ITM X	ITM Y	Tip Height
T1	656,737	726,514	170
T2	656,985	725,919	170
T3	657,350	725,441	170
T4	657,926	725,233	170
T5	658,550	725,306	170
T6	659,141	725,527	170
T7	658,686	725,928	170
T8	658,044	725,845	170
T9	657,556	726,203	170
T10	660,088	725,849	170
T11	659,506	726,038	170
T12	660,243	726,450	170
T13	659,563	726,650	170
T14	658,952	726,496	170
T15	658,284	726,421	170
T16	658,978	727,112	170
T17	660,069	727,029	170
T18	659,570	727,373	170
T19	660,248	727,624	170
T20	658,943	727,737	170
T21	659,762	727,983	170

Tables below show the wind turbine octave band sound level used in the assessment.

Table A12-6 Ballydermot SG170 for 115m HH

Wind Speed (m/s)	Sound Power Level (dB(A)) at Octave Band Centre Frequency (Hz)								dB L_{WA}
	63	125	250	500	1000	2000	4000	8000	
3	Octave Sound Power Level under NDA								NDA
4									
5									
6									
7									106.5
8									
9									

Table A12-7 Ballydermot SG170 for 135m HH

Wind Speed (m/s)	Sound Power Level (dB(A)) at Octave Band Centre Frequency (Hz)								dB L_{WA}
	63	125	250	500	1000	2000	4000	8000	
3	Octave Sound Power Level under NDA								NDA
4									
5									
6									
7									106.5
8									
9									

Table A12-10 Cushaling V162 104 m HH

Wind Speed (m/s)	Sound Power Level (dB(A)) at Octave Band Centre Frequency (Hz)								dB L_{WA}
	63	125	250	500	1000	2000	4000	8000	
3	Octave Sound Power Level under NDA								NDA
4									
5									
6									
7									104.8
8									
9									

Table A12-13 Cloncreen V136 for 105m HH

Wind Speed (m/s)	Sound Power Level (dB(A)) at Octave Band Centre Frequency (Hz)								dB L_{WA}
	63	125	250	500	1000	2000	4000	8000	
3	Octave Sound Power Level under NDA								
4									
5									
6									
7									105.5
8									
9									

Table 0-1 Assignment of Representative Background Noise Levels

Representative Background Noise Levels	Noise Sensitive Location (NSL)
NML 1	H014, H015, H044, H047, H048, H052, H064, H068, H072, H076, H103, H104, H106, H120, H124, H143, H211, H270, H289, H350, H439, H511, H520, H555, H618, H678, H694, H745, H758, H803 and H835
NML 2	H236, H278, H505, H508, H519, H526, H538, H551, H557, H576, H578, H638, H721, H839, H854, H862, H906, H1117, and H1120
NML 3	H005, H011, H022, H033, H065, H083, H085, H089, H096, H097, H110, H139, H185, H192, H234, H267, H324, H333, H334, H339, H343, H347, H360, H379, H414, H421, H426, H428, H431, H440, H441, H446, H447, H457, H467, H482, H489, H495, H503, H504, H509, H534, H537, H541, H558, H568, H570, H616, H628, H659, H661, H693, H706, H710, H713, H728, H739, H746, H749, H751, H754, H755, H768, H776, H777, H778, H783, H784, H790, H808, H811, H812, H820, H822, H829, H836, H842, H845, H851, H853, H858, H865, H871, H872, H885, H888, H890, H898, H901, H910, H914, H961, H976, H997, H1003, H1006, H1016, H1036, H1058 and H1100
NML 4	H003, H010, H012, H013, H017, H018, H019, H024, H029, H030, H031, H032, H036, H037, H039, H050, H055, H056, H057, H066, H070, H077, H079, H082, H084, H087, H092, H107, H108, H122, H127, H131, H133, H141, H145, H148, H158, H159, H162, H163, H166, H168, H171, H173, H177, H178, H181, H182, H183, H188, H189, H190, H191, H193, H196, H199, H201, H202, H203, H204, H205, H207, H208, H216, H217, H219, H220, H223, H231, H232, H233, H239, H240, H241, H245, H246, H252, H253, H254, H255, H260, H261, H264, H265, H272, H274, H275, H276, H287, H292, H298, H301, H306, H308, H314, H315, H316, H317, H318, H320, H325, H327, H329, H330, H331, H332, H336, H337, H338, H340, H344, H349, H354, H355, H363, H366, and H368
NML 5	H007, H008, H009, H016, H021, H023, H034, H061, H101, H113, H243, H248, H251, H257, H259, H269, H281, H282, H286, H297, H302, H310, H326, H346, H352, H353, H357, H362, H364, H365, H369, H375, H383, H385, H401, H409, H425, H437, H460, H463, H466, H474, H490, H493, H517, H518, H521, H528, H540, H542, H547, H561, H565, H585, H586, H589, H610, H613, H634, H642, H677, H718, H772, H788, H804, H809, H814, H852, H863, H873, H880, H918, H919, H967, H972, H1032, H1065, H1089, H1107, and H1677
NML 6	H093, H098, H105, H109, H112, H121, H125, H135, H136, H142, H151, H152, H514, H554, H560, H644, H654, H673, H675, H682, H683, H689, H692, H701, H723, H724, H725, H729, H730, H732, H770, H805, H838, H844, H869, H874, H879, H891, H905, H908, H912, H917, H924, H946, H968, H974, H979, H980, H1022, H1033, and H1068

NML 7	H006, H025, H026, H027, H028, H035, H038, H040, H041, H042, H043, H045, H046, H049, H051, H053, H058, H060, H063, H067, H069, H075, H081, H086, H088, H091, H094, H099, H100, H102, H111, H114, H115, H117, H118, H119, H123, H126, H128, H130, H134, H137, H138, H140, H144, H146, H147, H149, H150, H153, H154, H157, H160, H161, H165, H167, H169, H170, H174, H175, H179, H180, H184, H186, H194, H195, H197, H198, H200, H206, H210, H215, H218, H221, H224, H225, H226, H227, H229, H230, H237, H247, H249, H250, H262, H263, H266, H268, H271, H280, H283, H291, H303, H304, H311, H322, H341, H345, H351, H356, H359, H361, H371, H372, H378, H380, H381, H384, H388, H389, H390, H391, H396, H397, H398, H400, and H405
NML 8	H020, H062, H071, H073, H074, H080, H095, H116, H129, H132, H156, H164, H176, H212, H214, H228, H238, H244, H284, H285, H312, H313, H376, H402, H408, H413, H417, H418, H427, H429, H464, H478, H480, H550, H573, H575, H617, H622, H623, H635, H643, H651, H653, H655, H657, H663, H669, H672, H685, H688, H691, H695, H699, H703, H714, H715, H716, H717, H719, H720, H722, H727, H733, H735, H736, H738, H747, H761, H764, H767, H771, H780, H782, H796, H799, H802, H806, H815, H830, H833, H857, H861, H870, H877, H881, H882, H887, H895, H896, H897, H903, H921, H923, H932, H1019, H1057, H1077, H1118, and H1123
NML 9	H172, H187, H209, H242, H258, H273, H277, H279, H288, H293, H294, H295, H296, H300, H307, H321, H323, H328, H335, H358, H370, H373, H382, H387, H393, H407, H411, H433, H434, H455, H479, H485, H487, H496, H502, H507, H510, H524, H535, H544, H559, H569, H577, H599, H604, H605, H611, H620, H660, H665, H670, H679, H681, H698, H700, H704, H708, H741, H748, H752, H756, H760, H762, H766, H775, H791, H792, H793, H800, H817, H819, H824, H828, H859, H886, H958, H1126, H1127, H1672, H1673, and H1838
NML 10	H436, H443, H444, H448, H469, H471, H473, H484, H543, H621, H668, H837, H938, H989, H1013, H1043, and H1109