Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	1869	100.000
2		✓	644	100.000
3		✓	146	100.000
4		✓	1245	100.000
5		✓	194	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	42	83	1526	216
	2	49	0	63	433	99
	3	33	32	0	74	7
	4	820	264	93	4	64
	5	87	28	8	69	2

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	2	5	4	2
	2	2	0	2	2	0
	3	14	3	0	9	0
	4	15	6	8	0	74
	5	14	16	14	32	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	1.02	73.20	44.1	F
2	0.87	31.36	5.8	D
3	0.85	98.54	4.0	F
4	0.70	6.92	2.6	A
5	0.32	9.52	0.6	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1407	375	2117	0.665	1399	2.0	5.147	A
2	485	1499	1143	0.424	482	0.7	5.513	A
3	110	1796	507	0.217	109	0.3	9.756	A
4	937	329	2044	0.459	933	1.0	3.695	A
5	146	972	852	0.172	145	0.2	6.103	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1680	448	2075	0.810	1671	4.2	9.072	A
2	579	1792	995	0.582	576	1.4	8.694	A
3	131	2147	365	0.359	130	0.6	16.479	C
4	1119	393	2009	0.557	1117	1.4	4.608	A
5	174	1163	774	0.225	174	0.3	7.195	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	2058	547	2018	1.019	1960	28.6	39.301	E
2	709	2109	834	0.850	695	4.9	24.296	C
3	161	2539	207	0.776	152	2.8	62.909	F
4	1371	465	1970	0.696	1366	2.6	6.770	A
5	214	1419	670	0.319	213	0.6	9.427	A

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	2058	549	2017	1.020	1996	44.1	73.203	F
2	709	2145	816	0.869	705	5.8	31.358	D
3	161	2581	190	0.846	156	4.0	98.545	F
4	1371	474	1965	0.698	1371	2.6	6.920	A
5	214	1425	667	0.320	214	0.6	9.515	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1680	454	2071	0.811	1837	4.8	25.410	D
2	579	1955	912	0.635	595	1.8	12.076	B
3	131	2319	296	0.444	144	0.9	27.501	D
4	1119	424	1992	0.562	1124	1.5	4.764	A
5	174	1177	768	0.227	175	0.4	7.291	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1407	378	2115	0.665	1418	2.1	5.439	A
2	485	1519	1133	0.428	489	0.8	5.721	A
3	110	1821	497	0.221	112	0.3	10.189	B
4	937	335	2041	0.459	939	1.0	3.742	A
5	146	980	848	0.172	146	0.3	6.154	A

OPERATION - Base 2018, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	172.10	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	OPERATION - Base 2018	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	1309	100.000
2		✓	627	100.000
3		✓	293	100.000
4		✓	2135	100.000
5		✓	299	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	182	80	995	50
	2	142	1	97	358	29
	3	90	89	0	109	5
	4	1559	494	54	3	25
	5	181	63	7	48	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	2	1	6	6
	2	1	0	2	2	12
	3	1	0	0	6	0
	4	3	2	8	0	69
	5	1	2	50	20	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	0.75	7.97	3.1	A
2	0.57	6.95	1.3	A
3	0.63	19.53	1.7	C
4	1.19	336.80	200.0	F
5	1.07	210.43	19.3	F

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	985	566	2008	0.491	981	1.0	3.674	A
2	472	928	1432	0.330	470	0.5	3.814	A
3	221	1220	740	0.298	219	0.4	7.061	A
4	1607	305	2057	0.782	1593	3.6	7.804	A
5	225	1817	508	0.443	222	0.8	13.025	B

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1177	670	1948	0.604	1174	1.6	4.875	A
2	564	1110	1341	0.420	563	0.7	4.723	A
3	263	1460	643	0.410	262	0.7	9.666	A
4	1919	366	2024	0.948	1883	12.6	22.196	C
5	269	2151	372	0.722	262	2.4	32.639	D

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1441	722	1918	0.751	1435	3.1	7.736	A
2	690	1342	1223	0.565	688	1.3	6.850	A
3	323	1779	514	0.628	319	1.6	18.567	C
4	2351	446	1980	1.187	1974	106.8	116.334	F
5	329	2305	310	1.063	291	12.0	115.836	F

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1441	728	1915	0.753	1441	3.1	7.968	A
2	690	1349	1219	0.566	690	1.3	6.949	A
3	323	1787	511	0.632	322	1.7	19.527	C
4	2351	449	1978	1.188	1978	200.0	282.548	F
5	329	2311	307	1.072	300	19.3	210.434	F

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1177	722	1919	0.613	1183	1.7	5.181	A
2	564	1128	1331	0.423	566	0.8	4.822	A
3	263	1476	636	0.414	267	0.7	10.099	B
4	1919	370	2021	0.949	2011	177.1	336.805	F
5	269	2282	319	0.842	306	10.0	186.296	F

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	985	696	1933	0.510	988	1.1	4.012	A
2	472	952	1421	0.332	473	0.5	3.886	A
3	221	1234	734	0.300	222	0.4	7.214	A
4	1607	308	2055	0.782	2043	68.1	217.690	F
5	225	2264	326	0.690	254	2.7	63.880	F

OPERATION - Base + Committed 2022, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	111.24	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	OPERATION - Base + Committed 2022	AM	ONE HOUR	06:45	08:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	2040	100.000
2		✓	699	100.000
3		✓	156	100.000
4		✓	1343	100.000
5		✓	207	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	44	88	1678	228
	2	52	0	66	477	104
	3	35	34	0	80	7
	4	884	287	100	4	68
	5	92	30	8	75	2

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	2	5	4	2
	2	2	0	2	2	0
	3	13	3	0	8	0
	4	15	6	7	0	72
	5	15	15	14	31	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	1.13	199.91	137.5	F
2	0.95	57.94	11.7	F
3	1.03	208.75	9.6	F
4	0.75	8.42	3.4	A
5	0.37	10.91	0.7	B

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1536	404	2100	0.731	1525	2.8	6.382	A
2	526	1633	1075	0.489	522	1.0	6.580	A
3	117	1960	441	0.266	116	0.4	11.858	B
4	1011	346	2034	0.497	1007	1.1	3.983	A
5	156	1047	821	0.190	155	0.3	6.479	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1834	484	2054	0.893	1815	7.5	14.561	B
2	628	1945	917	0.685	624	2.1	12.289	B
3	140	2335	289	0.485	138	1.0	25.199	D
4	1207	413	1998	0.604	1205	1.7	5.165	A
5	186	1253	737	0.252	186	0.4	7.830	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	2246	588	1995	1.126	1980	73.9	82.290	F
2	770	2145	816	0.943	741	9.2	39.476	E
3	172	2613	177	0.969	152	5.8	114.445	F
4	1479	465	1970	0.751	1472	3.3	8.156	A
5	228	1522	628	0.363	227	0.7	10.752	B

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	2246	591	1993	1.127	1992	137.5	195.864	F
2	770	2157	810	0.950	760	11.7	57.943	F
3	172	2640	166	1.033	156	9.6	208.751	F
4	1479	472	1966	0.752	1478	3.4	8.419	A
5	228	1531	624	0.365	228	0.7	10.906	B

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1834	493	2049	0.895	2034	87.5	199.911	F
2	628	2161	808	0.778	659	3.9	28.402	D
3	140	2573	193	0.725	164	3.7	140.125	F
4	1207	458	1974	0.612	1214	1.8	5.451	A
5	186	1276	728	0.256	187	0.4	8.010	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1536	410	2096	0.733	1874	3.0	48.358	E
2	526	1976	901	0.584	536	1.5	10.277	B
3	117	2299	304	0.387	129	0.7	23.597	C
4	1011	395	2008	0.504	1014	1.2	4.146	A
5	156	1061	815	0.191	156	0.3	6.569	A

OPERATION - Base + Committed 2022, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	308.59	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	OPERATION - Base + Committed 2022	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	1399	100.000
2		✓	668	100.000
3		✓	311	100.000
4		✓	2323	100.000
5		✓	315	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	192	84	1068	53
	2	150	1	102	384	31
	3	95	94	0	117	5
	4	1697	537	60	3	26
	5	191	66	7	51	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	2	1	6	6
	2	1	0	2	2	11
	3	1	0	0	5	0
	4	3	2	7	0	64
	5	1	2	50	19	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	0.80	10.09	4.2	B
2	0.63	8.37	1.7	A
3	0.74	30.41	2.8	D
4	1.30	610.73	351.2	F
5	1.14	317.50	28.8	F

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1053	608	1983	0.531	1049	1.2	4.028	A
2	503	994	1399	0.359	501	0.6	4.084	A
3	234	1306	705	0.332	232	0.5	7.743	A
4	1749	322	2047	0.854	1727	5.6	10.936	B
5	237	1963	449	0.529	233	1.1	17.092	C

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1258	700	1931	0.651	1255	1.9	5.571	A
2	601	1186	1302	0.461	599	0.9	5.225	A
3	280	1561	602	0.465	278	0.9	11.305	B
4	2088	386	2013	1.038	1970	35.2	46.605	E
5	283	2254	330	0.857	270	4.4	54.162	F

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1540	727	1916	0.804	1532	4.1	9.636	A
2	735	1429	1179	0.624	732	1.7	8.181	A
3	342	1900	465	0.737	336	2.6	27.146	D
4	2558	469	1968	1.300	1966	183.0	205.374	F
5	347	2316	305	1.137	295	17.3	160.027	F

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1540	730	1914	0.805	1540	4.2	10.087	B
2	735	1437	1175	0.626	735	1.7	8.368	A
3	342	1910	461	0.743	342	2.8	30.414	D
4	2558	474	1965	1.302	1965	331.2	471.215	F
5	347	2319	304	1.141	301	28.8	297.733	F

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1258	725	1917	0.656	1266	2.0	5.892	A
2	601	1203	1294	0.464	604	0.9	5.356	A
3	280	1579	595	0.470	287	0.9	12.222	B
4	2088	393	2009	1.040	2008	351.2	610.727	F
5	283	2299	312	0.907	301	24.2	317.495	F

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1053	720	1920	0.549	1056	1.3	4.398	A
2	503	1023	1384	0.363	504	0.6	4.185	A
3	234	1328	696	0.336	236	0.5	8.012	A
4	1749	326	2046	0.855	2040	278.5	556.092	F
5	237	2275	322	0.737	308	6.4	192.203	F

OPERATION - Base + Committed + Development 2022, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	129.21	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	OPERATION - Base + Committed + Development 2022	AM	ONE HOUR	06:45	08:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	2068	100.000
2		✓	708	100.000
3		✓	158	100.000
4		✓	1373	100.000
5		✓	205	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	44	88	1706	228
	2	52	0	66	486	104
	3	35	34	0	82	7
	4	906	295	104	0	68
	5	92	30	8	75	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	2	5	5	2
	2	2	0	2	3	0
	3	13	3	0	9	0
	4	16	8	9	0	72
	5	15	15	14	31	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	1.14	236.28	154.9	F
2	0.96	63.04	12.9	F
3	1.05	221.53	10.4	F
4	0.77	9.06	3.7	A
5	0.37	11.23	0.7	B

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1557	409	2097	0.742	1545	2.9	6.686	A
2	533	1652	1066	0.500	529	1.0	6.820	A
3	119	1982	432	0.275	117	0.4	12.309	B
4	1034	345	2035	0.508	1029	1.2	4.112	A
5	154	1070	812	0.190	153	0.3	6.566	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1859	489	2051	0.906	1837	8.5	16.101	C
2	636	1965	907	0.702	631	2.3	13.136	B
3	142	2359	280	0.508	139	1.1	27.289	D
4	1234	410	1999	0.617	1232	1.8	5.395	A
5	184	1280	726	0.254	184	0.4	7.976	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	2277	594	1992	1.143	1980	82.8	91.068	F
2	780	2143	817	0.954	749	10.0	42.121	E
3	174	2614	176	0.986	153	6.2	120.585	F
4	1512	459	1973	0.766	1504	3.6	8.737	A
5	226	1554	615	0.367	225	0.7	11.064	B

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	2277	597	1990	1.144	1988	154.9	219.432	F
2	780	2152	812	0.960	768	12.9	63.043	F
3	174	2640	166	1.048	157	10.4	221.526	F
4	1512	466	1969	0.768	1511	3.7	9.058	A
5	226	1563	611	0.369	226	0.7	11.234	B

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1859	499	2046	0.909	2032	111.6	236.277	F
2	636	2158	809	0.786	671	4.2	31.373	D
3	142	2579	191	0.745	167	4.3	159.203	F
4	1234	454	1976	0.625	1241	2.0	5.715	A
5	184	1304	717	0.257	185	0.4	8.171	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1557	415	2094	0.744	1990	3.4	87.608	F
2	533	2089	844	0.631	543	1.8	12.568	B
3	119	2411	259	0.460	132	1.0	33.527	D
4	1034	404	2003	0.516	1037	1.2	4.313	A
5	154	1085	806	0.192	155	0.3	6.660	A

OPERATION - Base + Committed + Development 2022, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	318.45	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	OPERATION - Base + Committed + Development 2022	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	1409	100.000
2		✓	672	100.000
3		✓	311	100.000
4		✓	2337	100.000
5		✓	315	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	192	84	1078	53
	2	150	1	102	388	31
	3	95	94	0	117	5
	4	1707	541	60	3	26
	5	191	66	7	51	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	2	1	7	6
	2	1	0	2	3	11
	3	1	0	0	5	0
	4	3	2	7	0	64
	5	1	2	50	19	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	0.81	10.47	4.4	B
2	0.63	8.61	1.7	A
3	0.75	31.98	2.9	D
4	1.31	631.32	364.4	F
5	1.14	318.62	28.8	F

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1061	611	1982	0.535	1056	1.2	4.096	A
2	506	1002	1395	0.363	504	0.6	4.136	A
3	234	1316	701	0.334	232	0.5	7.811	A
4	1759	322	2047	0.859	1736	5.8	11.237	B
5	237	1973	445	0.533	233	1.1	17.392	C

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1267	701	1930	0.656	1264	2.0	5.690	A
2	604	1194	1298	0.466	603	0.9	5.313	A
3	280	1574	597	0.468	278	0.9	11.480	B
4	2101	386	2013	1.044	1974	37.6	48.939	E
5	283	2258	329	0.861	270	4.4	55.104	F

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1551	727	1916	0.810	1542	4.3	9.966	A
2	740	1439	1173	0.631	737	1.7	8.403	A
3	342	1915	459	0.746	335	2.7	28.261	D
4	2573	469	1968	1.308	1967	189.2	213.141	F
5	347	2316	305	1.137	295	17.4	160.914	F

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1551	731	1914	0.811	1551	4.4	10.465	B
2	740	1448	1169	0.633	740	1.7	8.606	A
3	342	1926	455	0.753	342	2.9	31.977	D
4	2573	474	1965	1.310	1965	341.3	485.875	F
5	347	2319	304	1.141	301	28.8	298.604	F

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1267	725	1917	0.661	1276	2.1	6.030	A
2	604	1212	1289	0.469	607	0.9	5.454	A
3	280	1592	589	0.474	287	0.9	12.476	B
4	2101	394	2009	1.046	2008	364.4	631.325	F
5	283	2299	312	0.907	301	24.3	318.623	F

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1061	721	1919	0.553	1064	1.3	4.471	A
2	506	1031	1381	0.366	507	0.6	4.241	A
3	234	1338	692	0.338	236	0.5	8.089	A
4	1759	326	2045	0.860	2040	294.3	581.634	F
5	237	2276	322	0.738	308	6.6	193.453	F

OPERATION - Base + Committed 2028, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	211.46	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	OPERATION - Base + Committed 2028	AM	ONE HOUR	06:45	08:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	2180	100.000
2		✓	746	100.000
3		✓	167	100.000
4		✓	1434	100.000
5		✓	218	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	47	93	1796	242
	2	55	0	70	510	111
	3	37	36	0	86	8
	4	944	307	107	4	72
	5	97	31	9	79	2

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	2	5	4	3
	2	2	0	1	2	0
	3	13	3	0	9	0
	4	15	7	8	0	74
	5	14	14	13	31	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	1.22	392.01	229.2	F
2	1.01	97.94	22.4	F
3	1.16	346.01	16.4	F
4	0.80	10.63	4.5	B
5	0.41	12.45	0.8	B

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1641	430	2085	0.787	1626	3.7	7.921	A
2	562	1742	1020	0.551	557	1.2	7.814	A
3	126	2090	388	0.324	124	0.5	14.593	B
4	1080	367	2023	0.534	1074	1.3	4.323	A
5	164	1117	793	0.207	163	0.3	6.815	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1960	515	2037	0.962	1915	14.8	24.734	C
2	671	2054	862	0.778	662	3.3	17.663	C
3	150	2469	235	0.638	145	1.7	41.342	E
4	1289	434	1987	0.649	1286	2.1	5.859	A
5	196	1336	704	0.278	195	0.5	8.450	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	2400	623	1975	1.215	1970	122.2	132.187	F
2	821	2148	814	1.009	773	15.3	57.798	F
3	184	2637	167	1.100	154	9.2	168.491	F
4	1579	469	1967	0.802	1570	4.4	10.127	B
5	240	1617	589	0.407	239	0.8	12.206	B

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	2400	627	1973	1.217	1972	229.2	322.651	F
2	821	2151	813	1.011	793	22.4	97.943	F
3	184	2658	159	1.158	155	16.4	333.683	F
4	1579	475	1965	0.804	1578	4.5	10.634	B
5	240	1627	585	0.410	240	0.8	12.446	B

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1960	522	2032	0.964	2023	213.3	392.014	F
2	671	2162	807	0.831	736	6.1	61.315	F
3	150	2637	167	0.897	159	14.2	346.007	F
4	1289	469	1968	0.655	1298	2.2	6.246	A
5	196	1359	694	0.282	197	0.5	8.676	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1641	445	2077	0.790	2067	106.9	280.091	F
2	562	2174	801	0.701	576	2.5	17.139	C
3	126	2520	215	0.586	175	1.8	132.264	F
4	1080	446	1980	0.545	1083	1.4	4.613	A
5	164	1150	779	0.211	165	0.3	7.003	A

OPERATION - Base + Committed 2028, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	457.92	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	OPERATION - Base + Committed 2028	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	1490	100.000
2		✓	710	100.000
3		✓	330	100.000
4		✓	2490	100.000
5		✓	335	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	203	89	1140	56
	2	158	1	108	411	32
	3	100	99	0	125	6
	4	1819	576	64	3	28
	5	202	70	8	55	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	2	1	6	6
	2	1	0	2	3	10
	3	1	0	0	6	0
	4	3	2	6	0	71
	5	1	2	50	20	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	0.86	13.71	6.0	B
2	0.69	10.59	2.3	B
3	0.88	62.87	5.9	F
4	1.40	898.82	526.9	F
5	1.22	493.73	41.7	F

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1122	646	1962	0.572	1116	1.4	4.447	A
2	535	1060	1366	0.391	532	0.7	4.420	A
3	248	1391	671	0.370	246	0.6	8.644	A
4	1875	339	2038	0.920	1837	9.4	16.246	C
5	252	2085	399	0.632	246	1.7	23.664	C

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1339	714	1923	0.697	1336	2.4	6.399	A
2	638	1260	1264	0.505	637	1.0	5.875	A
3	297	1662	561	0.529	295	1.1	13.737	B
4	2238	406	2002	1.118	1988	72.0	82.403	F
5	301	2288	317	0.951	280	6.9	77.854	F

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1641	729	1914	0.857	1627	5.7	12.604	B
2	782	1514	1136	0.688	777	2.2	10.181	B
3	363	2018	417	0.871	348	4.9	46.289	E
4	2742	489	1957	1.401	1956	268.3	317.735	F
5	369	2321	303	1.216	298	24.6	218.073	F

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1641	732	1913	0.858	1639	6.0	13.712	B
2	782	1525	1130	0.692	781	2.3	10.588	B
3	363	2032	412	0.883	359	5.9	62.875	F
4	2742	497	1952	1.404	1952	465.6	673.704	F
5	369	2324	302	1.222	301	41.7	416.723	F

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1339	730	1914	0.700	1354	2.5	6.915	A
2	638	1279	1255	0.509	643	1.1	6.091	A
3	297	1685	552	0.538	315	1.2	16.742	C
4	2238	421	1993	1.123	1993	526.9	889.565	F
5	301	2307	309	0.975	301	41.7	493.729	F

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1122	724	1917	0.585	1126	1.5	4.805	A
2	535	1086	1353	0.395	536	0.7	4.537	A
3	248	1413	662	0.375	251	0.6	9.037	A
4	1875	344	2036	0.921	2032	487.6	898.820	F
5	252	2282	319	0.790	311	26.9	401.207	F

OPERATION - Base + Committed + Development 2028, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	235.31	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D9	OPERATION - Base + Committed + Development 2028	AM	ONE HOUR	06:45	08:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	2208	100.000
2		✓	755	100.000
3		✓	169	100.000
4		✓	1468	100.000
5		✓	218	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	47	93	1824	242
	2	55	0	70	519	111
	3	37	36	0	88	8
	4	966	315	111	4	72
	5	97	31	9	79	2

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	2	5	5	3
	2	2	0	1	3	0
	3	13	3	0	10	0
	4	16	8	10	0	74
	5	14	14	13	31	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	1.24	437.63	250.8	F
2	1.02	107.80	25.2	F
3	1.17	390.19	17.5	F
4	0.82	11.76	5.1	B
5	0.42	13.00	0.9	B

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1662	439	2080	0.799	1646	4.0	8.412	A
2	568	1765	1009	0.564	563	1.3	8.177	A
3	127	2117	378	0.337	125	0.5	15.351	C
4	1105	367	2023	0.546	1100	1.4	4.476	A
5	164	1142	782	0.210	163	0.3	6.926	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1985	525	2031	0.977	1930	17.7	28.278	D
2	679	2073	852	0.796	669	3.6	19.224	C
3	152	2491	226	0.672	146	1.9	46.237	E
4	1320	432	1988	0.664	1316	2.2	6.163	A
5	196	1365	692	0.283	195	0.5	8.653	A

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	2431	636	1968	1.235	1964	134.3	146.087	F
2	831	2147	815	1.020	778	16.9	62.202	F
3	186	2639	167	1.117	154	9.9	178.441	F
4	1616	464	1970	0.820	1605	4.9	11.083	B
5	240	1652	575	0.417	239	0.8	12.716	B

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	2431	640	1966	1.237	1965	250.8	354.041	F
2	831	2149	814	1.021	798	25.2	107.796	F
3	186	2658	159	1.171	156	17.5	354.462	F
4	1616	469	1967	0.822	1616	5.1	11.757	B
5	240	1663	570	0.421	240	0.9	13.001	B

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1985	532	2027	0.979	2019	242.4	437.632	F
2	679	2161	808	0.841	752	6.9	73.330	F
3	152	2650	162	0.938	152	17.5	390.195	F
4	1320	463	1971	0.670	1331	2.4	6.605	A
5	196	1388	683	0.287	197	0.5	8.889	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1662	456	2070	0.803	2061	142.7	337.112	F
2	568	2172	802	0.709	585	2.6	18.147	C
3	127	2526	212	0.599	189	2.1	180.524	F
4	1105	448	1979	0.559	1109	1.5	4.799	A
5	164	1180	767	0.214	165	0.3	7.147	A

OPERATION - Base + Committed + Development 2028, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	471.26	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D10	OPERATION - Base + Committed + Development 2028	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	1500	100.000
2		✓	714	100.000
3		✓	330	100.000
4		✓	2504	100.000
5		✓	335	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	203	89	1150	56
	2	158	1	108	415	32
	3	100	99	0	125	6
	4	1829	580	64	3	28
	5	202	70	8	55	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	2	1	7	6
	2	1	0	2	3	10
	3	1	0	0	6	0
	4	3	2	7	0	71
	5	1	2	50	20	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1	0.86	14.36	6.3	B
2	0.70	10.89	2.3	B
3	0.90	68.30	6.4	F
4	1.41	926.19	541.0	F
5	1.22	494.70	41.7	F

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1129	649	1960	0.576	1124	1.4	4.525	A
2	538	1067	1362	0.395	535	0.7	4.454	A
3	248	1401	666	0.373	246	0.6	8.729	A
4	1885	339	2038	0.925	1846	9.9	16.831	C
5	252	2094	395	0.638	245	1.7	24.160	C

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1348	714	1923	0.701	1344	2.4	6.545	A
2	642	1268	1260	0.509	640	1.1	5.950	A
3	297	1675	556	0.533	295	1.1	13.991	B
4	2251	406	2002	1.125	1989	75.3	85.699	F
5	301	2289	316	0.953	280	7.0	78.530	F

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1652	729	1914	0.863	1637	6.0	13.111	B
2	786	1524	1131	0.695	781	2.3	10.442	B
3	363	2033	411	0.883	347	5.2	48.902	E
4	2757	488	1957	1.409	1957	275.3	327.156	F
5	369	2321	303	1.216	298	24.7	218.537	F

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1652	732	1913	0.864	1650	6.3	14.364	B
2	786	1536	1125	0.699	786	2.3	10.889	B
3	363	2048	405	0.896	358	6.4	68.304	F
4	2757	497	1953	1.412	1952	476.4	689.980	F
5	369	2324	302	1.222	301	41.7	417.117	F

16:45 - 17:00

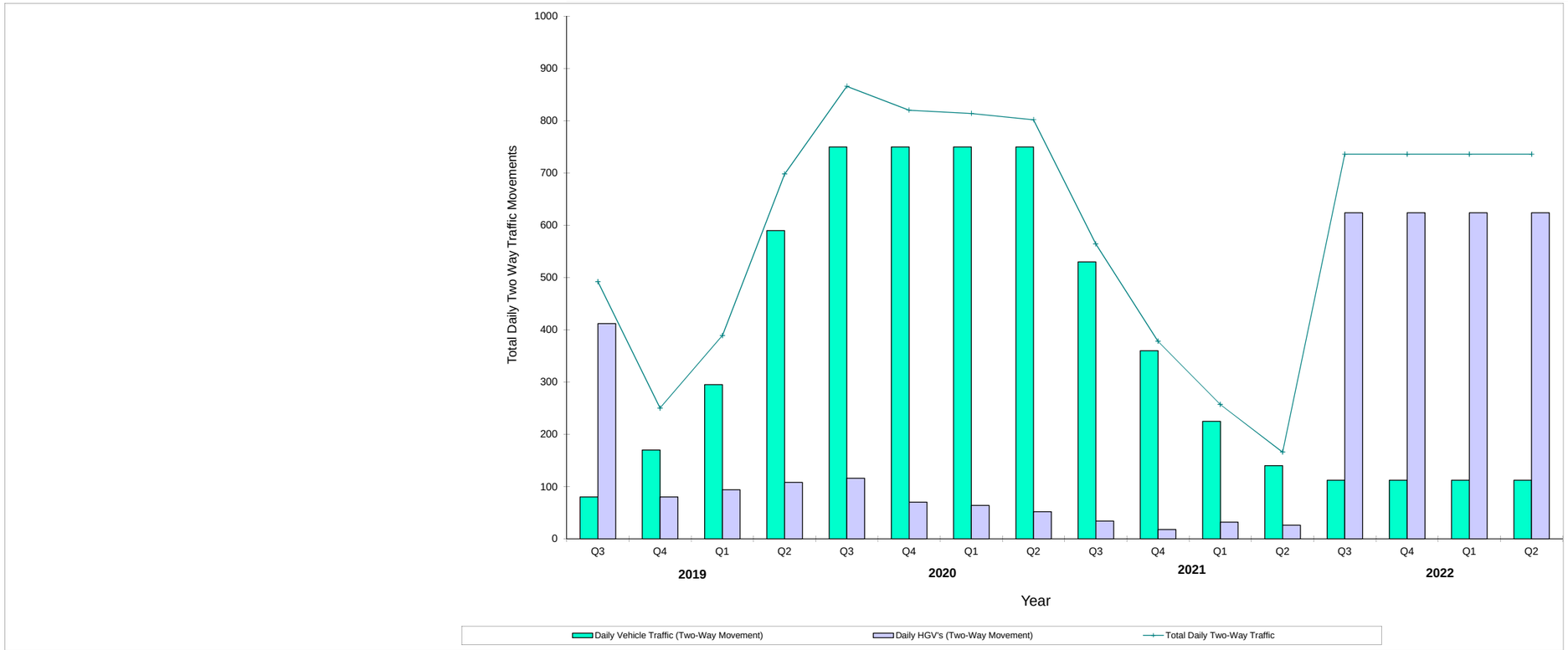
Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1348	731	1914	0.705	1363	2.6	7.109	A
2	642	1289	1250	0.514	647	1.1	6.181	A
3	297	1699	546	0.543	317	1.3	17.446	C
4	2251	423	1993	1.130	1993	541.0	911.837	F
5	301	2308	309	0.976	301	41.7	494.699	F

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	1129	725	1917	0.589	1133	1.5	4.889	A
2	538	1093	1349	0.398	539	0.7	4.575	A
3	248	1424	657	0.378	251	0.6	9.137	A
4	1885	344	2036	0.926	2032	504.4	926.194	F
5	252	2282	319	0.791	311	27.0	401.742	F

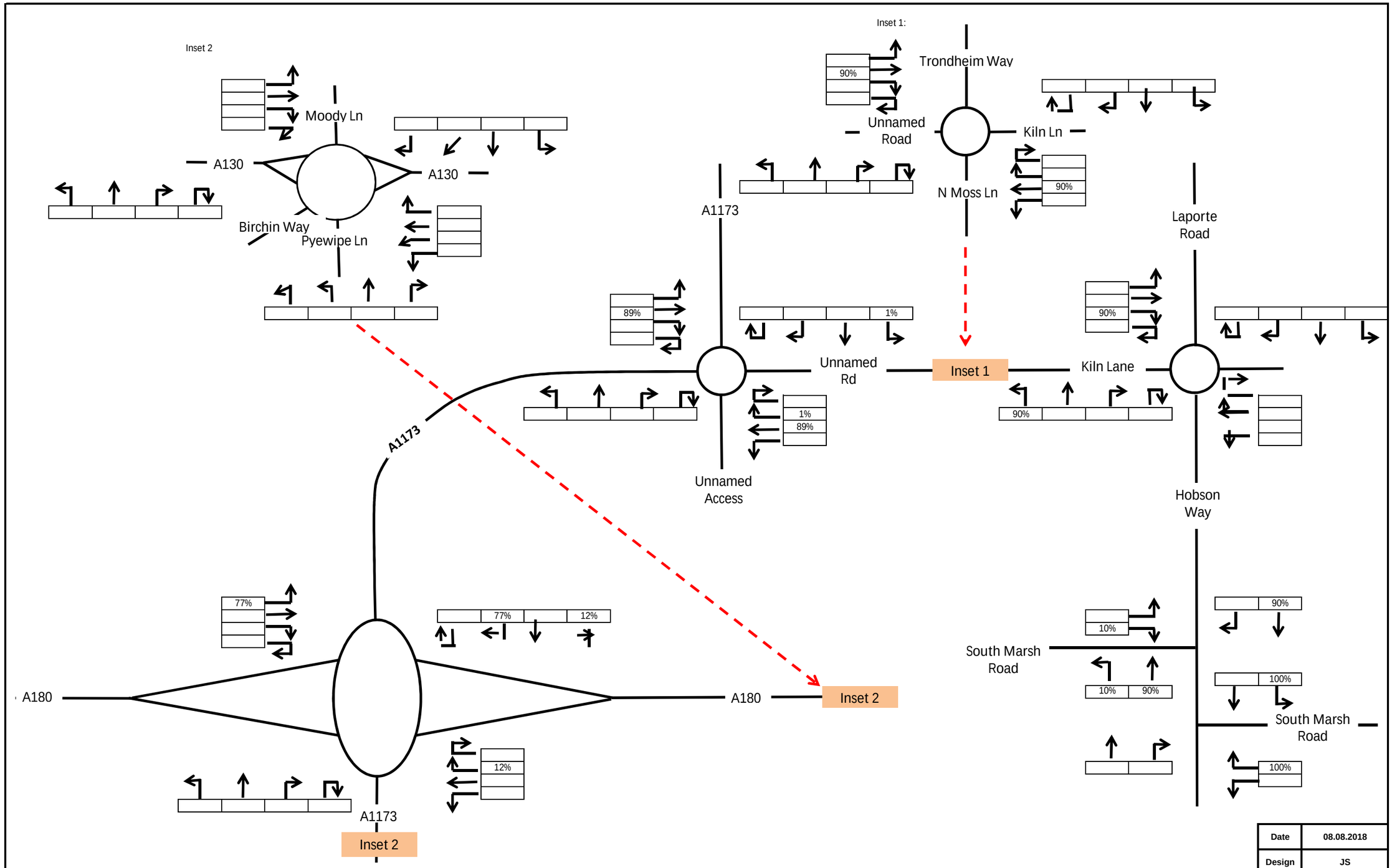
ANNEX 21: CONSTRUCTION TRAFFIC PROFILE

	Year 1 Construction				Year 2 Construction				Year 3 Construction				Operation			
Description	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**
Civil Construction																
Mechanical Erection																
Cold Commisioning																
Hot Commisioning																
Operation																
Typical Daily Construction Workforce in Month	80	170	295	590	750	750	750	750	530	360	225	140				
Typical Daily Construction Worker Vehicles (Inbound)(Based on 2.0 per vehicle)	40	85	148	295	375	375	375	375	265	180	113	70				
Typical Daily Construction Worker Vehicles (Outbound)(Based on 2.0 per vehicle)	40	85	148	295	375	375	375	375	265	180	113	70				
Typical Maximum Daily HGV Trafic in Month (Inbound)	206	40	47	54	58	35	32	26	17	9	16	13				
Typical Maximum Daily HGV Trafic in Month (Outbound)	206	40	47	54	58	35	32	26	17	9	16	13				
Typical Daily Operational Workforce in Month													56	56	56	56
Typical Daily Operational Traffic (Inbound) (Based on 1.0 per vehicle)													56	56	56	56
Typical Daily Operational Traffic (Outbound) (Based on 1.0 per vehicle)													56	56	56	56
Typical Maximum Daily Operational HGV Traffic (Inbound)													312	312	312	312
Typical Maximum Daily Operational HGV Traffic (Outbound)													312	312	312	312
Daily Vehicle Traffic (Two-Way Movement)	80	170	295	590	750	750	750	750	530	360	225	140	112	112	112	112
Daily HGV's (Two-Way Movement)	412	80	94	108	116	70	64	52	34	18	32	26	624	624	624	624
Total Daily Two-Way Traffic	**492**	**250**	**389**	**698**	**866**	**820**	**814**	**802**	**564**	**378**	**257**	**166**	**736**	**736**	**736**	**736**



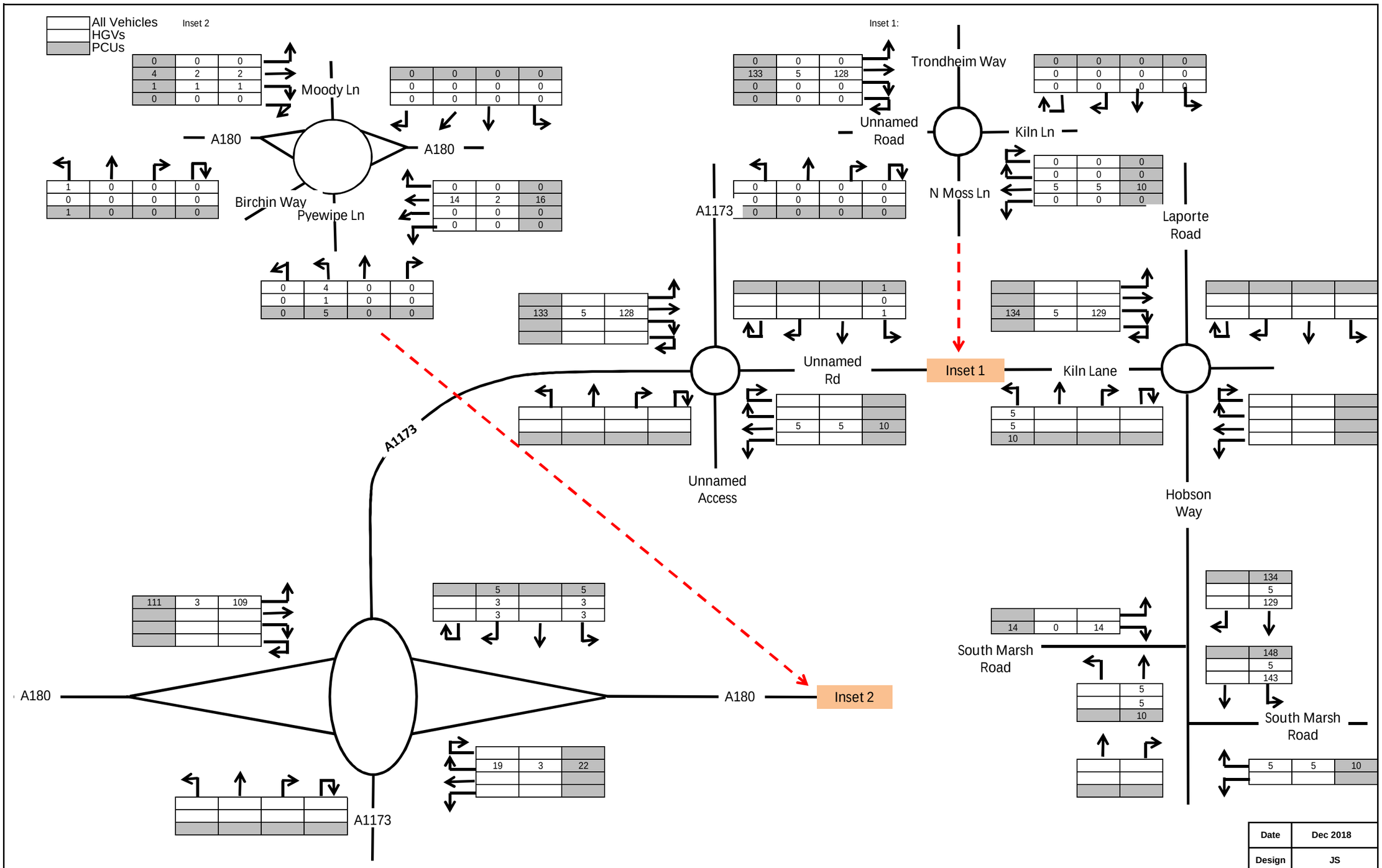
SOUTH HUMBER BANK ENERGY CENTRE: PROFILE OF TRAFFIC DURING CONSTRUCTION AND OPERATION (TWO-WAY TRIPS)

ANNEX 22: CONSTRUCTION WORKER VEHICLE ASSIGNMENT

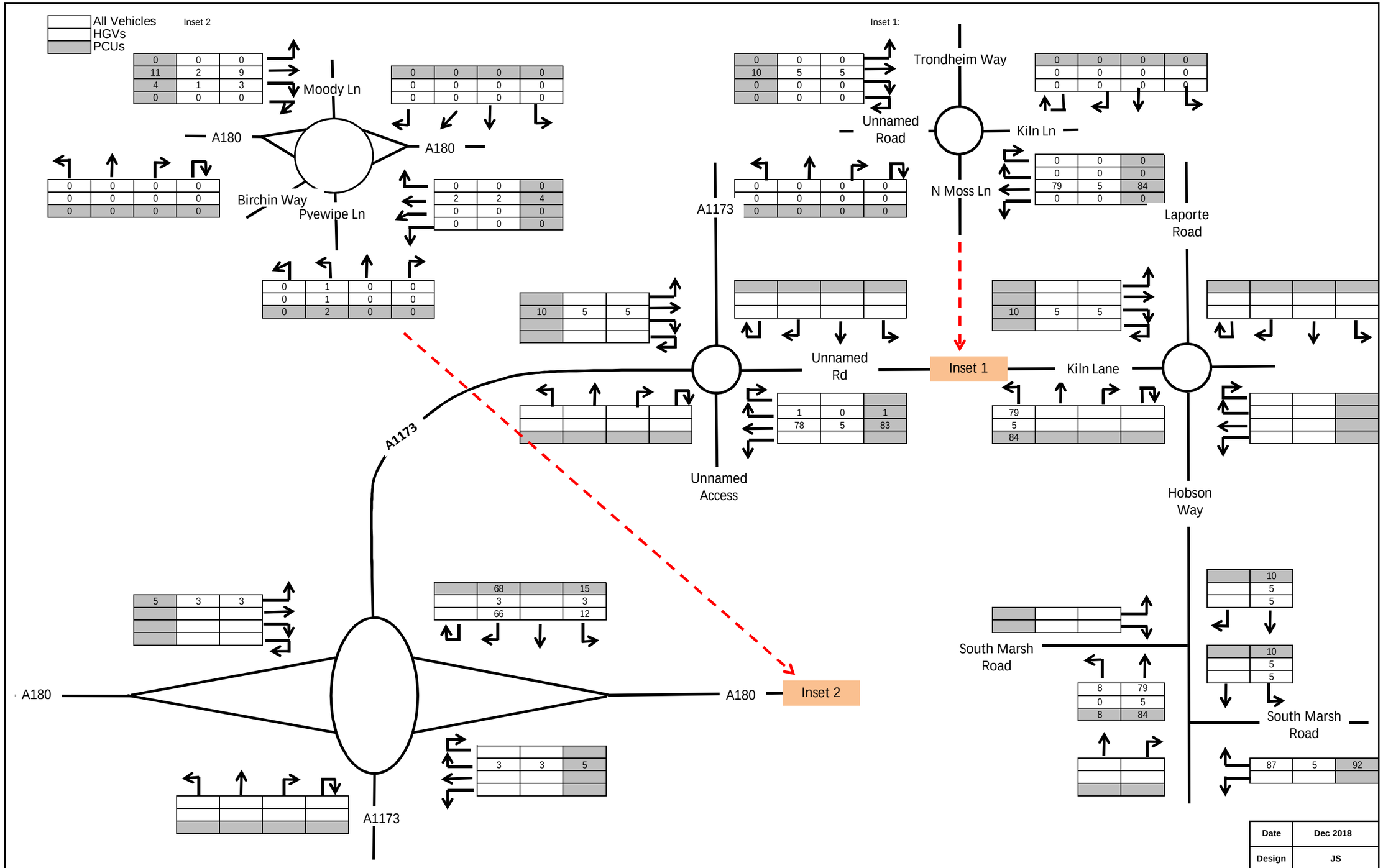


Client:	Project:	Title:	AECOM	Drawing Number:	Revision:	Date: 08.08.2018
EP SHB	South Humber Bank Energy Centre	Construction Staff Vehicle Assignment		Annex 22	A	Design: JS Checked: PF Appr'd: PF
				File:		

ANNEX 23: TOTAL CONSTRUCTION VEHICLE FLOWS DURING PEAK OF CONSTRUCTION



Client:	Project:	Title:		Drawing Number:	Revision:	Date	Dec 2018
EP SHB	South Humber Bank Energy Centre	Total Construction Development Flows - AM Peak (07:00 - 08:00)	AECOM	Annex 23	A	Design	JS
						Checked	PF
						Appr'd	PF
				File:			



Client:	Project:	Title:		Drawing Number:	Revision:	Date	Dec 2018
EP SHB	South Humber Bank Energy Centre	Total Construction Development Flows - PM Peak (16:00 - 17:00)	AECOM	Annex 23	A	Design	JS
						Checked	PF
						Appr'd	PF
				File:			

ANNEX 24: DELIVERY AND SERVICING PLAN

EP SHB

South Humber Bank Energy Centre

South Marsh Road, Stallingborough, DN41 8BZ

Operational Delivery and Servicing Plan

Applicant: EP SHB Limited
Date: December 2018

DOCUMENT HISTORY

Revision	1		
Author	Jonathan Scott		
Signed		**Date**	December 2018
Approved By	Peter Firth		
Signed		**Date**	December 2018
Document Owner	AECOM		

CONTENTS

1.0 INTRODUCTION 1

2.0 DELIVERY AND SERVICING STRATEGY 2

Delivery Hours 2
Weighbridges 2
Fuel Reception 2
HGV Routing Agreement 3

TABLES

TABLE 2.1 – TIPPING BAY REQUIREMENTS 2

FIGURES

FIGURE 2.1 – HGV DESIGNATED ROUTE PLAN 3

1.0 INTRODUCTION

1.1 This Delivery and Servicing Plan has been prepared by AECOM on behalf of EP SHB Limited to accompany the planning application for the Proposed South Humber Bank Energy Centre, an energy from waste plant located on land within the site boundary of the existing South Humber Bank Power Station, South Marsh Road, Stallingborough.

1.2 This plan demonstrates how deliveries to the Site once operational will be managed and should be read in accordance with the Transport Assessment presented within Appendix 9A in ES Volume III.

2.0 DELIVERY AND SERVICING STRATEGY

Delivery Hours

2.1 It is expected that the Proposed Development will receive fuel by road during the following hours:

- Monday to Sunday: 06:00 – 18:00 (excluding Christmas Day, Boxing Day and New Years Day)

2.2 Although the above timings allow for deliveries every day of the week, it is likely that deliveries will be concentrated around the period from Monday to Friday.

Weighbridges

2.3 Incoming bulk transport vehicles will enter the Site through the main entrance. They will proceed along the access road to the incoming weighbridges where the quantity of incoming fuel will be checked and recorded.

2.4 The weight of the outgoing vehicles will be recorded on separate outgoing weighbridges as they leave the Site.

2.5 Total HGV movements at the site are estimated to be 312 in and 312 out per day and a maximum of 44 deliveries during the hourly peak comprising of:

- 34 fuel deliveries;
- 1 consumables delivery; and
- 9 bottom ash and flue gas treatment residue deliveries.

2.6 It is proposed that four weighbridges are installed: two incoming and two outgoing. The proposed location of the weighbridges is shown on the site layout plan provided in Annex 1.

2.7 Should all weighbridges be occupied, there is sufficient space on the access road to allow for some queuing and a HGV holding area is to be provided to the east of the weighbridge accommodating up to approximately six HGVs. These measures combined should help to prevent HGV stacking on the access road.

2.8 It is proposed that a separate lane to either side of the incoming and outgoing weighbridges is provided for use by staff and visitor vehicles.

Fuel Reception

2.9 After weighing, the vehicles will proceed to the tipping hall where they will be directed to a vacant tipping bay to discharge into a bunker.

2.10 It is assumed that the average unloading time is 12 minutes, which is the total time occupying a bay, including reversing and leaving. Table 2.1 indicates that based on a peak of 34 fuel deliveries per hour, the fuel reception hall requires a minimum of 7 tipping bays.

Table 2.1: Tipping Bay Requirements

	TOTAL
Peak Deliveries per Hour	34 HGVs
Unloading time per Bay (minutes)	12 minutes
Minimum Bays Required	7 Bays

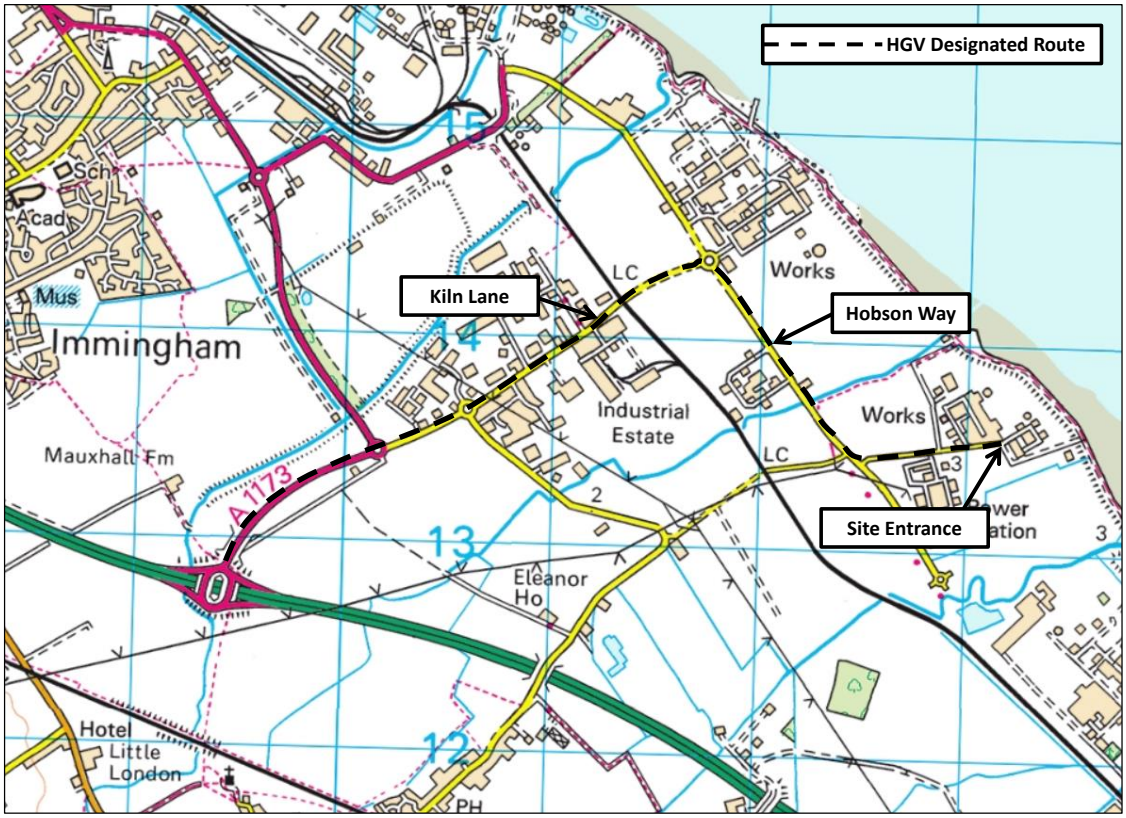
2.11 However, to provide flexibility in operations, the design layout has allowed for 11 tipping bays.

2.12 On completion of the tipping operation, the vehicles will leave the tipping hall via a separate exit. A one-way system will be operated around the Site to reduce the risk of congestion and collisions.

HGV Routing Agreement

2.13 It is proposed that all operational HGV traffic to / from the Proposed Development will be required to route to / from the A180 via the A1173, Kiln Lane, Hobson Way and South Marsh Road. This will be formalised by a routing agreement and will be rigorously enforced by the operator of the Proposed Development. The designated HGV routing plan is shown in Figure 2.1 below.

Figure 2.1: HGV Designated Route Plan



2.14 The Proposed Development operator will encourage the public to report any incidents regarding any breaches of the routing agreement to the operator's management team together with information on the location of the HGV, direction of travel and its number plate / operator. This information will allow the operator to take appropriate action to avoid any future incidents.

ANNEX 1: SITE LAYOUT PLAN

FOR LOCAL AUTHORITY PLANNING PURPOSES ONLY

LEGEND

① REAGENT SILOS
② AMMONIA TANK
③ FUEL OIL TANK
④ FIRE WATER PUMP HOUSE
⑤ FIRE WATER TANK

KEY

PLANNING APPLICATION BOUNDARY

-100.000 E
0.000 E
100.000 E
200.000 E
300.000 E
400.000 E
500.000 E
600.000 E
700.000 E
500.000 N
400.000N
300.000N
200.000N
100.000N
0.000N

TRUE NORTH

RDF RECEPTION
RDF BUNKER
BOILER HALL
ASH BUNKER
FLUE GAS TREATMENT
STACK
CONTROL ROOM
STAIR CORE
ADMINISTRATION, WORKSHOPS & STORES
TURBINE HALL
AIR COOLED CONDENSER
STACK
IN
OUT
CAR PARK
ACCESS FROM SHB POWER STATION
STEAM PIPE
PIPEBRIDGE
TO PUMPING STATION
DRIVER WELFARE
ATTENUATION POND 4500m³
HGV HOLDING AREA
SUBSTATION
PROPOSED FENCE LINE

WORKSHOP STORE
ADMIN BUILDING
CAR PARK
RAW WATER TANK
DEMIN WATER TANK
WATER TREATMENT PLANT
BRITISH GAS COMPOUND
STEAM TURBINE BUILDING
ELECTRICAL BUILDING
AUXILIARY BOILER BUILDING
NATIONAL GRID COMPOUND
GAS TURBINE BUILDING
WATER TREATMENT BUILDING
RAW WATER TANK
DEMIN WATER TANK
ST BUILDING
ELECTRICAL BUILDING
GT BUILDING
ROMNEY BUILDING
CONCRETE BUILDING
ROMNEY 3 BUILDING
OVERFLOW CAR PARK
WASTE MANAGEMENT COMPOUND
PIPE BRIDGE

REV.	DETAILS OF REVISION	DRAWN	CHKD	DATE
R6	VISUAL SCREEN REMOVED	AO	TO	21.11.18
R5	NOTE CHANGE	AO	TO	07.11.18
R4	PRELIMINARY	AO	TO	06.11.18
R3	PRELIMINARY	AO	TO	04.10.18
R2	PRELIMINARY	AO	TO	24.08.18
R1	PRELIMINARY	AO	TO	07.08.18

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CLIENT: EP UK INVESTMENTS LTD
SITE: SOUTH HUMBER BANK
PROJECT: SOUTH HUMBER BANK ENERGY CENTRE
TITLE: SITE PLAN

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Sheet 1 of 1
REVISION: R6

ANNEX 25: FRAMEWORK CONSTRUCTION WORKER TRAVEL PLAN

EP SHB

South Humber Bank Energy Centre

South Marsh Road, Stallingborough, DN41 8BZ

Framework Construction Worker Travel Plan

Applicant: EP SHB Limited
Date: December 2018

DOCUMENT HISTORY

Revision	1		
Author	Jonathan Scott		
Signed		**Date**	November 2018
Approved By	Peter Firth		
Signed		**Date**	November 2018
Document Owner	AECOM		

GLOSSARY

Abbreviation	**Description**
CWTP	Construction Worker Travel Plan

CONTENTS

1.0 INTRODUCTION 1

2.0 BACKGROUND 2

Site Description 2
Accessibility 2
Walking 3
Cycling 3
Bus 4
Rail 5

3.0 PROPOSED DEVELOPMENT 6

Development Description 6
Construction Programme 6
Construction Phase Site Worker Traffic Generation 6
Access Proposals 7
Car Parking Provision 7

4.0 OBJECTIVES 8

5.0 ROLES AND RESPONSIBILITIES 9

6.0 TRAVEL PLAN MEASURES 10

General 10
Proposed Measures to Reduce the Level of Traffic 10
Minimising the Impact on the Local Road Network 11

7.0 TARGETS 12

8.0 MONITORING 13

TABLES

TABLE 2.1: BUS SERVICE FREQUENCY 5
TABLE 2.2: SUMMARY OF RAIL FREQUENCY 5
TABLE 3.1: DAILY CONSTRUCTION WORKER VEHICLE GENERATIONS 6
TABLE 3.2: DAILY VEHICLE PROFILE DURING PEAK OF CONSTRUCTION 7

FIGURES

FIGURE 2.1: SITE LOCATION 2

FIGURE 2.2: 1 KM / 2 KM WALKING CATCHMENT AREA 3

FIGURE 2.3: 5 KM / 8 KM CYCLING CATCHMENT AREA 4

1.0 INTRODUCTION

1.1 This Framework Construction Worker Travel Plan (CWTP) has been prepared by AECOM on behalf of EP SHB Limited to support a planning application for the proposed South Humber Bank Energy Centre, Stallingborough, North East Lincolnshire.

1.2 The Framework CWTP is designed to promote and encourage the use of sustainable transport modes and reduce reliance on the private car during the construction phase of the development, which is expected to take 36 months between 2019 and 2022.

1.3 EP SHB is committed to the sustainable development agenda and realise that the success of the travel plan will be based on its enthusiasm and commitment to ensure that the chosen contractor encourages and promotes the suggested measures detailed within this report to their workers. The Framework CWTP sets out the aims, objectives and measures to promote sustainable travel to the Site.

1.4 This document is a Framework CWTP setting the limits assessed during the assessment of environmental impacts in the consenting application process. The appointed contractor will be required to use this as the starting point for their final CWTP and demonstrate how the limits set will be achieved. It also identifies the suggested measures to be implemented by the contractor.

1.5 Following this introduction the Framework CWTP is structured as follows:

- Section 2 provides background information including the Site location and accessibility;
- Section 3 describes the proposed development;
- Section 4 presents the final CWTP objectives;
- Section 5 sets out the roles and responsibilities;
- Section 6 describes the proposed measures;
- Section 7 describes the process for setting targets; and
- Section 8 outlines the proposed monitoring of the final CWTP.

2.0 BACKGROUND

Site Description

2.1 The Site of the Proposed Development is located off South Marsh Road, Stallingborough, North East Lincolnshire approximately 5 km south east of Immingham. The Main Development Area is located on vacant land within the boundary of the applicant's existing South Humber Bank Power Station. The Site location is shown in Figure 2.1.

2.2 South Marsh Road provides highway access to the existing South Humber Bank Power Station, also to Synthomer (UK) Limited and the NEWLINCS Integrated Waste Management Facility, both located north of the Site.

Figure 2.1: Site Location

Accessibility

2.3 The accessibility of the Proposed Development has been reviewed with respect to opportunities for walking, cycling and the availability of public transport.

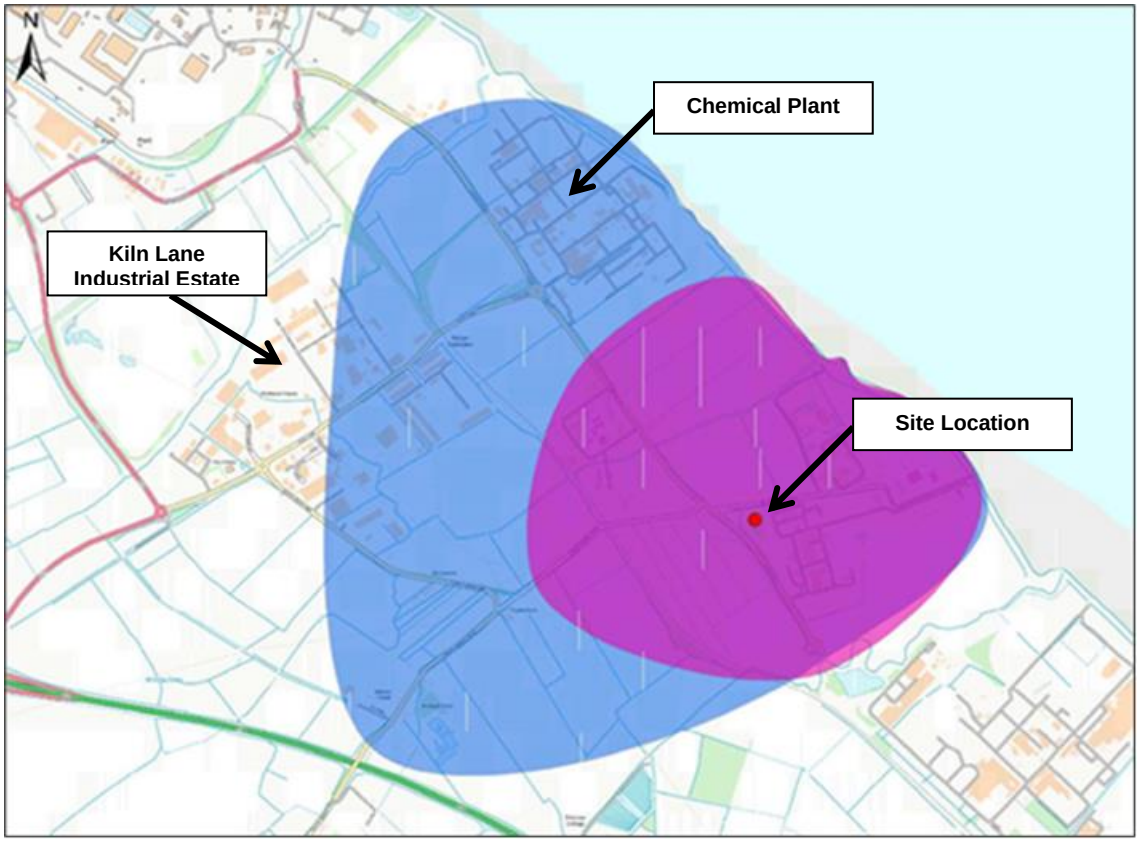
2.4 The Site is located in a remote location on the southern bank of the Humber Estuary. Given its location and the construction working hours, opportunities to access the Site by sustainable modes are limited.

2.5 Notwithstanding, this section considers the opportunities to walk, cycle or use public transport to access the construction Site.

Walking

2.6 The Chartered Institution of Highways and Transportation (CIHT) document 'Providing for Journeys on Foot' suggests a maximum walking distance of 2 km. Figure 2.2 below shows a 1 km and 2 km walking catchment area from the Proposed Development.

Figure 2.2: 1 km / 2 km Walking Catchment Area



2.7 Figure 2.2 shows that there are no residential areas (except for a small number of isolated properties) within a 2 km walking distance of the Site. In terms of pedestrian facilities in the vicinity of the Site, a footway approximately 2 m wide is provided along the western kerbline of Hobson Way. No footways are provided on South Marsh Road.

2.8 In summary it is not anticipated that walking trips would likely represent a practical travel mode for construction workers.

Cycling

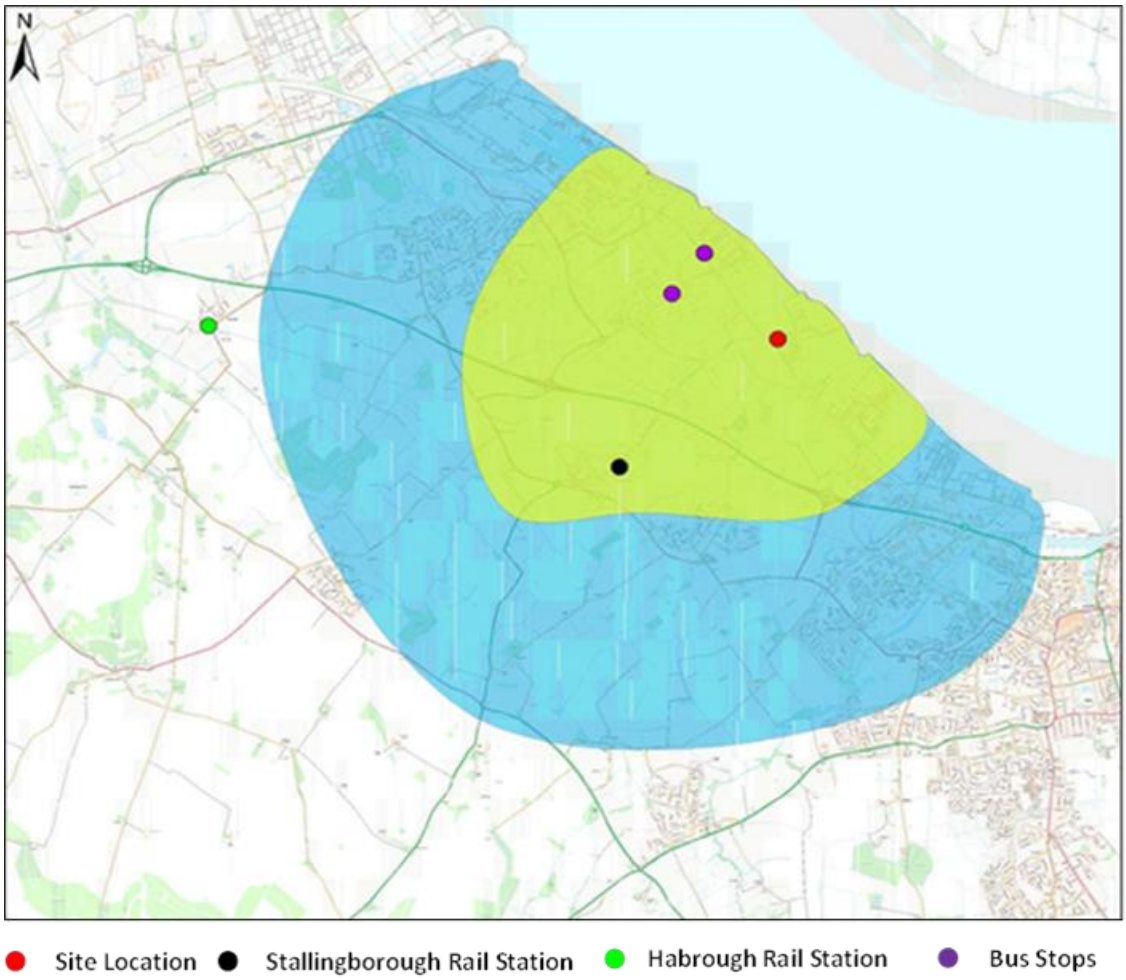
2.9 Cycling is considered to be a viable alternative to that of the private car for journeys up to 8 km, providing a healthy and environmentally friendly form of transport.

2.10 In respect of acceptable cycle distances, 'Local Transport Note 2/08: Cycling Infrastructure Design', published by the Department for Transport states that many utility cycle trips are less than 3 miles (approximately 5 km), but for commuter journeys a distance of 5 miles (approximately 8 km) is not uncommon.

2.11 Taking this into account, a plan illustrating the indicative 5 km and 8 km cycle catchment area from the Proposed Development is shown in Figure 2.3.

2.12

Figure 2.3: 5 km / 8 km Cycling Catchment Area



2.13 Figure 2.3 shows Healing, Great Coates, Stallingborough, and parts of Immingham are within an 8 km cycle distance of the Site. Due to the nature of construction and as set out in Table 11.4 of the Transport Assessment in Appendix 9A of ES Volume III, the number of workers originating from these areas is expected to be minimal.

2.14 Within the vicinity of the Site there are no dedicated traffic-free cycle routes. Whilst this is not considered to be an issue for experienced cyclists, the surrounding road network is regularly used by HGVs given its industrial nature and therefore may not represent an attractive option for less experienced cyclists.

Bus

2.15 The CIHT guidance document 'Planning for Public Transport in Developments' recommends that 400 m is the desirable walking distance to a bus stop from a new development. The nearest bus stop to the Site is located approximately 1.9 km to the north of the Site on Laporte Road, outside of the acceptable walking distance.

2.16 This bus stop is served by the 5M bus service. The frequency of this service is shown in Table 2.1.

2.17

Table 2.1: Bus Service Frequency

SERVICE	ROUTE	FREQUENCY		
		Mon - Fri	Sat	Sun
5M	Immingham - Grimsby	06:49, 07:49. 16:15 & 17:10	No Service	No Service

2.18 In summary this bus stop is located outside of the acceptable walking distance to a bus stop and given the low frequency of service represents an unattractive option for construction workers. In addition there are no footways present on South Marsh Road between the junction with Hobson Way and the Site.

Rail

2.19 The nearest railway station to the Site is Stallingborough approximately 3.2 km south west of the Site (See figure 2.3). Whilst the station is located outside the acceptable 2 km walking catchment area, multi modal journeys using rail and cycling could be utilised.

2.20 Stallingborough station is on the Cleethorpes to Barton on Humber line and provides a two hourly service in each direction Monday to Saturday.

2.21 Rail Services are operated by Northern, Table 2.2 Illustrates the rail frequency from Stallingborough rail station

Table 2.2: Summary of Rail Frequency

SERVICE	MONDAY TO SATURDAY FREQUENCY	SUNDAY FREQUENCY
Barton On Humber	2 hours	2 to 3 hours
Cleethorpes (via Grimsby)	2 hours (once per hour during morning peak)	2 to 3 hours

3.0 PROPOSED DEVELOPMENT

Development Description

3.1 The Proposed Development is an energy from waste power station which will generate energy through the controlled combustion of refuse derived fuel (RDF) with a maximum gross electrical output of 49.9 MW.

Construction Programme

3.2 Subject to being granted planning consent, it is anticipated that construction could commence in 2019 and last circa 36 months. The facility is programmed to open in 2022.

Construction Phase Site Worker Traffic Generation

3.3 During construction, the Proposed Development would require a maximum of 750 workers per day at the peak of construction.

3.4 The standard construction working hours for the Proposed Development will be 07:00 to 19:00 Monday to Saturday. Exceptions to these working hours could include activities that must continue beyond these hours and non-noisy activities.

3.5 In relation to traffic generation associated with construction workers, an average occupancy of 2 workers per vehicle has been applied. This occupancy rate has been accepted by transport stakeholders on other recent power station construction projects including Eggborough CCGT and Knottingley CCGT and is therefore considered robust. The resulting construction worker traffic volumes throughout construction are set out in Table 3.1.

Table 3.1: Daily Construction Worker Vehicle Generations

YEAR OF CONSTRUCTION	DAILY WORKFORCE	DAILY VEHICLE GENERATIONS
Q3 2019	80	40
Q4 2019	170	85
Q1 2020	295	148
Q2 2020	590	295
Q3 2020	750	375
Q4 2020	750	375
Q1 2021	750	375
Q2 2021	750	375
Q3 2021	530	265
Q4 2021	360	180
Q1 2022	225	113
Q2 2022	140	70

3.6

3.7 Table 3.2 illustrates the daily vehicle arrival and departure profile during the peak of construction where the daily workforce is estimated to be up to 750 workers.

Table 3.2: Daily Vehicle Profile during Peak of Construction

HOUR BEGINNING	% OF DAILY INBOUND	% OF DAILY OUTBOUND	ARRIVALS	DEPARTURES
06:00	42%	0%	158	0
07:00	37%	0%	138	0
08:00	12%	0%	45	0
09:00	9%	0%	34	0
16:00	0%	22%	0	82
17:00	0%	26%	0	98
18:00	0%	47%	0	176
19:00	0%	5%	0	19
Total	**100%**	**100%**	**375**	**375**

Access Proposals

3.8 All construction workers will arrive and depart the Proposed Development via a construction site entrance that is expected to be located off South Marsh Road to the east of the South Humber Bank Power Station entrance.

Car Parking Provision

3.9 Parking demand will vary throughout the construction phase and an area of hardstanding will be set aside within the Site to accommodate parking for construction workers as required.

4.0 OBJECTIVES

4.1 The final CWTP will act in helping the environment by reducing the number of trips made to and from the construction site by private car. All staff during construction will be made aware of the measures included in the final CWTP so that benefits can be delivered and the number of car borne trips can be reduced by promoting car sharing and minibus use.

4.2 The final CWTP will aim to ensure all construction staff are aware of the advantages and potential for travel by more sustainable and environmentally friendly modes of transport through raising awareness and the provision of information identifying travel options and the necessary contact information.

4.3 The primary objectives which are of most relevance during the construction period of the proposed development are to:

- ensure that an appropriate package of measures is employed to encourage sustainable transport behaviour;
- reduce car usage (particularly single occupancy journeys);
- raise awareness of the sustainable transport measures serving construction site; and
- minimise the impacts of traffic on sensitive locations.

5.0 ROLES AND RESPONSIBILITIES

5.1 The Travel Plan Co-ordinator has a key role to play in managing, monitoring and implementing the individual measures within the plan.

5.2 A dedicated Travel Plan Co-ordinator should be appointed by the contractor to manage and deliver the Travel Plan. The Travel Plan Co-ordinators contact details will be supplied to NELC and Highways England.

5.3 The Travel Plan Co-ordinator will work closely with the Site manager who has overall responsibility for the Site.

5.4 The responsibilities of EP SHB Limited will primarily include:

- contractually committing the contractor to finalise the CWTP and to comply with the guidelines outlined within it.

5.5 The responsibilities of the Travel Plan Co-ordinator will primarily include:

- ensuring the obligations of contractors / sub-contractors related to the travel plan are adhered to;
- ensuring the travel plan notice board is located in a prominent position and that the information is kept up to date;
- monitoring parking to ensure no parking on any public highway leading to the Site;
- being based on the Site;
- acting as the key point of contact for issues related to construction traffic;
- reviewing cycle parking provision on a regular basis;
- engaging with local stakeholders;
- monitoring performance against the targets of the final CWTP; and
- implementing additional measures if not delivering on targets set.

5.6 The contractor will be responsible for managing how their workers travel to and from the Site. Given the limited number of parking spaces to be provided, the contractor's responsibilities will primarily include:

- providing a dedicated Travel Plan Co-ordinator to oversee the management and delivery of the CWTP;
- encouraging and promoting the use of sustainable transport measures included within the final CWTP; and
- organising crew minibuses to transport workers to and from the Site if appropriate.

6.0 TRAVEL PLAN MEASURES

General

6.1 To encourage sustainable travel behaviour by construction staff throughout the period of construction, it is important that an appropriate package of measures is introduced.

6.2 The measures should primarily aim to minimise the level of construction worker traffic and then whenever possible minimise the impact and disruption on the remaining traffic and local road network.

Proposed Measures to Reduce the Level of Traffic

Car Parking

6.3 The availability of car parking has a major influence on the means of transport people use for their journeys and is therefore an important travel plan measure in promoting sustainable travel to and from the Site.

6.4 It is proposed that sections of the car park will be gradually opened up, to make sure that the number of vehicles is controlled, and that sustainable transport options are promoted throughout the course of construction.

6.5 It is proposed that car parking at the Site will be monitored with restricted access.

6.6 In arranging the layout of the car park, it is proposed that the spaces closest to the construction site / offices will be designated for car sharers and minibuses.

Minibus

6.7 Given the restriction on the number of car parking spaces provided, contractors will be encouraged to provide minibuses for transporting their workers from key points of construction worker origin to the Site. This will have the benefit of reducing the number of vehicular trips on the local road network. For example many construction workers will find local accommodation at hotels and B&Bs. The locations of accommodation chosen by these workers are likely to provide suitable pick up locations for the minibus.

6.8 The contractor will be requested to encourage the use of common hotels and B&Bs by workers that are not from the local area, to encourage the use of shared transport modes such as minibus.

6.9 The contractor will be requested to provide minibuses and to organise where the minibuses will pick up workers and at what times if appropriate.

Car Sharing

6.10 The contractor will be encouraged to set up and manage a car share scheme for its workers. In construction projects, car sharing is often popular amongst workers due to the financial and social benefits it can provide. It is expected that some workers will be away from home and may welcome the companionship of other colleagues.

6.11 In emergencies, the Travel Plan Co-ordinator should provide a guaranteed lift home for car sharers. The provision should be extended for emergency situations for staff who cycle to the Site.

Cycling

6.12 Although cycling to the Site is likely to have limited appeal to construction site personnel (due to carrying PPE etc.) secure parking for bicycles will be provided within the temporary car park. Construction staff that cycle to work will also have access to shower and changing facilities and lockers to store clothing, cycle helmets etc.

On-Site Storage

6.13 An on Site storage facility is usually provided by contractors. Providing this facility would encourage construction workers to store their tools on Site. This would reduce the amount of tools they need to carry each day and would assist those workers who are considering cycling or car sharing as a potential travel mode.

Minimising the Impact on the Local Road Network

Signage Strategy

6.14 In order to ensure that construction vehicles unable to park on Site do not park on the public highway in the vicinity of the Site, clear and appropriate signage will be required on South Marsh Road. The signage will indicate no parking is permitted on the road and the potential penalties for those who do.

Staggered Working Hours

6.15 It is understood that the start and finishing hours of contractors may vary according to discipline. This should help to ensure that the flow of construction worker traffic is either outside of, or spread across the AM and PM Peak, thereby minimising the impact on any particular time period.

Travel Plan Communication

6.16 Details of the sustainable transport options available for accessing the Site will be provided in an information pack and presented to construction workers prior to them starting work at the Site. This will raise awareness of the initiatives being implemented and also allow staff to register an interest in the schemes. The contractor will be responsible for ensuring all construction workers receive the information pack prior to starting work on Site.

6.17 The contractor will be encouraged to ensure that all construction workers receive an introductory briefing on the travel plan when they commence work. This will be incorporated into the Site safety briefing and will include the provision of the following information:

- designated access and exit routes to the Site;
- details of sustainable transport measures available for accessing the Site; and
- parking arrangements.

6.18 The provision of such a meeting should ensure that each worker is fully aware of the CWTP and the respective sustainable transport measures contained within it.

7.0 TARGETS

7.1 Without management, construction industry standards suggest a typical vehicle occupancy of 1.35 which would result in 555 vehicles arriving and departing the Site per day at the peak of construction.

7.2 One of the prime objectives of an active CWTP is to set clear and realistic targets. The main target to be achieved during the construction of the Proposed Development is as follows:

- to achieve a car occupancy of two workers per vehicle over the duration of the construction project. Up until handover of the Proposed Development, no more than one car or van should be parked on Site for every two people registered on Site per day.

7.3 The Travel Plan Co-ordinator will monitor parking utilisation at the Site reviewing the split between cars, vans and minibuses. Ensuring that this target is not exceeded is dependent on the contractor encouraging its workers to travel to and from the Site by sustainable options provided in the final CWTP. Not meeting the target will result in the implementation of additional measures to ensure the travel plan stays on course to meet its overall objectives.

7.4 This target represents a 32% reduction in vehicles arriving at the Site when compared to the industry standard.

8.0 MONITORING

8.1 Monitoring the final CWTP will be central to ensuring its aims are delivered in practice throughout the construction timeframe. Effective monitoring should guarantee that failures or changing conditions are identified at the earliest point and that remedial action (i.e. identifying additional measures, providing incentives, marketing campaign to promote the CWTP) can be taken, to ensure that the plan stays on course to meet its overall objectives.

8.2 The Travel Plan Co-ordinator will be responsible for monitoring the final CWTP, to ensure an efficient and effective execution of the measures, and to refine the measures where necessary to cope with the changes in demand over the life of the construction project.

8.3 An important part of the monitoring strategy will be obtaining feedback from employees of the Principal Contractor, North East Lincolnshire Council and local residents regarding any issues with construction worker traffic. The appointment of a Travel Plan Co-ordinator will ensure that an appropriate person is available and can react to such feedback.

8.4 Furthermore, employees will be given the chance to offer their suggestions and ideas via a suggestion box / an informal discussion with the Travel Plan Co-ordinator, while review meetings will be held at regular intervals with construction worker representatives to ensure any issues are dealt with effectively.

8.5 The Travel Plan Co-ordinator will monitor parking utilisation at the Site to review the split of vehicles between cars, vans and minibuses. It is anticipated that monitoring will be undertaken on a regular basis with a six monthly monitoring report prepared by the Travel Plan Co-ordinator and submitted to North East Lincolnshire Council's Travel Plan Officer. In addition, monitoring of the local road network will be undertaken to ensure no parking on the public highway leading to the Site.

ANNEX 26: FRAMEWORK CONSTRUCTION TRAFFIC MANAGEMENT PLAN

EP SHB

South Humber Bank Energy Centre

South Marsh Road, Stallingborough, DN41 8BZ

Framework Construction Traffic Management Plan

Applicant: EP SHB Limited
Date: December 2018

DOCUMENT HISTORY

Revision	1		
Author	Jonathan Scott		
Signed		**Date**	December 2018
Approved By	Peter Firth		
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CONTENTS

1.0 INTRODUCTION 1
Overview 1
2.0 BACKGROUND 2
Site Description 2
Development Description 2
Construction Programme 2
Construction Phase Site Worker Traffic Generation 3
Construction Phase HGV Traffic Generation 3
3.0 MEASURES TO CONTROL HGV ROUTING AND IMPACT 4
Designated Route to Site 4
Construction Programme / Site Hours 4
Wheel Cleaning Facility 5
Advanced Warning Signs 5
Contact Name and Number 5
4.0 ABNORMAL INDIVISIBLE LOADS 6
5.0 MONITORING 7
6.0 CONSULTATION 8

TABLES

TABLE 2.1: CONSTRUCTION HGV MOVEMENTS 3

FIGURES

FIGURE 2.1: SITE LOCATION 2
FIGURE 3.1: HGV DESIGNATED ROUTE PLAN 4

1.0 INTRODUCTION

Overview

1.1 This Framework Construction Traffic Management Plan (CTMP) has been prepared to investigate the likely generation and routing of HGV traffic associated with the construction of the South Humber Bank Energy Centre, Stallingborough, North East Lincolnshire.

1.2 The Proposed Development Site ('the Site') is located to the north of the A180 and is accessed via the A1173, Kiln Lane, Hobson Way and South Marsh Road.

1.3 The construction site will generate a volume of HGVs delivering plant and machinery, concrete and aggregates, steelwork, bricks and block work and other general construction materials. A number of abnormal indivisible loads (AILs) will also be generated by the construction of the Proposed Development which will need a special strategy for delivery.

1.4 This document is a Framework CTMP. The appointed contractor will be required to use this framework document as the starting point for the final CTMP.

1.5 Following this introduction the Framework CTMP is structured as follows:

- Section 2 describes the development proposals including the construction programme and the HGV generation;
- Section 3 describes the proposed measures to control HGV routing and impact;
- Section 4 describes the proposed AIL route;
- Section 5 provides the monitoring strategy; and
- Section 6 describes the planned liaison with key stakeholders.

2.0 BACKGROUND

Site Description

2.1 The Site of the Proposed Development is located off South Marsh Road, Stallingborough, North East Lincolnshire approximately 5 km south east of Immingham. The Main Development Area is located on vacant land within the site boundary of the applicant's existing South Humber Bank Power Station. Its location in relation to the surrounding area and the strategic road network is shown in Figure 2.1.

2.2 South Marsh Road provides highway access to the existing South Humber Bank Power Station also to Synthomer (UK) Limited and the NEWLINCS Integrated Waste Management Facility, both located north of the Site.

Figure 2.1: Site Location

Development Description

2.3 The Proposed Development is an energy from waste power station which will generate energy through the controlled combustion of refuse derived fuel (RDF) and with a maximum gross electrical output of 49.9 MW.

Construction Programme

2.4 Subject to being granted planning consent, it is anticipated that construction could commence in 2019 and last circa 36 months. The facility is programmed to operational in 2022.

Construction Phase Site Worker Traffic Generation

2.5 For construction worker traffic generations and the proposed measures to be implemented to encourage sustainable travel modes, please refer to the Framework Construction Workers Travel Plan.

Construction Phase HGV Traffic Generation

2.6 The volume of HGVs on the network is predicted to be at its maximum of 412 two-way daily vehicle movements (206 in and 206 out) during Q3 2019 of construction and is associated with the possible removal of the top 2 metres of ground within the Main Development Area and replacing with imported compacted engineering fill to improve bearing capacity. During the remainder of the construction period HGV movements will vary between 18 and 116 daily two-way movements as shown in Table 2.1.

Table 2.1: Construction HGV Movements

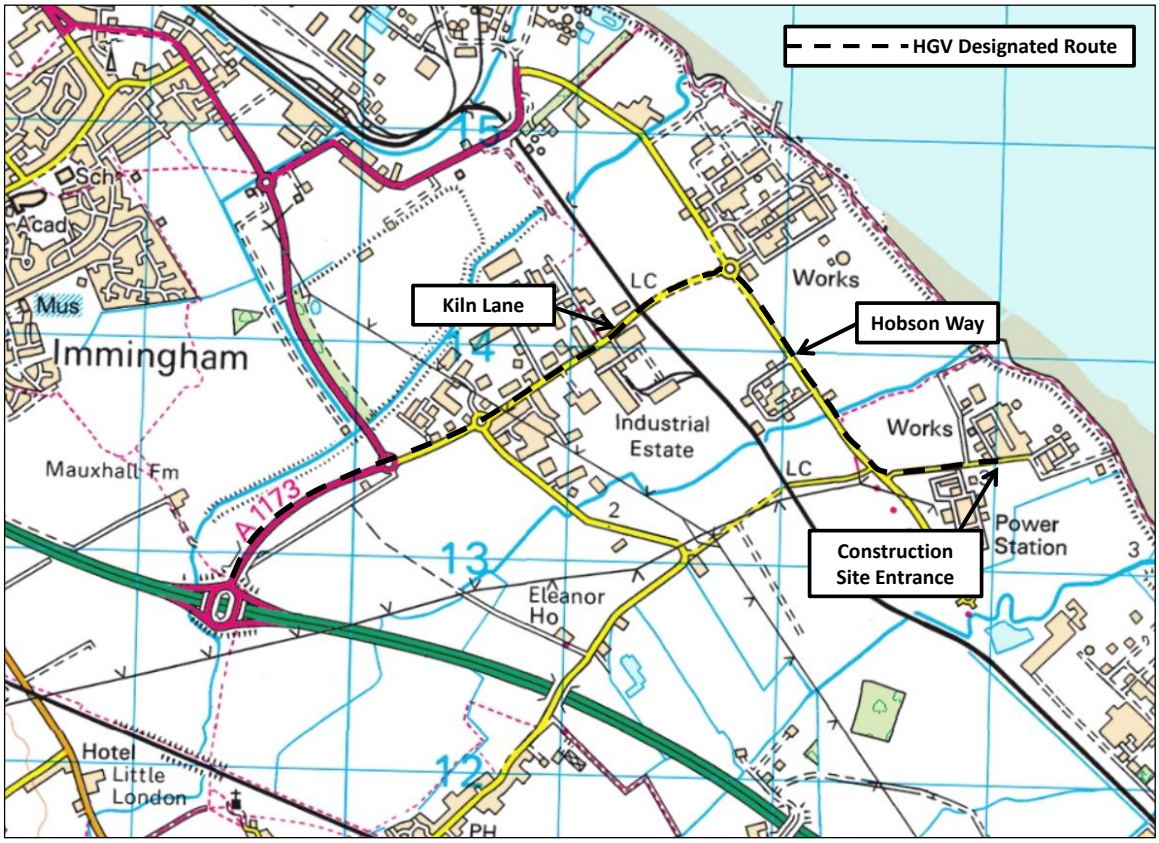
YEAR OF CONSTRUCTION	DAILY TWO-WAY HGV MOVEMENTS
Q3 2019	412
Q4 2019	80
Q1 2020	94
Q2 2020	108
Q3 2020	116
Q4 2020	70
Q1 2021	64
Q2 2021	52
Q3 2021	34
Q4 2021	18
Q1 2022	32
Q2 2022	26

3.0 MEASURES TO CONTROL HGV ROUTING AND IMPACT

Designated Route to Site

3.1 It is proposed that all construction HGVs associated with the construction of the Proposed Development will arrive and depart the Site via the construction site entrance located off South Marsh Road. All HGVs associated with the construction of the Proposed Development will be required to arrive and depart the Site towards the A180 via Hobson Way, Kiln Lane and the A1173. The designated HGV routing plan is shown in Figure 3.1 below.

Figure 3.1: HGV Designated Route Plan



3.2 The HGV routing plan will be distributed to all drivers during their induction. It will be a condition of contract between EP SHB Limited and the appointed contractor to ensure that all HGV deliveries to the Site are instructed to use the designated route to access and egress the construction site. Sanctions will be put in place to deal with non-compliance.

Construction Programme / Site Hours

3.3 Construction at the Site is programmed to be carried out over a 36 month period.

3.4 In order to minimise the disruption to the public the standard construction hours will be restricted to the following:

- Monday – Saturday: 07:00 – 19:00

3.5 It is proposed that HGV deliveries will be made during these hours. Any construction activities outside these standard working hours will be limited to non-noisy activities or activities within buildings to avoid disturbance to local residents such as the delivery of abnormal loads.

Wheel Cleaning Facility

3.6 In the interests of highway safety, wheel cleaning facilities should be installed on-site from the start of the construction phase. All HGVs leaving the construction site should be required to wheel wash when exiting the Site. The need for this measure should be periodically reviewed throughout the construction period.

Advanced Warning Signs

3.7 Advance warning signage will be erected on South Marsh Road prior to the construction site entrance to warn drivers of the construction access ahead and the potential for slow turning vehicles. An example of the proposed signage is shown below.

3.8 The appointed contractor will be required to maintain all signage.

Contact Name and Number

3.9 A 24 hour contact name and number will be established by the contractor and displayed on a notice board at the construction site entrance points.

4.0 ABNORMAL INDIVISIBLE LOADS

4.1 A number of AILs will need to be brought into the construction site over the construction period.

4.2 The ports of Immingham, Hull and Goole are situated near to the Proposed Development. Detailed consideration will be given to the appropriate port and AIL routes during detailed design once final details of the size and origin of loads are known.

4.3 Abnormal Loads Officers at Highways England and the Local Highway Authority will be consulted at the earliest opportunity on the programme and plan for the delivery of AILs.

4.4 The public will also be made aware of when abnormal load deliveries are taking place via social media, local radio and the local press.

5.0 MONITORING

5.1 A programme of monitoring is recommended to assess the effectiveness of the measures included in the final CTMP to control the routing and impact of construction HGVs. A monitoring programme will also provide a firm basis upon which to answer queries and complaints regarding the HGV traffic impact during construction. A 24 hour contact name and number will be established by the contractor and displayed at the Site.

5.2 The appointed contractor will maintain gatehouse records of construction HGVs entering and leaving the Site and they will be available to North East Lincolnshire Council on request.

5.3 Should any complaints be raised by members of the public with regards to construction HGVs not using the dedicated HGV route to the Site, gatehouse records will be used to identify the offending HGV involved and appropriate sanctions put in place to ensure no repeat events.

6.0 CONSULTATION

6.1 A formal process of liaison between all relevant parties is proposed to:

- establish a channel of communication between the contractor and the regulating authorities;
- make all interested parties aware of the results of monitoring of the final CTMP;
- provide a route by which any complaints can be communicated and dealt with;
- provide a route through which transport related issues can be identified and dealt with; and
- provide prior notice of significant events e.g. delivery of abnormal loads.

6.2 It is proposed that a short written report is prepared on behalf of the contractor on a six monthly basis and circulated to all key stakeholders.

6.3 Any comments generated by the report will be circulated to all key stakeholders and a meeting may be held if required.