



## Appendix 19.1 Shadow flicker Graphs and Tables

This appendix presents a number of graphs and tables relating to the shadow flicker assessment for Beaw Field Wind Farm.

**Table 1: Locations for Shadow Flicker Modelling & Corresponding Turbine Bearings and Distance** - *this table presents the location of dwellings within 11 rotor diameters of the turbines and then identifies the distance and bearing of each turbine from that house location.*

**Figure 1: Variation in Sunrise and Sunset Times and Daylight Hours over a Year** – *this graph presents the sunrise and sunset times throughout the course of a year. Also shown is the duration of daylight throughout the year.*

**Figure 2: Monthly Daylight and Sunshine Hours** – *this graph shows monthly averages for daylight and sunshine (as recorded by the Met office). The ratio of these two figures is given on the secondary axis.*

*The following figures display the modelled output of times when shadow flicker might be expected to occur during the course of the year in respect to the named house:*

**Figure 3: Shadow Times on House 1 from Turbines T9 and T12**

**Figure 4: Shadow Times on House 2 from Turbines T7, T9 and T12**

**Figure 5: Shadow Times on House 3 from Turbines T9 and T12**

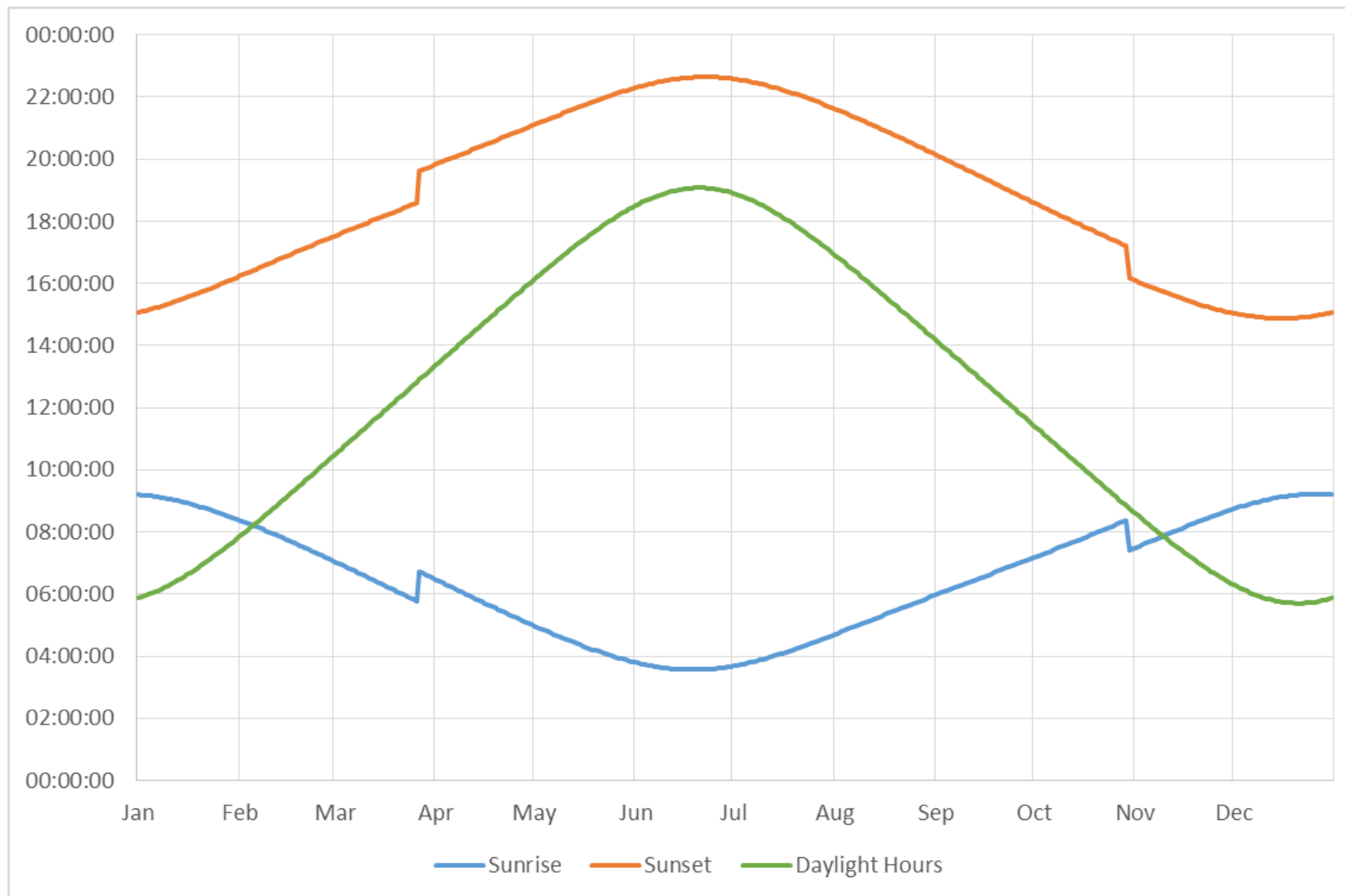
**Figure 6: Shadow Times on House 4 from Turbines T9 and T12**



			Distance & Bearing to Turbine																																	
House	Easting	Northing	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17																	
			m deg	m deg	m deg	m deg	m deg	m deg	m deg	m deg	m deg	m deg	m deg	m deg	m deg	m deg	m deg	m deg	m deg	m deg																
1	452663	1183263	2242	273	2045	266	4579	264	2056	256	4380	253	4902	247	4499	240	4884	237	1022	221	4517	220	4935	228	1090	206	4483	206	4942	218	4823	198	2412	210	2032	189
2	452625	1183152	2482	276	4974	269	4533	268	4994	259	4344	257	4826	250	1113	244	4793	240	914	223	4408	222	4834	230	973	207	4367	207	4834	219	4706	198	4997	211	4947	188
3	452755	1183028	2326	278	2402	272	4662	272	2402	263	4422	263	4943	255	4487	252	4850	245	930	234	4445	230	4862	235	937	217	4326	214	4826	225	4635	203	4964	216	4848	193
4	452905	1182984	2484	279	2254	273	4844	273	2246	264	4567	265	2047	257	4349	256	4970	248	1034	241	4507	235	4964	239	1003	226	4382	220	4905	229	4664	209	2024	220	4844	198
5	451773	1180560	3403	335	2780	336	2619	345	2458	333	2340	349	2446	336	2404	356	4820	338	4944	7	4552	357	4513	339	4772	14	4393	10	4244	345	1023	19	888	349	907	40
6	451823	1180356	3340	336	2987	337	2829	345	2663	334	2550	349	2353	337	2344	355	2028	338	2439	5	4759	355	4722	340	4964	11	4588	7	4424	346	4204	14	1098	349	1045	31
7	451911	1180310	3388	335	3064	336	2897	344	2744	333	2613	347	2434	336	2366	353	2404	337	2479	2	4844	353	4797	337	4992	8	4626	3	4489	343	4232	9	4463	345	1044	25
8	452212	1180304	3534	330	3205	331	3004	338	2897	328	2700	341	2574	330	2427	346	2245	330	2494	354	4882	344	4937	329	4979	359	4642	353	4640	333	4225	355	4279	332	961	9
9	452283	1180276	3594	329	3264	330	3054	337	2959	327	2750	340	2635	329	2472	345	2306	329	2230	353	4930	342	4998	328	2009	357	4680	351	4668	331	4264	352	4338	330	981	4
10	452347	1180261	3639	329	3340	329	3094	336	3007	326	2787	339	2682	328	2504	343	2352	327	2254	351	4965	340	2045	327	2028	355	4706	349	4743	329	4286	349	4384	328	993	1
11	452390	1180265	3659	328	3328	329	3108	335	3028	325	2799	338	2704	327	2513	342	2372	326	2257	350	4977	339	2066	326	2028	354	4744	347	4732	328	4294	348	4405	326	990	358
12	451767	1180293	3345	337	3024	338	2876	346	2697	336	2602	351	2394	339	2370	357	2067	341	4279	16	1128	32	3345	337	3024	338	2876	346	2697	336	2602	351	2394	339	2370	357
13	451879	1180244	3435	335	3112	337	2952	345	2789	334	2674	348	2478	337	2428	354	2453	338	4302	10	1118	25	3435	335	3112	337	2952	345	2789	334	2674	348	2478	337	2428	354
14	451928	1180202	3493	335	3170	336	3005	344	2848	334	2722	348	2536	336	2476	353	2240	337	4336	8	1136	22	3493	335	3170	336	3005	344	2848	334	2722	348	2536	336	2476	353

**Table 1: Locations for Shadow Flicker Modelling & Corresponding Turbine Bearings and Distance**

*Note- This table presents the distance and bearing of each turbine from each house. The highlighted cells indicate turbines that lie within 11 rotor diameters of the respective house. This does not indicate that the turbine will necessarily cause shadow flicker effects at the property as further detailed modelling is required to establish whether this is the case. Location of turbines and distance to houses are shown in Figure 19.1.*



**Figure 1: Variation in Sunrise and Sunset Times and Daylight Hours over a Year**

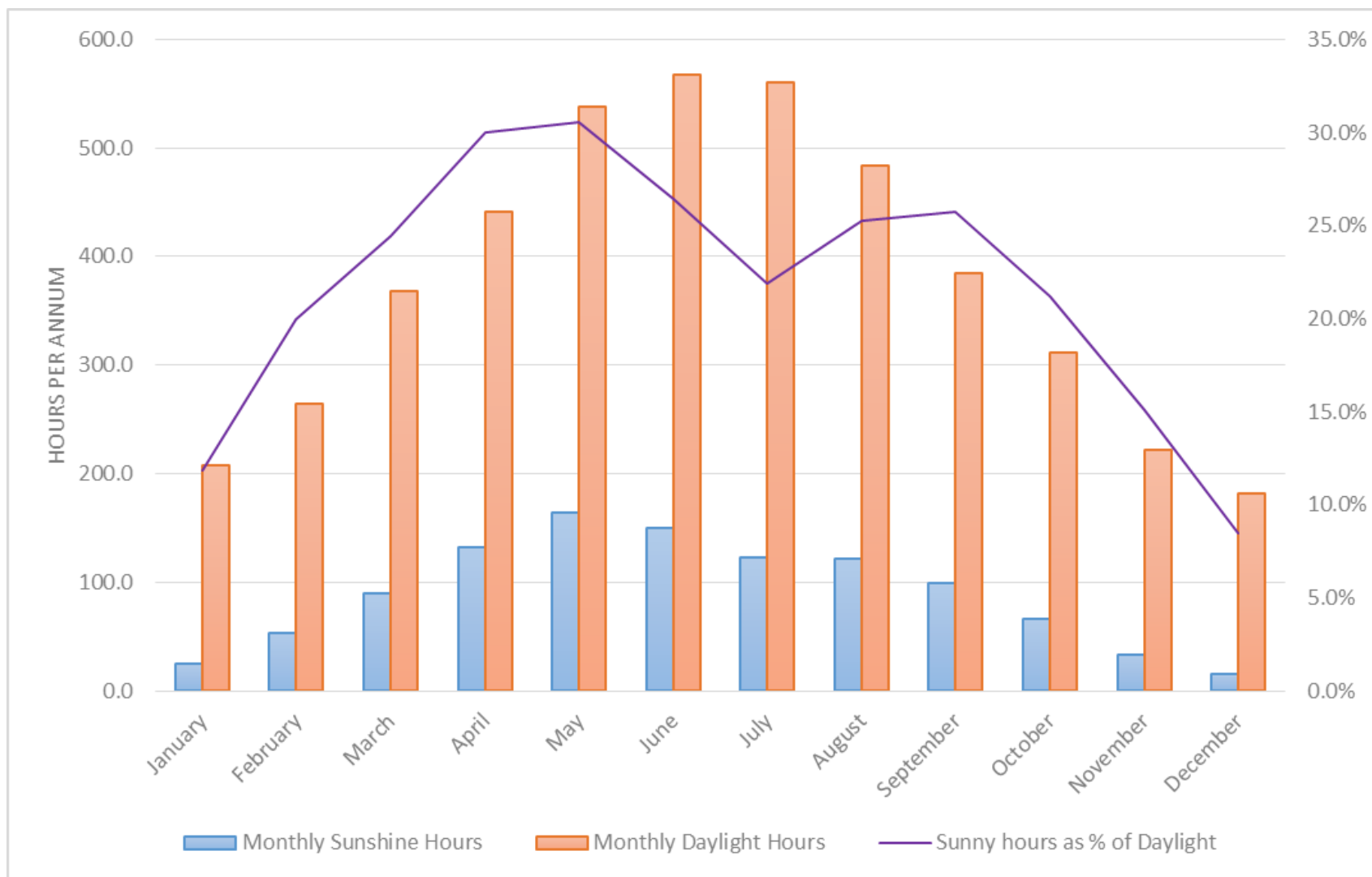
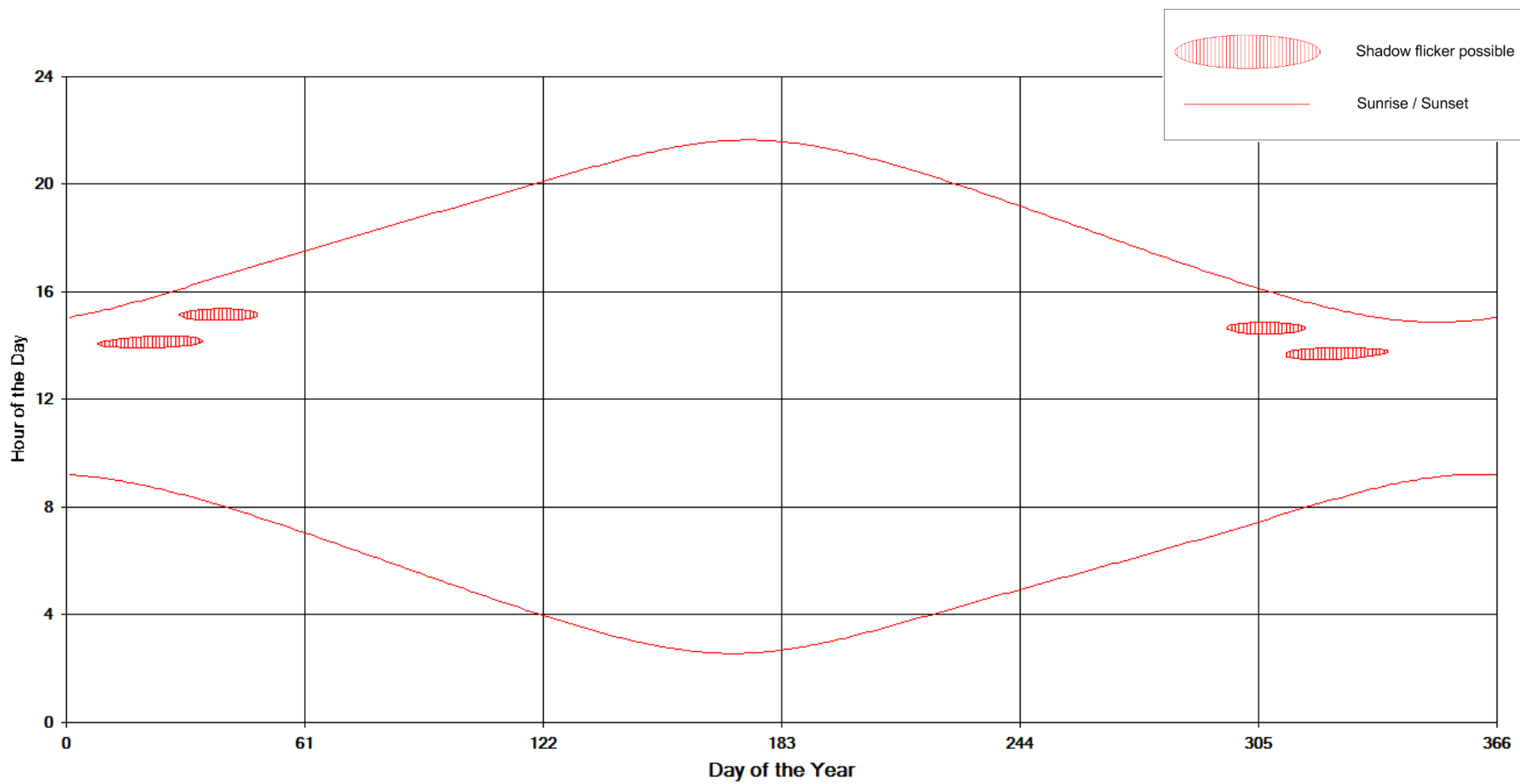
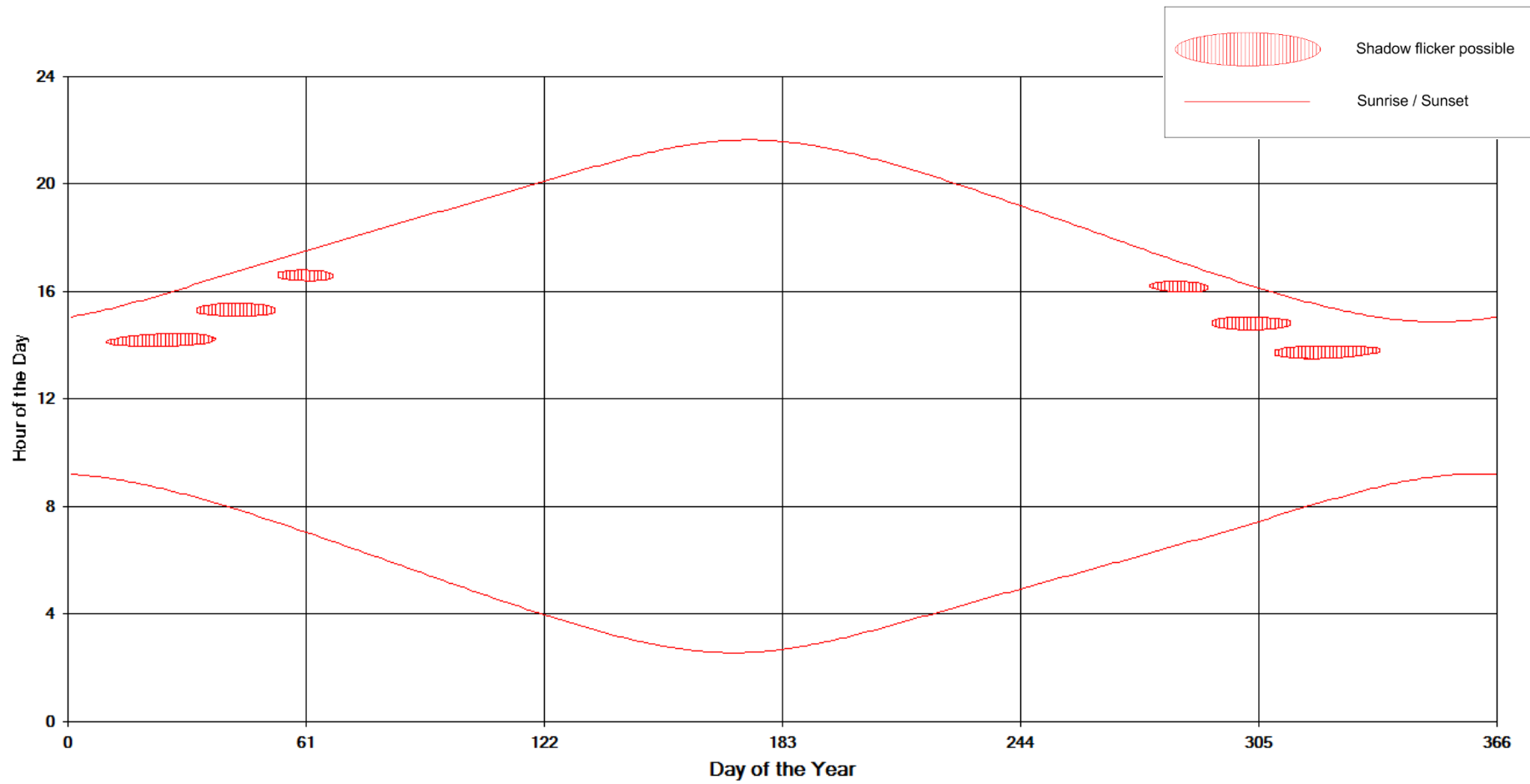


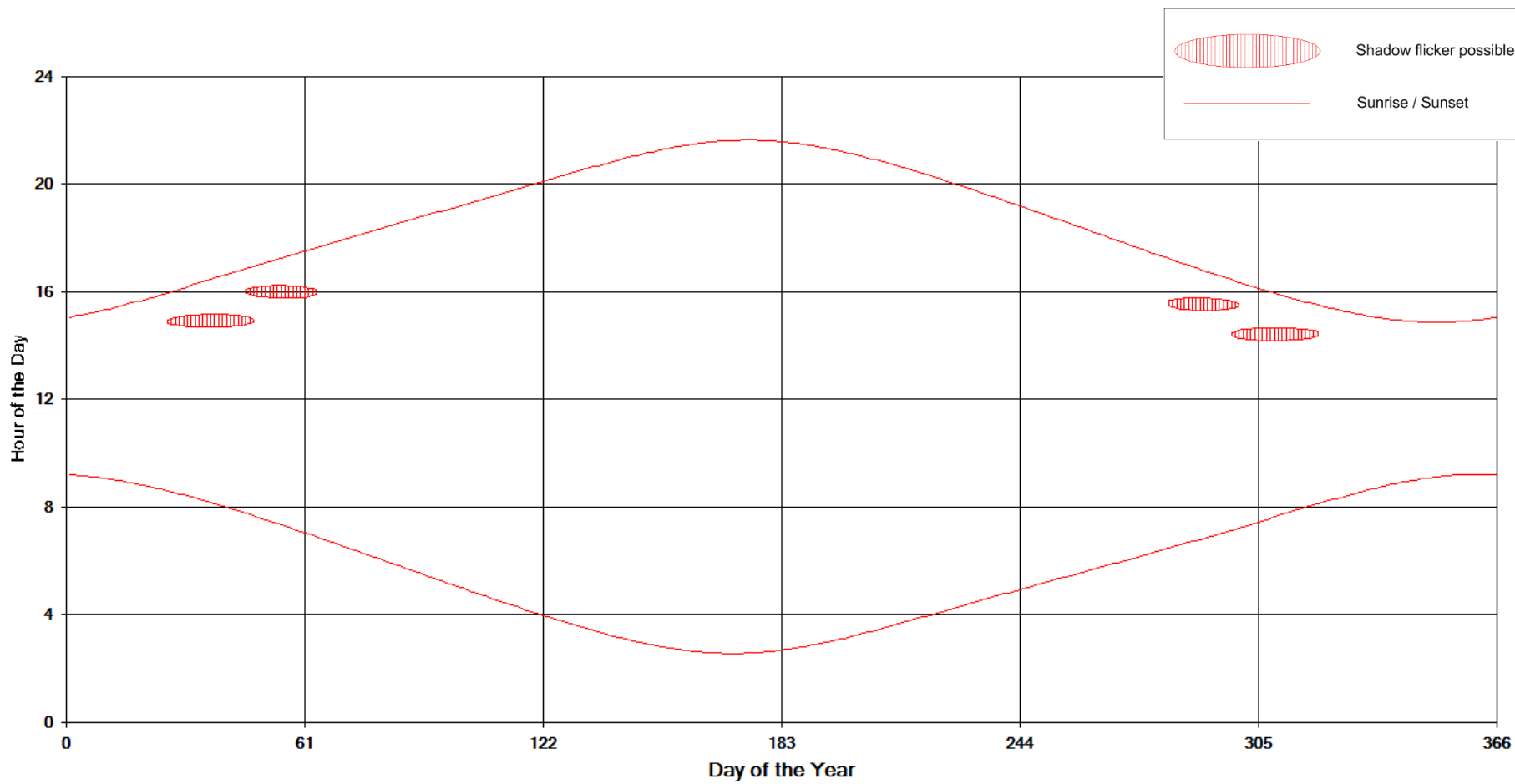
Figure 2: Monthly Daylight and Sunshine Hours



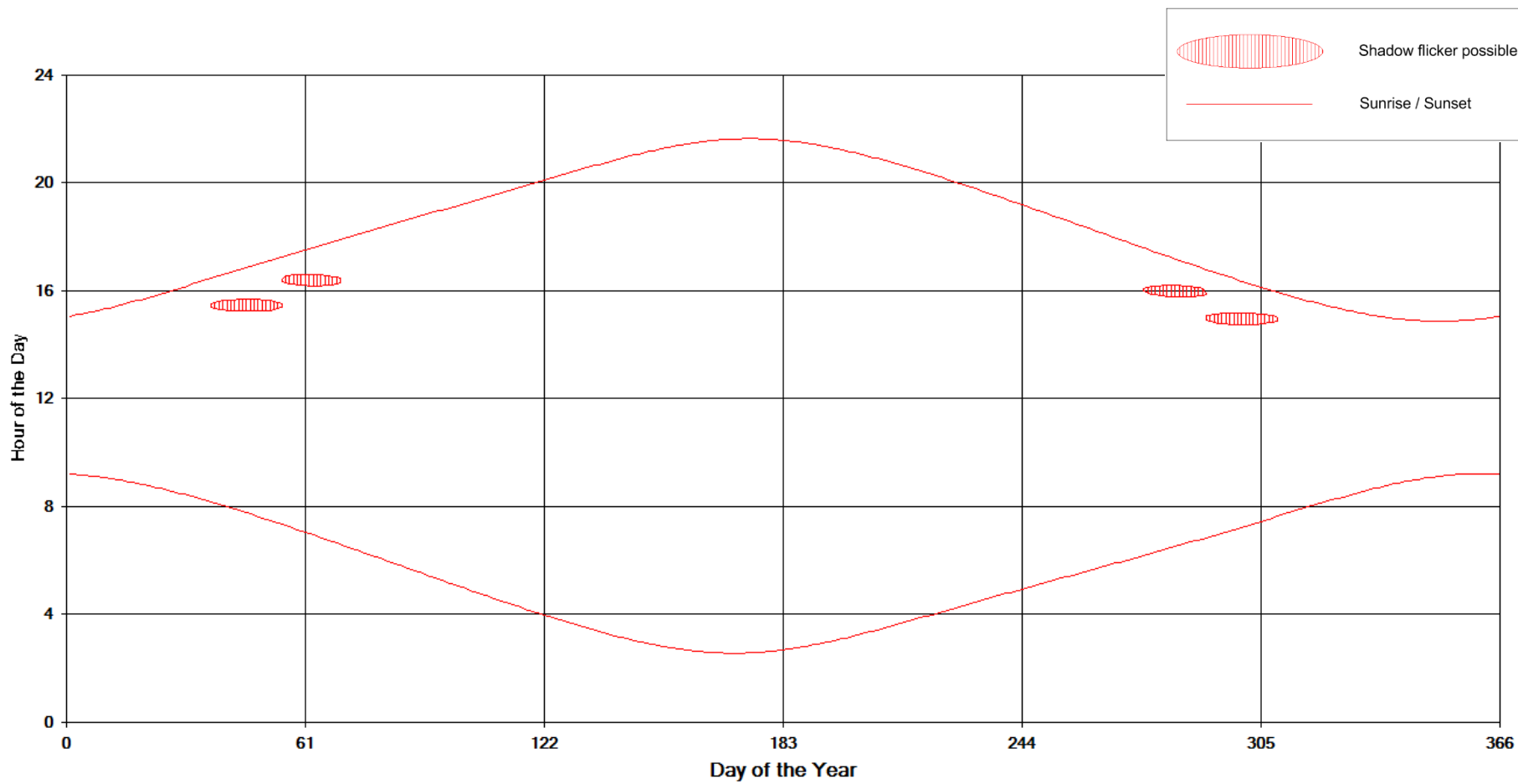
**Figure 3: Shadow Times on House 1 from Turbines T9 and T12**



**Figure 4: Shadow Times on House 2 from Turbines T7, T9 and T12**



**Figure 5: Shadow Times on House 3 from Turbines T9 and T12**



**Figure 6: Shadow Times on House 4 from Turbines T9 and T12**