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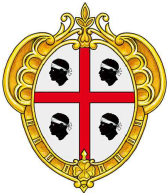
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REGIONE SARDEGNA



PROVINCIA DI ORISTANO



PROVINCIA DEL SUD SARDEGNA



COMUNE DI USELLUS



COMUNE DI ASSOLO



COMUNE DI VILLA SANT'ANTONIO

PROGETTO

PROGETTO DEFINITIVO PER LA REALIZZAZIONE DI UN PARCO EOLICO COMPOSTO DA 10 AEROGENERATORI DA 4.5 MW, PER UNA POTENZA COMPLESSIVA DI 45 MW SITO NEI COMUNI DI USELLUS (OR), VILLA SANT'ANTONIO (OR) E ASSOLO (OR) CON OPERE DI CONNESSIONE NEI COMUNI DI USELLUS (OR), VILLA SANT'ANTONIO (OR), ASSOLO (OR), ALBAGIARA (OR), SENIS (OR), NURECI (OR) E GENONI (SU)

ELABORATO

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## 1 INTRODUZIONE ALLO SHADOW FLICKERING

Lo shadow flickering (letteralmente ombreggiamento intermittente) è l'espressione comunemente impegnata per descrivere l'effetto stroboscopico causato dal passaggio delle pale di una o più turbine eoliche attraverso i raggi del sole rispetto a recettori sensibili posti nelle loro immediate vicinanze. Il periodico cambiamento dell'intensità della luce in prossimità dei recettori sensibili deve essere calcolato in modo da determinare il potenziale periodo di ombreggiamento generato dalle turbine. Il fenomeno generato si traduce in una variazione alternativa dell'intensità luminosa, che a lungo andare, può provocare fastidio agli occupanti delle abitazioni, in seguito recettori, le cui finestre risultino esposte al fenomeno.

**Nella fattispecie i generatori utilizzati raggiungono una velocità di rotazione massima di 12 rpm quindi ampiamente inferiore di quelle ritenute fastidiose per la maggioranza degli individui.**

La lunghezza dell'ombra, generata dal passaggio delle pale attraverso i raggi del sole, dipende non solo dall'altitudine, ma dalla posizione del sole.

Sebbene il fenomeno possa essere percepito anche all'esterno dalle abitazioni, esso risulta evidente e fastidioso in quegli ambienti con finestre rivolte verso le ombre. L'intensità del fenomeno è definita come la differenza di luminosità che si percepisce in presenza ed in assenza di flickering in una data posizione.

In generale si può affermare che:

- Avendo le pale una forma rastremata con spessore che cresce verso il mozzo, il fenomeno risulterà tanto più intenso quanto maggiore sarà la porzione di disco solare coperta dalla pala stessa e quanto minore la distanza dal recettore.
- L'intensità del flickering sarà minima quando l'ombra prodotta è generata all'estremità delle pale.
- Maggiori distanze tra generatore e ricettore determinano ombre meno nette, in tal caso l'effetto risulterà meno intenso e distinto.
- La presenza di schermature locali (come alberi interposti tra il recettore e la sorgente d'ombra) favorisce una diminuzione dell'effetto.

Il calcolo del potenziale periodo di ombreggiamento consiste nel determinare, attraverso software specifici, le ore di intermittenza annue cui ciascun recettore è sottoposto. Queste informazioni possono essere utilizzate per progettare e gestire la centrale eolica in modo da ridurre al minimo il disturbo causato alle persone.

Le condizioni per cui si formi l'ombra, e il recettore sia interessato da quest'ultima sono mostrate in Figura 1. Da questa figura si evince che, affinché il recettore sia interessato dall'ombra, si necessita che quest'ultimo abbia una finestra in direzione del campo eolico, il sole sia relativamente basso nel cielo e soprattutto lo stesso si trovi posizionato a valle dell'asse sole turbina.

L'analisi dello studio dell'ombreggiamento dei parchi eolici ha lo scopo di ridurre al minimo il disturbo causato dalle turbine ai recettori sensibili e consente di fornire al controller delle turbine o allo SCADA system la data e le ore in cui lo shadow flicker si manifesta così da poter, in casi particolarmente disagiati, fermare le turbine durante l'acutizzarsi del fenomeno.

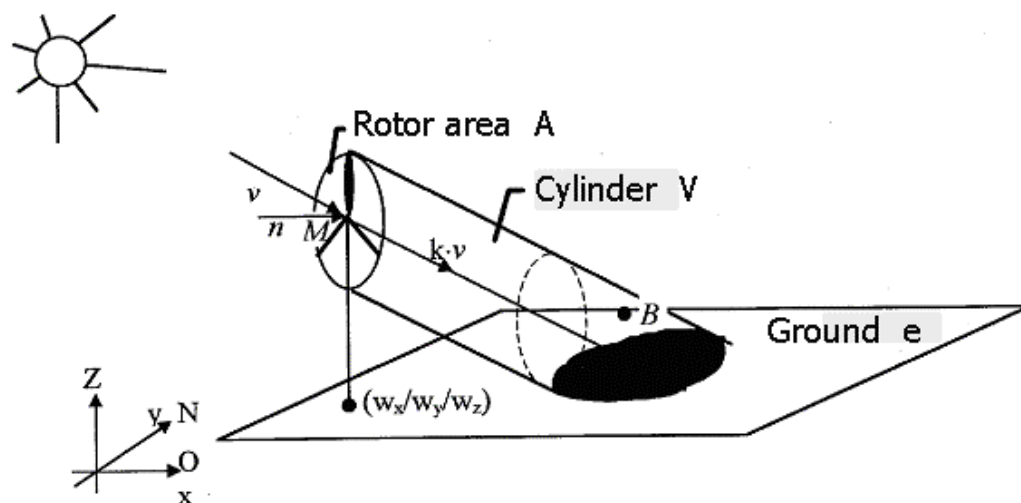


Figura 1 – Proiezione della turbina sul terreno

La figura successiva riporta l'evoluzione annuale dell'ombra di una turbina considerando il caso peggiore, che si manifesta nel momento in cui una pala sia sempre in rotazione intorno al mozzo, e orientate sempre ortogonalmente al sole durante la sua evoluzione giornaliera. Come si può evincere dal grafico, le ore annue di ombra sono sempre minori con l'aumentare della distanza dalla torre secondo una particolare geometria dettata dalla posizione geografica; da osservare che l'ombra arriva a proiettarsi anche sino ad una distanza di 1000m, anche se solo per pochi minuti all'anno.

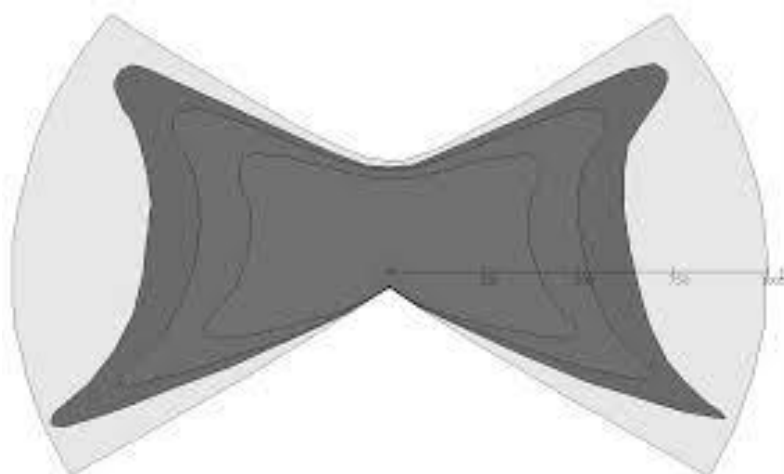


Figura 2 - Evoluzione annuale tipo dell'ombra di una pala

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## 2 PRINCIPALI PARAMETRI RICHIESTI PER IL CALCOLO DELLO SHADOW FLICKERING E SOFTWARE UTILIZZATI

I pacchetti software impegnati per la progettazione di un parco eolico contengono moduli specifici per il calcolo e l'analisi del fenomeno di flickering. I parametri principali richiesti dai modelli di calcolo per la determinazione degli effetti dovuti allo shadow -flickering del parco eolico sono:

1. La posizione delle turbine (coordinate x, y, z);
2. L'altezza al mozzo e il diametro del rotore della turbina scelta;
3. La posizione dei recettori sensibili (coordinate x, y, z);
4. Le dimensioni delle finestre dei recettori ed il loro orientamento;
5. L'orientamento rispetto al sud e l'angolo di tilt delle finestre dei recettori;
6. La posizione geografica (latitudine e longitudine), il fuso orario e l'ora legale della zona di interesse;
7. Un modello di simulazione contenente informazioni riguardo l'orbita della terra e la rotazione rispetto al sole;
8. Statistica di probabilità mensile di presenza del sole;
9. Un modello digitale del terreno;
10. L'angolo minimo del sole rispetto all'orizzonte da cui calcolare l'ombreggiamento;
11. La distanza massima di estensione dell'ombra dietro la turbina;
12. Percentuale di copertura del sole dalla pala;
13. Intervallo di tempo per il calcolo dell'ombreggiamento;
14. Scelta della rappresentazione del sole come "punto" o come "disco";

Questi parametri vengono usati per determinare l'accuratezza del calcolo e/o per specificare alcune restrizioni ai calcoli nel caso dei parametri relativi ai recettori.

I software utilizzati per il calcolo dello shadow -flickering possono essere svariati.

Per questo studio viene considerato il software WindFarm Release 5. Questo software, tramite il modulo "*shadow flickering*", consente di creare mappe per l'intermittenza dell'ombra e di analizzare l'intermittenza in punti specifici (recettori) attraverso la generazione di isolinee.

Nel presente studio verrà analizzato per primo il **worst-case** (il caso peggiore) impostando tutti i parametri del software su tale condizione. Il caso peggiore si ottiene considerando innanzitutto assimilando **il rotore** ad una vera e propria sfera con un off-set tra asse e rotore, **il sole** come disco e con l'asse del rotore allineato col sole e col punto recettore. Statisticamente questa potrebbe non essere la migliore rappresentazione della realtà, in quanto la distribuzione del vento, nei diversi settori della rosa dei venti, fa sì che il rotore non sia sempre orientato in corrispondenza dei recettori e soprattutto non sia sempre in movimento. Tali aspetti ci posizionano in un caso ideale di massima sicurezza ma comunque mai verificabile date le variazioni costanti della direzione del vento e le variazioni di velocità e calma della turbina nell'arco di una singola giornata ed ora.

### 3 ASPETTI NORMATIVI PER IL CALCOLO DELLO SHADOW FLICKERING

Il presente documento si riferisce al progetto di un parco eolico nel Comune di Usellus, Villa Sant'antonio e Assolo (OR) nel territorio della Regione Sardegna. La normativa Regionale in materia di calcolo dell'ombreggiamento provocato da turbine eoliche risulta essere estremamente carente, anche la normativa nazionale presenta le stesse lacune.

Pertanto, affinché sia possibile effettuare uno studio dello Shadow-Flickering abbastanza preciso, la normativa italiana dovrebbe fornire i seguenti parametri principali:

- L'angolo minimo del sole rispetto all'orizzonte da cui calcolare l'ombreggiamento;
- La distanza limite fino a cui calcolare l'ombreggiamento dalla turbina;
- Percentuale di copertura del sole dalla pala;
- Intervallo di tempo per il calcolo dell'ombreggiamento;
- Limiti accettabili di ombreggiamento annuale.

Sulla base di quanto descritto, si evidenzia la carenza della Normativa Italiana e, nel caso in esame, per la definizione dei parametri necessari al calcolo dell'ombreggiamento. Pertanto, si utilizzerà un criterio quantitativo basato sulla determinazione di percentuali di ombreggiamento rispetto alle ore giornaliere e di luce nell'arco annuale.

Il presente studio prenderà in considerazione il lay-out dell'impianto con turbine di nuova generazione con diametro da 163 m, un'altezza al mozzo di 113 m e un'altezza complessiva di 194,5 metri.

Di seguito si riportano le coordinate in WGS-84 dei singoli aerogeneratori:

ID WTG	Coordinate WGS 84 UTM 32		Quote e misure				
	Long. EST (m)	Long. NORD (m)	Altitudine (m s.l.m.)	Modello WTG	Altezza mozzo (m)	Altezza TIP (m)	Altezza TIP (m s.l.m.)
WTG 01	488830	4407252	233	Vestas 4.5 MW - 163	113	194,5	427,5
WTG 02	488815	4408527	270	Vestas 4.5 MW - 163	113	194,5	464,5
WTG 03	488007	4408702	276	Vestas 4.5 MW - 163	113	194,5	470,5
WTG 04	487385	4408840	297	Vestas 4.5 MW - 163	113	194,5	491,5
WTG 05	487912	4409654	281	Vestas 4.5 MW - 163	113	194,5	475,5
WTG 06	491097	4408574	207	Vestas 4.5 MW - 163	113	194,5	401,5
WTG 07	487415	4410455	367	Vestas 4.5 MW - 163	113	194,5	561,5
WTG 08	490966	4409049	218	Vestas 4.5 MW - 163	113	194,5	412,5
WTG 09	487985	4410359	290	Vestas 4.5 MW - 163	113	194,5	484,5
WTG 10	490327	4409525	230	Vestas 4.5 MW - 163	113	194,5	424,5

Tabella 1– Coordinate in WGS-84 degli aerogeneratori

Pertanto, per lo studio dell'effetto di ombreggiamento si utilizzeranno i parametri definiti nel prossimo capitolo, che oltretutto, come spiegato successivamente in dettaglio, risultano essere tra i più restrittivi che si possano considerare.

#### 4 MODELLO CALCOLO DEGLI EFFETTI DI SHADOW FLICKERING DEL PARCO EOLICO

L'analisi si basa sull'impegno di un modello digitale del terreno per la simulazione dell'orografia del suolo.

I parametri utilizzati per il calcolo e inseriti nel software sono:

1. Angolo minimo del sole rispetto all'orizzonte da cui calcolare l'ombreggiamento = 2°
2. Distanza limite fino a cui calcolare l'ombreggiamento dalla turbina = 1,0 km.
3. Statistica di probabilità mensile di presenza di sole dedotta (descritta in seguito)
4. Curve di livello rilevate dal DEM Regione Sardegna e curve di livello CTR 1:5000
5. Modello delle turbine Vestas V163

In relazione al punto 1 il valore di 2° è stato desunto da bibliografia e risulta anche essere il parametro di default impostato dal software. Si usa in genere questo valore poiché per angoli inferiori la luce, dovendo passare attraverso uno strato di atmosfera più spesso, diventa molto diffusa e non riesce quindi a formare un'ombra. Il parametro risulta molto restrittivo ai fini del calcolo.

In relazione al punto 2 la scelta di considerare un valore di 1000m, come da bibliografia, riportano che ad una distanza massima di 1,0 Km, in piano, gli effetti dell'ombreggiamento risultano trascurabili. Questa scelta arbitraria è stata fatta sulla base del fatto che non è ancora stabilito dalla normativa quale sia la distanza massima dalla turbina a cui si risente ancora dell'ombreggiamento.

In relazione al punto 3 la statistica di probabilità mensile di presenza del sole è stata dedotta da una stazione meteorologica più vicina in cui sono state reperiti dati di soleggiamento (Stazione di Capo Bellavista (NU)-cfr. "Reperto di Sperimentazioni di Meteorologia Aeronautica- **La radiazione solare globale e la durata del soleggiamento in Italia dal 1991 al 2010**") da cui sono state dedotte le probabilità mensili di soleggiamento qui di seguito riportate:

Mesi	Valori medi mensili delle ore giornaliere di soleggiamento (ore/giorno)	Ore di soleggiamento mensili	Ore totali mensili	% soleggiamento su ore mensili
<b>Gennaio</b>	4,81	149,11	744	20,04
<b>Febbraio</b>	5,69	159,32	672	23,71
<b>Marzo</b>	6,69	207,39	744	27,88
<b>Aprile</b>	7,19	215,7	720	29,96
<b>Maggio</b>	8,67	268,77	744	36,13
<b>Giugno</b>	10,29	308,7	720	42,88
<b>Luglio</b>	11,01	341,31	744	45,88
<b>Agosto</b>	10,09	312,79	744	42,04
<b>Settembre</b>	7,89	236,7	720	32,88
<b>Ottobre</b>	6,45	199,95	744	26,88

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<b>Novembre</b>	4,9	147	720	20,42
<b>Dicembre</b>	4,16	128,96	744	17,33
<b>TOT</b>		<b>2676</b>	<b>8760</b>	<b>30,50</b>

Tabella 2: Ore di soleggiamento mensile

Il calcolo dell'ombreggiamento è stato fatto utilizzando le condizioni al contorno semplificate, che comportano una situazione quanto più peggiorativa possibile (Worst-case) rispetto al caso reale, in particolare:

- Il cielo è considerato sempre chiaro e limpido e quindi non si considerano nubi, nebbia o qualsiasi ostacolo;
- Le turbine sono sempre in rotazione;
- Il rotore delle turbine è sempre orientato in direzione del recettore;
- Non sono considerati eventuali ostacoli come alberi o palazzi;
- Asse del rotore allineato con il sole.

I calcoli effettuati per l'ombreggiamento rappresentano un approccio molto conservativo e di conseguenza peggiorativo, per questo denominato "**worst case**", in cui la situazione reale risulterà ben al di sotto dei risultati ottenuti.

Per valutare l'effetto del fenomeno, sono stati individuati i ricettori sensibili che interferiscono con le isolinee di ombreggiamento e sono state calcolate le ore di ombreggiamento sulle finestre "tipo" delle pareti esposte al fenomeno.

## 5 INDIVIDUAZIONE DEI RECETTORI SENSIBILI

Ai fini della previsione degli impatti indotti dell'impianto in oggetto sono stati individuati i "ricettori sensibili" nelle immediate vicinanze del parco eolico che possono essere soggetti a tale fenomeno. Tali ricettori rappresentano abitazioni e fabbricati definiti come tali dalle visure catastali e dalle condizioni di abitabilità.

Il fenomeno diventa fastidioso in presenza di aperture trasparenti nella direzione dell'asse turbina-sole. Per questo motivo sono state inserite, per ogni singolo ricettore, 4 finestre (una per ogni facciata) di altezza 1 metro, larghezza 1 metro e altezza dal suolo 2 metri.

Di seguito sono riportati i riferimenti geografici di tutti i 70 ricettori individuati con l'indicazione della sensibilità o meno in funzione delle categorie catastali e delle caratteristiche di abitabilità dei beni.

Ricettore	Comune	Sensibilità	Est	Nord
R01	Albagiara	Sensibile	489925	4407382
R02	Albagiara	Sensibile	489971	4408107
R03	Usellus	Sensibile	489062	4408082
R04	Usellus	Non sensibile	488151	4408283
R05	Usellus	Non sensibile	487901	4408510
R06	Usellus	Non sensibile	488011	4408435
R07	Usellus	Non sensibile	488205	4408813



R08	Usellus	Sensibile	487995	4409205
R09	Usellus	Sensibile	487453	4409416
R10	Usellus	Sensibile	487451	4409909
R11	Usellus	Non sensibile	487426	4409912
R12	Assolo	Non sensibile	490722	4408723
R13	Albagiara	Sensibile	489914	4408936
R14	Usellus	Non sensibile	487489	4410345
R15	Assolo	Sensibile	491708	4409224
R16	Villa sant'antonio	Non sensibile	491499	4409789
R17	Villa sant'antonio	Sensibile	491076	4409673
R18	Assolo	Non sensibile	491208	4409175
R19	Mogorella	Sensibile	488275	4410743
R20	Mogorella	Non sensibile	488194	4411258
R21	Mogorella	Sensibile	487488	4411075
R22	Villa sant'antonio	Sensibile	490780	4409883
R23	Assolo	Non sensibile	490857	4409258
R24	Usellus	Sensibile	488317	4407874
R25	Usellus	Sensibile	488328	4409884
R26	Usellus	Sensibile	486788	4409559
R27	Albagiara	Sensibile	489817	4409014
R28	Albagiara	Sensibile	489789	4408916
R29	Albagiara	Sensibile	489748	4408989
R30	Albagiara	Sensibile	489685	4408398
R31	Albagiara	Sensibile	489336	4407244
R32	Assolo	Sensibile	490640	4407311
R33	Assolo	Non sensibile	491489	4407823
R34	Assolo	Non sensibile	491384	4407999
R35	Assolo	Non sensibile	491390	4408016
R36	Assolo	Non sensibile	491411	4408024
R37	Assolo	Sensibile	490805	4407939
R38	Usellus	Sensibile	487557	4407883
R39	Usellus	Sensibile	486744	4408079
R40	Usellus	Non sensibile	486692	4408183
R41	Usellus	Non sensibile	486714	4408223
R42	Usellus	Non sensibile	487038	4408243
R43	Usellus	Non sensibile	487097	4408225
R44	Usellus	Sensibile	486623	4409852
R45	Mogorella	Sensibile	487818	4411781
R46	Mogorella	Sensibile	487772	4411712
R47	Mogorella	Sensibile	488603	4410900
R48	Mogorella	Non sensibile	488708	4410795
R49	Mogorella	Non sensibile	488801	4410880
R50	Usellus	Sensibile	488457	4410115

R51	Usellus	Sensibile	488576	4409166
R52	Usellus	Sensibile	488966	4409397
R53	Villa Sant'Antonio	Sensibile	491716	4409802
R54	Villa Sant'Antonio	Sensibile	491406	4410065
R55	Villa Sant'Antonio	Sensibile	491195	4410179
R56	Villa Sant'Antonio	Non sensibile	490174	4410322
R57	Villa Sant'Antonio	Non sensibile	490149	4410137
R58	Villa Sant'Antonio	Non sensibile	489605	4409960
R59	Villa Sant'Antonio	Sensibile	489782	4409865
R60	Villa Sant'Antonio	Non sensibile	489616	4409718
R61	Albagiara	Non sensibile	489449	4409363
R62	Assolo	Sensibile	491529	4408377
R63	Assolo	Sensibile	491520	4408290
R64	Assolo	Sensibile	491522	4408258
R65	Assolo	Sensibile	491499	4408192
R66	Usellus	Non sensibile	488310	4406581
R67	Usellus	Sensibile	488552	4406621
R68	Assolo	Non sensibile	491661	4407775
R69	Assolo	Non sensibile	491876	4407959
R70	Villa Sant'Antonio	Sensibile	489659	4409965

*Tabella 3: Ricettori nell'area di studio*

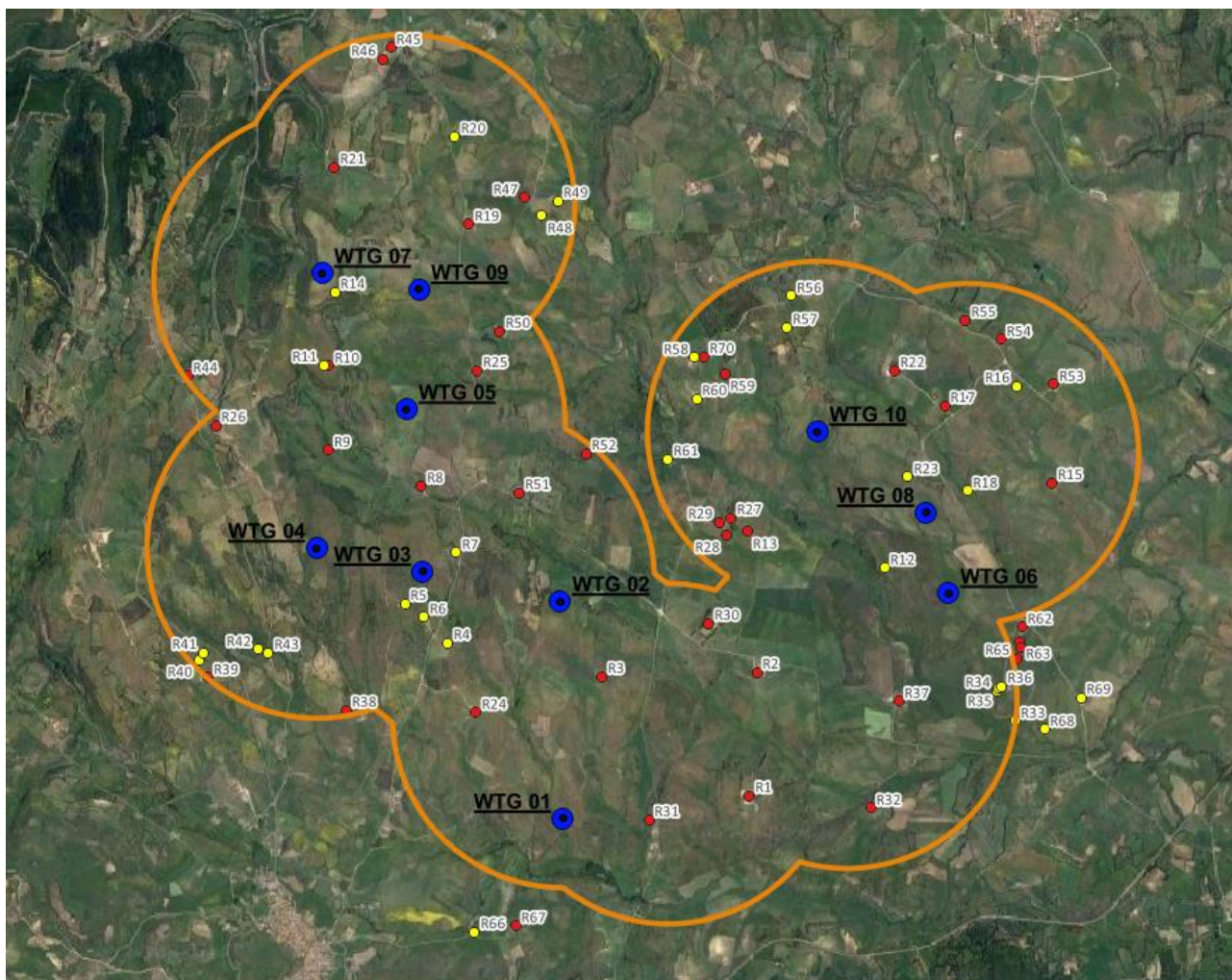


Figura 2: Individuazione dei ricettori nell'area di studio. In rosso i ricettori sensibili, in giallo i non sensibili

In particolare, sono stati considerati tutti gli edifici rientranti nella distanza di 1000 m dall'aerogeneratore classificati sensibili poiché appartenenti alle categorie catastali da A1 a A10 e quelle classificate come D10 che abbiano condizioni di abitabilità. Pertanto, restano in valutazione 41 ricettori; di questi si riporta anche l'orientamento delle finestre considerate per il calcolo del fenomeno stroboscopico:

Id shadow	Codifica	Comune	Sensibilità	Est	Nord	Orientamento finestre N=0			
						15	105	195	285
1	R1	Albagiara	Sensibile	489925	4407382	15	105	195	285
2	R2	Albagiara	Sensibile	489971	4408107	70	160	250	340
3	R3	Usellus	Sensibile	489062	4408082	45	135	225	315
4	R8	Usellus	Sensibile	487995	4409205	45	135	225	315
5	R9	Usellus	Sensibile	487453	4409416	80	170	260	350
6	R10	Usellus	Sensibile	487451	4409909	15	105	195	285
7	R13	Albagiara	Sensibile	489914	4408936	30	120	210	300
8	R15	Assolo	Sensibile	491708	4409224	70	160	250	340
9	R17	Villa Sant'Antonio	Sensibile	491076	4409673	80	170	260	350
10	R19	Mogorella	Sensibile	488275	4410743	15	105	195	285
11	R21	Mogorella	Sensibile	487488	4411075	45	135	225	315

Id shadow	Codifica	Comune	Sensibilità	Est	Nord	Orientamento finestre			
						N=0			
12	R22	Villa Sant'Antonio	Sensibile	490780	4409883	35	125	215	305
13	R24	Usellus	Sensibile	488317	4407874	60	150	240	330
14	R25	Usellus	Sensibile	488328	4409884	60	150	240	330
15	R26	Usellus	Sensibile	486788	4409559	20	110	200	290
16	R27	Albagiara	Sensibile	489817	4409014	45	135	225	315
17	R28	Albagiara	Sensibile	489789	4408916	15	105	195	285
18	R29	Albagiara	Sensibile	489748	4408989	30	120	210	300
19	R30	Albagiara	Sensibile	489685	4408398	30	120	210	300
20	R31	Albagiara	Sensibile	489336	4407244	0	90	180	270
21	R32	Assolo	Sensibile	490640	4407311	5	95	185	275
22	R37	Assolo	Sensibile	490805	4407939	5	95	185	275
23	R38	Usellus	Sensibile	487557	4407883	45	135	225	315
24	R39	Usellus	Sensibile	486744	4408079	0	90	180	270
25	R44	Usellus	Sensibile	486623	4409852	60	150	240	330
26	R45	Mogorella	Sensibile	487818	4411781	45	135	225	315
27	R46	Mogorella	Sensibile	487772	4411712	45	135	225	315
28	R47	Mogorella	Sensibile	488603	4410900	15	105	195	285
29	R50	Usellus	Sensibile	488457	4410115	15	105	195	285
30	R51	Usellus	Sensibile	488576	4409166	60	150	240	330
31	R52	Usellus	Sensibile	488966	4409397	70	160	250	340
32	R53	Villa Sant'Antonio	Sensibile	491716	4409802	25	115	205	295
33	R54	Villa Sant'Antonio	Sensibile	491406	4410065	45	135	225	315
34	R55	Villa Sant'Antonio	Sensibile	491195	4410179	30	120	210	300
35	R59	Villa Sant'Antonio	Sensibile	489782	4409865	70	160	250	340
36	R62	Assolo	Sensibile	491529	4408377	45	135	225	315
37	R63	Assolo	Sensibile	491520	4408290	5	95	185	275
38	R64	Assolo	Sensibile	491522	4408258	5	95	185	275
39	R65	Assolo	Sensibile	491499	4408192	10	100	190	280
40	R67	Usellus	Sensibile	488552	4406621	70	160	250	340
41	R70	Villa Sant'Antonio	Sensibile	489659	4409965	45	135	225	315

Tabella 4: **Tabella riepilogativa dei ricettori sensibili con orientamento delle finestre**

Per un approfondimento sulla tipologia di ricettore si rimanda alla tavola “AS311-SI07-D\_Individuazione dei ricettori nell'area di studio” e “AS311-SI08-D \_Schede report dei fabbricati e ricettori nell'area di studio”.

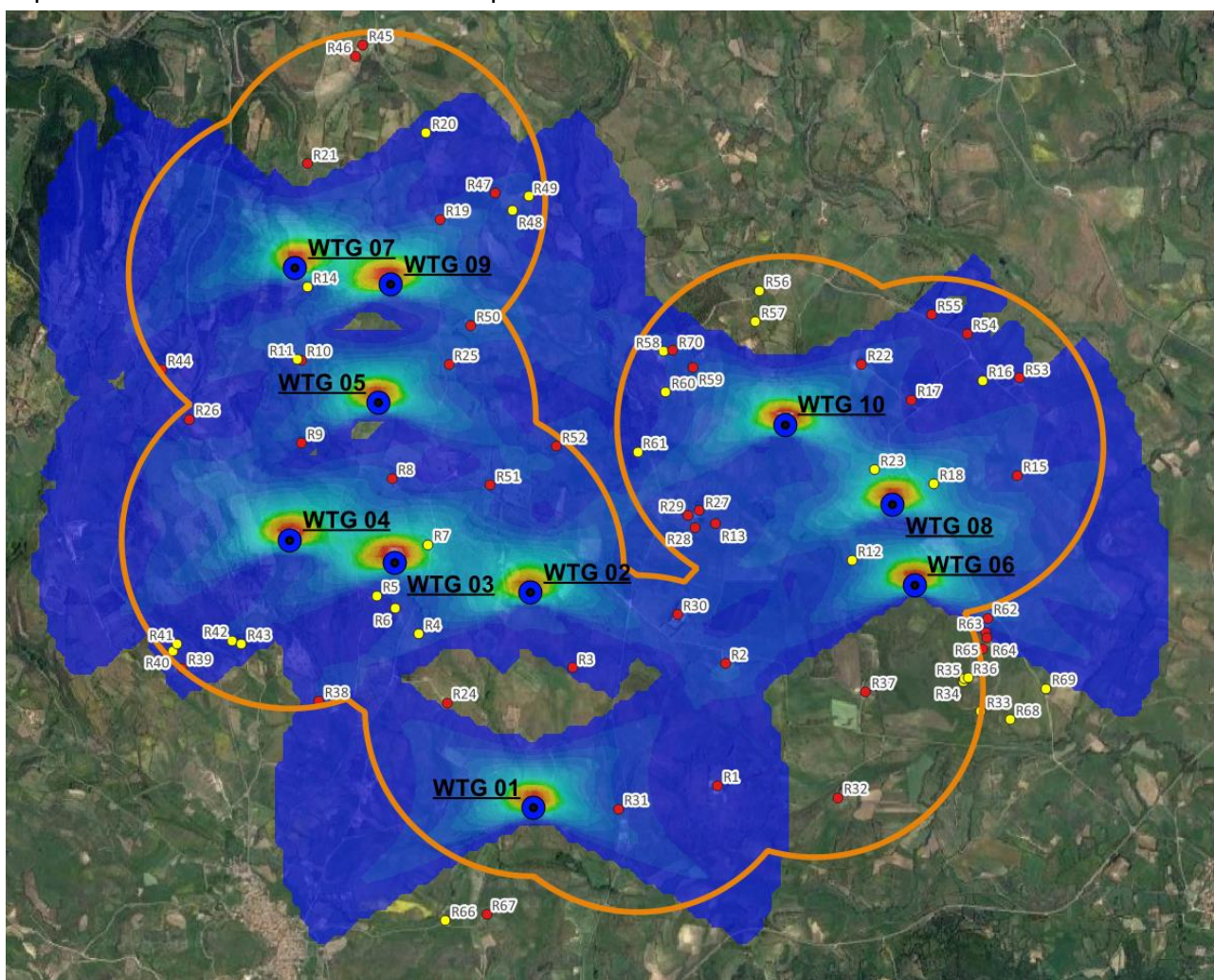
## 6 RISULTATI DELLE ELABORAZIONI E CONCLUSIONI

Le elaborazioni per il calcolo dell'ombreggiamento provocato dalle turbine eoliche sono state condotte considerando un totale di 41 ricettori sensibili posti nell'area del parco.

Al di là di una certa distanza, l'ombra smette di essere un problema perché il rapporto tra lo spessore della pala e il diametro del sole diventa infinitesimamente piccolo, da poter essere trascurato. Siccome non vi è un valore, generalmente accettato, per questa distanza massima, il modulo utilizzato permette di specificare il limite in metri o multipli del diametro della turbina.

Nel caso specifico è stata considerata una distanza dalla turbina di 1000m. Graficamente è stato riportato il report a 1500 m in cui si può verificare che le ore di ombreggiamento sono sempre inferiori a 50h/anno.

Il modello numerico utilizzato, al pari di altri presenti sul mercato, produce in output una mappa dell' impatto dell'ombra sul terreno, nel caso più penalizzante denominato "worst case", corrispondente alle ore in cui il sole permane al di sopra dell'orizzonte nell'arco dell'anno (**circa 4380 h/a di luce**), indipendentemente dalla presenza o meno di nubi, le quali inficerebbero il fenomeno stesso di shadow flickering per impossibilità che si generi il fenomeno di flickering, oltre agli input specificati precedentemente, che rendono il caso in oggetto nettamente peggiorativo, ma soprattutto considerano le turbine sempre in movimento ed alla massima rotazione del rotore.



**Figura 3 – Visualizzazione mappa delle ombre generate**

Dall'analisi dei risultati cartografici si nota che tanti ricettori sono esterni alle curve di ombreggiamento e quindi non subiscono alcun ombreggiamento. Dall'analisi degli ombreggiamenti per singola finestra e per intero ricettore, che si allega in coda alla presente relazione, si riscontra che 16 ricettori superano le 30 h/anno di ombreggiamento.

Oltre alla restituzione cartografica si è calcolato l'ombreggiamento in ore/anno su finestre "tipo" dei prospetti più esposti. Ad ogni ricettore è stato assegnato un id shadow per l'elaborazione con software come riportato in tabella 4.

Project : USELLUS  
Run Name : KUsellus002.WFK  
Title : SHADOW 02  
Time : 15:40:13, 29 Jan 2024

**SUMMARY OF MERGED SHADOW TIMES ON EACH HOUSE FROM ALL TURBINES**

House	Easting	Northing	Days per year	Max hours per day	Mean hours per day	Total hours
1	489924	4407382	0	0.00	0.00	0.00
2	489970	4408107	0	0.00	0.00	0.00
3	489062	4408081	0	0.00	0.00	0.00
4	487994	4409205	97	0.93	0.68	66.04
5	487452	4409415	73	1.01	0.82	59.82
6	487451	4409909	142	1.19	0.85	120.16
7	489913	4408936	0	0.00	0.00	0.00
8	491708	4409223	87	0.85	0.56	48.85
9	491075	4409672	65	0.85	0.67	43.57
10	488274	4410742	149	1.24	0.86	128.06
11	487487	4411074	0	0.00	0.00	0.00
12	490780	4409883	111	1.11	0.96	106.67
13	488316	4407874	0	0.00	0.00	0.00
14	488328	4409883	121	1.32	0.98	118.76
15	486788	4409558	0	0.00	0.00	0.00
16	489816	4409014	0	0.00	0.00	0.00
17	489789	4408916	0	0.00	0.00	0.00
18	489748	4408988	0	0.00	0.00	0.00
19	489685	4408398	69	0.75	0.59	40.53
20	489335	4407243	108	1.25	0.96	104.03
21	490640	4407311	0	0.00	0.00	0.00
22	490805	4407938	0	0.00	0.00	0.00
23	487556	4407883	0	0.00	0.00	0.00
24	486744	4408078	0	0.00	0.00	0.00
25	486622	4409852	0	0.00	0.00	0.00
26	487818	4411780	0	0.00	0.00	0.00
27	487771	4411712	0	0.00	0.00	0.00
28	488602	4410899	86	0.79	0.69	59.63
29	488456	4410114	147	0.89	0.73	106.79
30	488575	4409166	98	0.87	0.78	76.31
31	488966	4409396	0	0.00	0.00	0.00
32	491716	4409801	0	0.00	0.00	0.00
33	491406	4410065	0	0.00	0.00	0.00
34	491194	4410178	0	0.00	0.00	0.00
35	489781	4409864	125	0.98	0.80	100.41
36	491529	4408377	92	1.25	1.03	95.03
37	491519	4408290	0	0.00	0.00	0.00
38	491522	4408257	0	0.00	0.00	0.00
39	491499	4408192	0	0.00	0.00	0.00
40	488552	4406621	0	0.00	0.00	0.00
41	489659	4409965	102	0.80	0.69	70.42

Tabella 5-Ore di ombreggiamento caso worst case

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Nel momento in cui nel calcolo, verrà considerato anche la percentuale annua di giorni nuvolosi l'impatto in termini di ore di ombreggiamento annua risulterà minore dei risultati ottenuti. Ulteriori indagini andranno condotte al fine di verificare se i recettori sensibili che subiscono più ombreggiamento non abbiano schermi naturali quali alberi o costruzioni varie che riducono l'impatto stesso, allo stesso tempo bisognerà verificare il posizionamento degli infissi qualora non fossero rivolti verso le turbine che porterebbe l'impatto ad annullarsi. Qualora questi recettori sensibili evidenzino problematiche derivanti da questo impatto è possibile che lo sviluppatore pianifichi alcune mitigazioni in fase di progettazione esecutiva del parco, come ad esempio piantare alberi addizionali allo scopo di schermare l'ombreggiamento verso le finestre più esposte.

Per le motivazioni di cui sopra, allo scopo di pervenire a valori più realistici di impatto, prossimi al caso reale (denominato REAL CASE), si è impiegato il valore di eliofania locale, ovvero il numero di ore di cielo libero da nubi durante il giorno.

Per l'area in esame tale valore di soleggiamento corrisponde a circa 2676 h/yr (rispetto alle 4380 h/yr considerate nel worst - case). I risultati del calcolo possono, ragionevolmente, essere abbattuti mediamente del 38,90 %, pari al complemento a 1 del rapporto  $2676/4380 = 61,10$  %. In altri termini, rispetto al WORST CASE, la probabilità di occorrenza del fenomeno di shadow flickering si riduce, per l'area in esame, al 61,10 % che corrisponde proprio alla probabilità che il disco solare risulti libero da nubi. Tale valore percentuale è un valore mediato nell'intero anno.

Altro fattore da considerare ai fini dell'effetto stroboscopico è la distribuzione di frequenza di velocità del vento nell'area in esame. Come riportato nelle schede tecniche degli aerogeneratori, il cut-in è fissato a 3m/s. Per velocità più basse di tale valore, le turbine non sono in movimento e non generano effetto flickering.

Nell'ottica di tutela nei confronti delle strutture in analisi, in considerazione dei dati in frequenza registrati per tutti i range di velocità del vento inferiore alla velocità media di cut-in delle turbine (range di velocità per la quale gli aerogeneratori non entrano in esercizio), considerata nel solo periodo diurno 06:00/19:00 cui l'effetto SH/FL potrebbe manifestarsi, è stata calcolata e quindi decurtata una percentuale pari al 25 % nella stima più verosimile rappresentata dal "Real Case".

Bisogna tenere presente che tale riduzione si è ottenuta solo ed esclusivamente considerando le condizioni meteorologiche assimilabili a quelle reali della zona in esame in riferimento alla presenza del sole e della distribuzione di velocità del vento nell'area di studio. Per tale motivo, il calcolo, nel caso real-case, è comunque da considerarsi molto cautelativo in quanto nella simulazione vengono comunque utilizzate le condizioni al contorno del worst - case indicate nel capitolo 4. I nuovi valori, alla luce delle considerazioni appena fatte, sono stati riportati nella seguente tabella:

ID.Shadow	Ricettore	Total hours worst case	Total hours real case	Total hours real case con frequenza di velocità <3m/s	Total min/day worst case	Total min/day real case	Total min/day real case con frequenza di velocità <3m/s
1	R1	0	0,0	0,0	0,0	0,0	0,0
2	R2	0	0,0	0,0	0,0	0,0	0,0
3	R3	0	0,0	0,0	0,0	0,0	0,0
4	R8	66,04	40,4	30,3	40,8	25,0	18,7
5	R9	59,82	36,6	27,4	49,2	30,0	22,5
6	R10	120,16	73,4	55,1	50,8	31,0	23,3
7	R13	0	0,0	0,0	0,0	0,0	0,0
8	R15	48,85	29,8	22,4	33,7	20,6	15,4
9	R17	43,57	26,6	20,0	40,2	24,6	18,4
10	R19	128,06	78,2	58,7	51,6	31,5	23,6
11	R21	0	0,0	0,0	0,0	0,0	0,0
12	R22	106,67	65,2	48,9	57,7	35,2	26,4
13	R24	0	0,0	0,0	0,0	0,0	0,0
14	R25	118,76	72,6	54,4	58,9	36,0	27,0
15	R26	0	0,0	0,0	0,0	0,0	0,0
16	R27	0	0,0	0,0	0,0	0,0	0,0
17	R28	0	0,0	0,0	0,0	0,0	0,0
18	R29	0	0,0	0,0	0,0	0,0	0,0
19	R30	40,53	24,8	18,6	35,2	21,5	16,2
20	R31	104,03	63,6	47,7	57,8	35,3	26,5
21	R32	0	0,0	0,0	0,0	0,0	0,0
22	R37	0	0,0	0,0	0,0	0,0	0,0
23	R38	0	0,0	0,0	0,0	0,0	0,0
24	R39	0	0,0	0,0	0,0	0,0	0,0
25	R44	0	0,0	0,0	0,0	0,0	0,0
26	R45	0	0,0	0,0	0,0	0,0	0,0
27	R46	0	0,0	0,0	0,0	0,0	0,0
28	R47	59,63	36,4	27,3	41,6	25,4	19,1
29	R50	106,79	65,2	48,9	43,6	26,6	20,0
30	R51	76,31	46,6	35,0	46,7	28,5	21,4
31	R52	0	0,0	0,0	0,0	0,0	0,0
32	R53	0	0,0	0,0	0,0	0,0	0,0
33	R54	0	0,0	0,0	0,0	0,0	0,0
34	R55	0	0,0	0,0	0,0	0,0	0,0
35	R59	100,41	61,4	46,0	48,2	29,4	22,1
36	R62	95,03	58,1	43,5	62,0	37,9	28,4
37	R63	0	0,0	0,0	0,0	0,0	0,0



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			Data Dicembre 2023	Rev. 00

ID.Shadow	Ricettore	Total hours worst case	Total hours real case	Total hours real case con frequenza di velocità <3m/s	Total min/day worst case	Total min/day real case	Total min/day real case con frequenza di velocità <3m/s
38	R64	0	0,0	0,0	0,0	0,0	0,0
39	R65	0	0,0	0,0	0,0	0,0	0,0
40	R67	0	0,0	0,0	0,0	0,0	0,0
41	R70	70,42	43,0	32,3	41,4	25,3	19,0

Tabella 6-Ore di ombreggiamento h/anno

Dei 41 ricettori sensibili individuati nell'arco di 1 km dagli aerogeneratori, solo 3 (R10-R19-R25) hanno un ombreggiamento poco superiore alle 50 h/anno.

L'altro parametro da considerare è il numero di minuti giorno di ombreggiamento che per tutti i ricettori è sempre inferiore ai 30min/giorno.

Tutto ciò non tiene conto di altri fattori che potrebbero diminuire o annullare del tutto l'effetto flickering sul ricettore, come la presenza di alberi interposti tra turbina e ricettore e/o posizionamento delle abitazioni e dei propri infissi rispetto alla fonte, la posizione del disco tra sole e ricettore (fattore indispensabile per la formazione del fenomeno dello sfarfallio).

È importante sottolineare che i calcoli effettuati sono molto cautelativi in quanto nella stima non sono stati considerati alcuni aspetti fondamentali che potrebbero abbattere tali valori, es. direzione del rotore ortogonale alla direttrice sole-finestra, eventuale presenza di ostacoli e/o vegetazione arbustiva tra finestra e direttrice. Ad ogni modo riportando il calendario annuale (nel caso del WORST CASE) e l'effetto ombre generato dalle turbine sui ricettori sopra richiamati, si può notare l'effetto transitorio e quindi trascurabile del fenomeno.

Le curve di colore rosso, superiore e inferiore, indicano l'alba e il tramonto, in ascissa i giorni dell'anno e in ordinate le ore dell'anno. Le curve campite individuano gli eventi di ombreggiamento presso il ricettore.

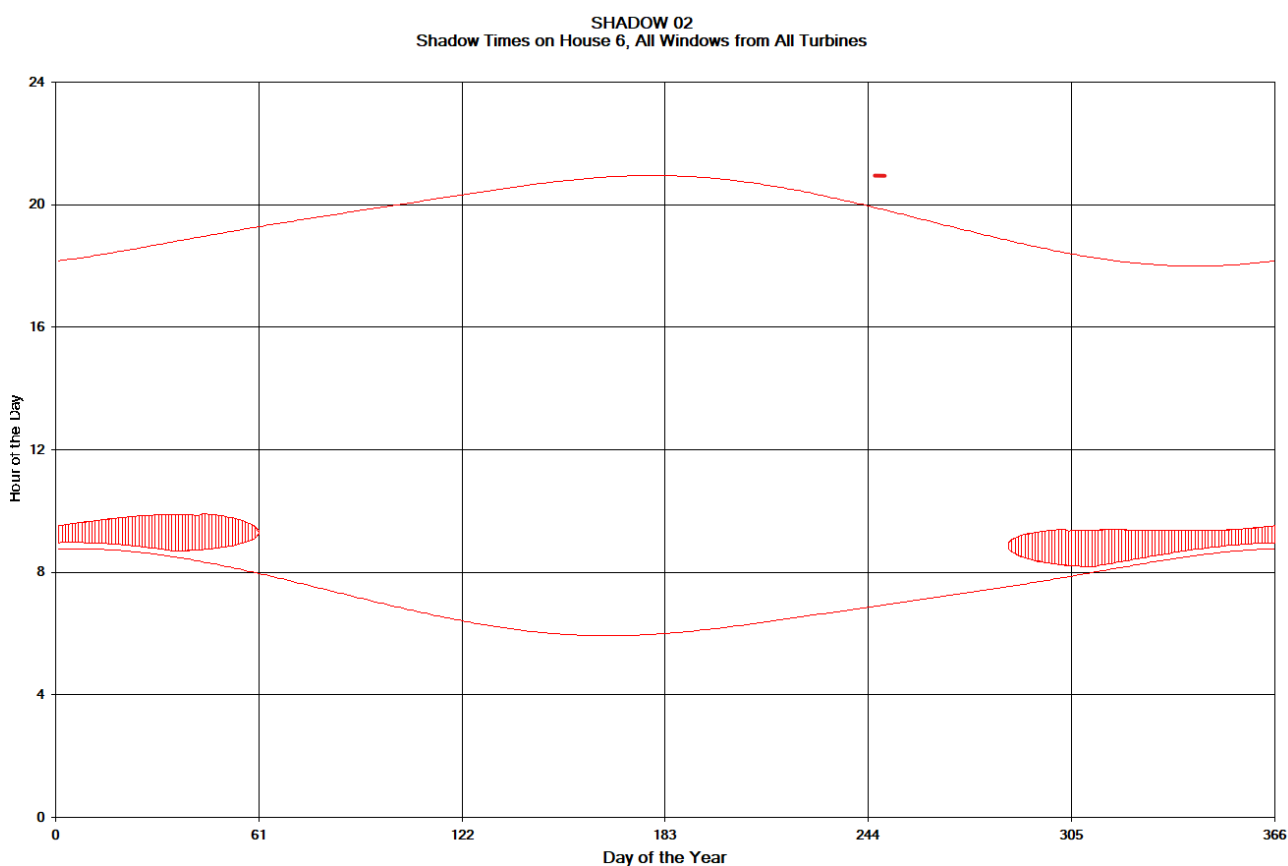
**R 10– id6**

Figura 3 – Calendario delle ombre per il ricettore R10

Dalla lettura del grafico si ha che l'ombreggiamento sul ricettore è determinato dalla turbina WTG05.

WTG 05: dal 01 gennaio al 28 aprile tra le 7:15 e le 7:55 – dal 12 Ottobre al 31 dicembre tra le 08:11 e le 9.31

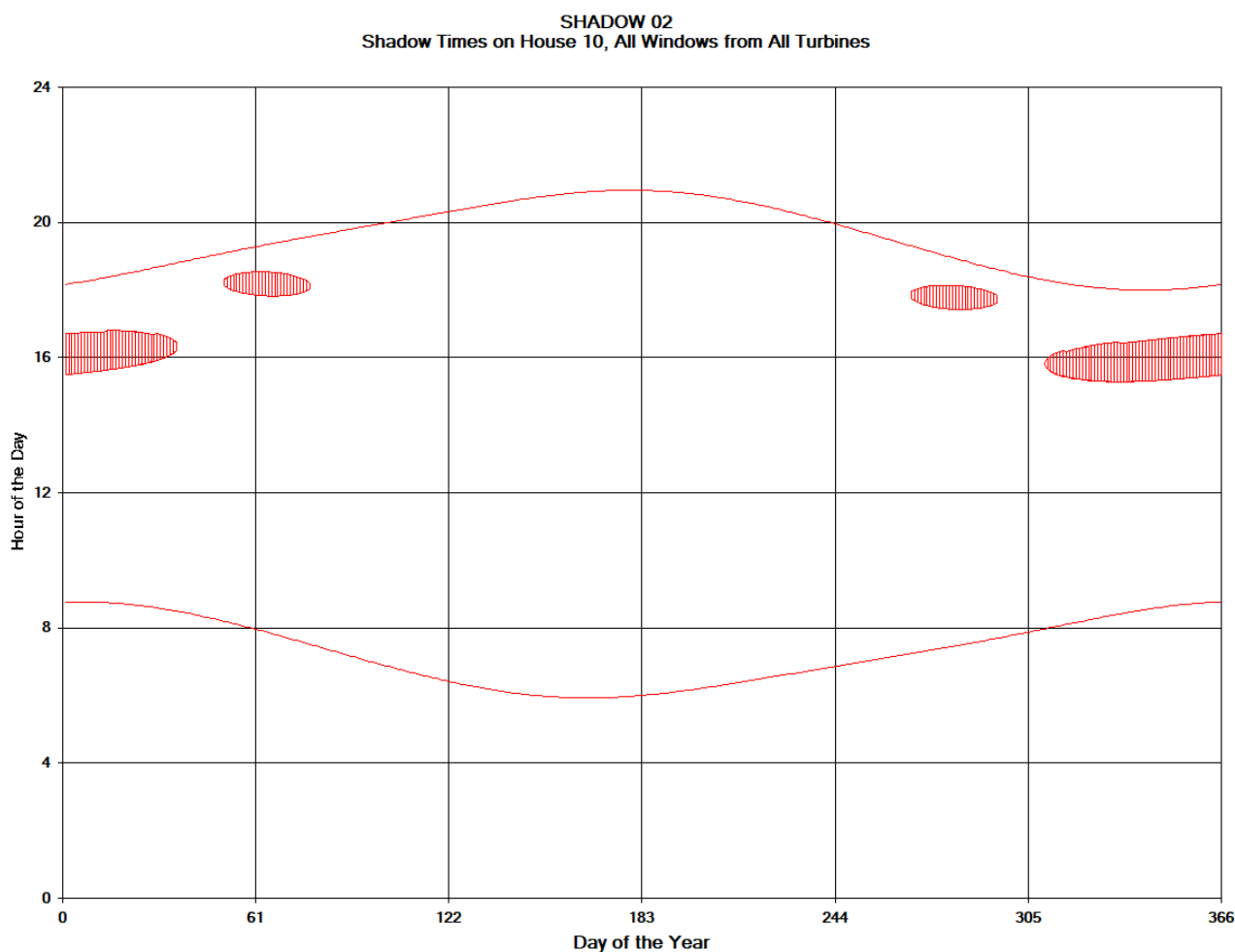
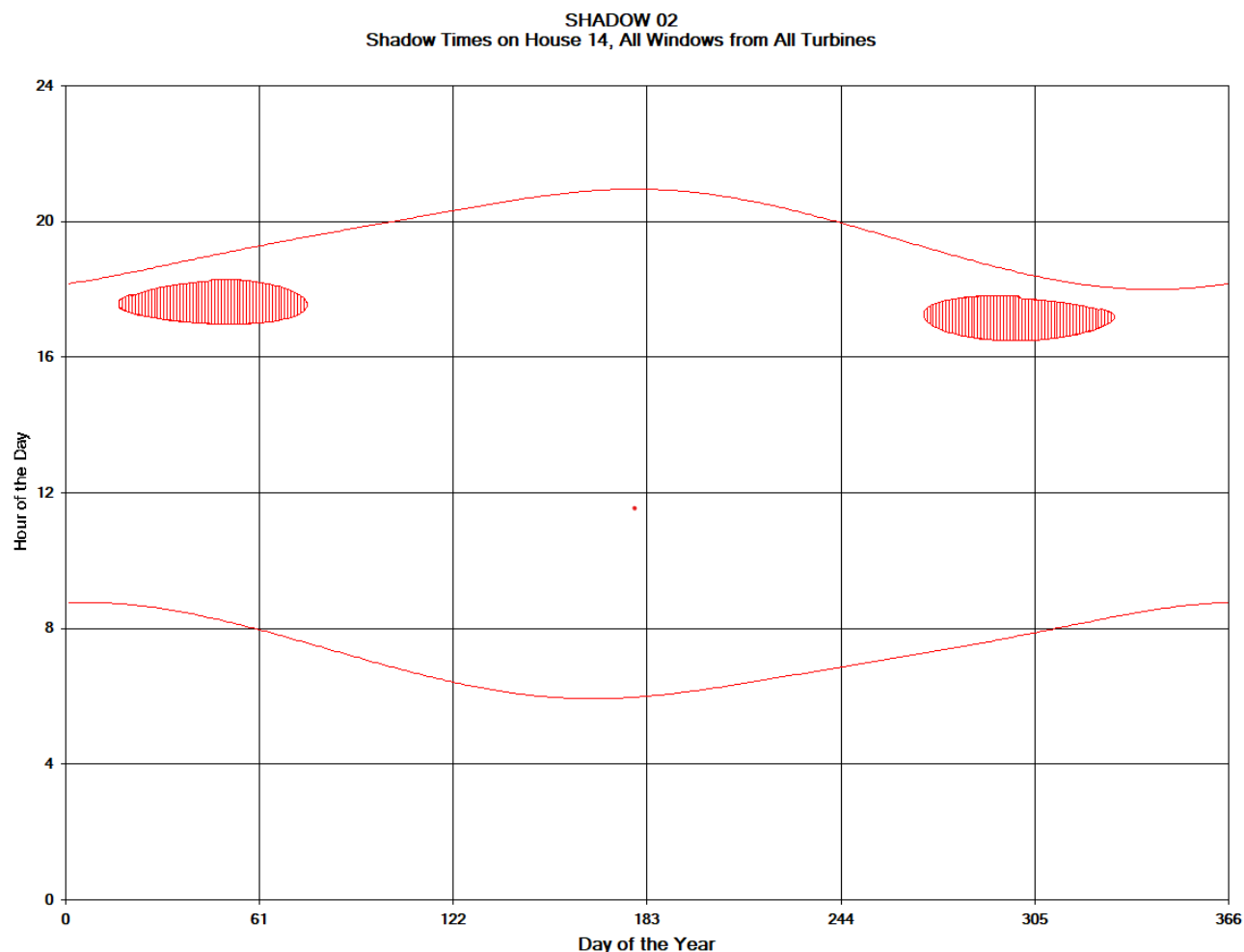
**R 19– id10**

Figura 4 – Calendario delle ombre per il ricettore R19

Dalla lettura del grafico si ha che l'ombreggiamento sul ricettore è determinato dalle turbine WTG07 e WTG09.

WTG 07: dal 20 Febbraio al 18 Marzo tra le 17:49 e le 18:31 – dal 24 Settembre al 21 Ottobre tra le 17:25 e le 18:08

WTG 09: dal 01 Gennaio al 05 Febbraio tra le 15:29 e le 16:48 – dal 5 Novembre al 31 Dicembre tra le 15:16 e le 16:42

**R 25– id14**

*Figura 5 – Calendario delle ombre per il ricettore R25*

Dalla lettura del grafico si ha che l'ombreggiamento sul ricettore è determinato dalla turbina WTG05.

WTG 05: dal 17 Gennaio al 16 Marzo tra le 16:58 e le 18:17 – dal 26 Settembre al 25 Novembre tra le 16:28 e le 17:48

Come si può notare il fenomeno è limitato a pochi minuti nelle prime ore del mattino o tardo pomeriggio per periodi limitati dell'anno. Per dettagli orari si rinvia alla tabella degli ombreggiamenti di ogni singola turbina su singolo ricettore allegato alla presente.

Per questi ricettori, per i quali si ha un superamento delle 50 h/anno, si prevederà, in accordo con i proprietari, una mitigazione che potrà consistere nell'installazione di frangisole fissi sui prospetti degli edifici o in alternativa l'installazione di piantumazione di alto fusto, da piantare ai limiti delle proprietà catastali, tale da mitigare il fenomeno.

<b>GRV Wind Shardana Srl</b> 	<b>STUDIO EVOLUZIONE DELLE OMBRE SHADOW FLICKERING</b>		Cod. AS311-SI09-R	
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## 7 CONCLUSIONI

Il lavoro è stato svolto in due distinte fasi: la prima tramite software idoneo al calcolo dell'effetto di shadow-flickering il quale ha portato alla luce che 41 ricettori su 70 sono censiti sensibili, che molti ricettori sono esterni al cono d'ombra e che 3 ricettori sono interessati dal fenomeno per poco più di 50 h/anno nel caso peggiorativo (Worst Case); la seconda, ha cercato in modo empirico di avvicinarsi ad un caso reale con condizioni al contorno identiche, considerando in aggiunta il solo fattore nuvolosità e della distribuzione di velocità. Tale studio ha portato ad una drastica diminuzione del monte ore/annuo per ricettore. Per tutti i ricettori è verificato l'ombreggiamento giornaliero inferiore ai 30 minuti.

Si aggiunge che nel presente studio non è stato considerato l'ombreggiamento dato dalle alberature presenti nei cortili dei fabbricati o lungo gli assi sole-turbina-finestra. Queste ulteriori ipotesi potrebbero addirittura eliminare completamente alcuni edifici tra la lista dei ricettori se gli stessi fossero dotate di finestre più piccole rispetto a quelle ipotizzate sulle pareti di Ovest ed Est (massimo allungamento delle curve di ombreggiamento), o fossero già ombreggiati naturalmente.

Dallo studio si evince che i ricettori sono posizionati a Est o ad Ovest delle turbine e quindi il fenomeno è limitato alle sole ore del tramonto o delle prime ore del mattino.

In ogni caso, la Società si impegna, se dovessero nascere delle precise e puntuali criticità, a mitigare l'effetto stroboscopico presso il recettore, intervenendo con piantumazioni di alberi schermanti e/o attraverso l'installazione di pensiline in prossimità delle aperture finestrate più esposte.

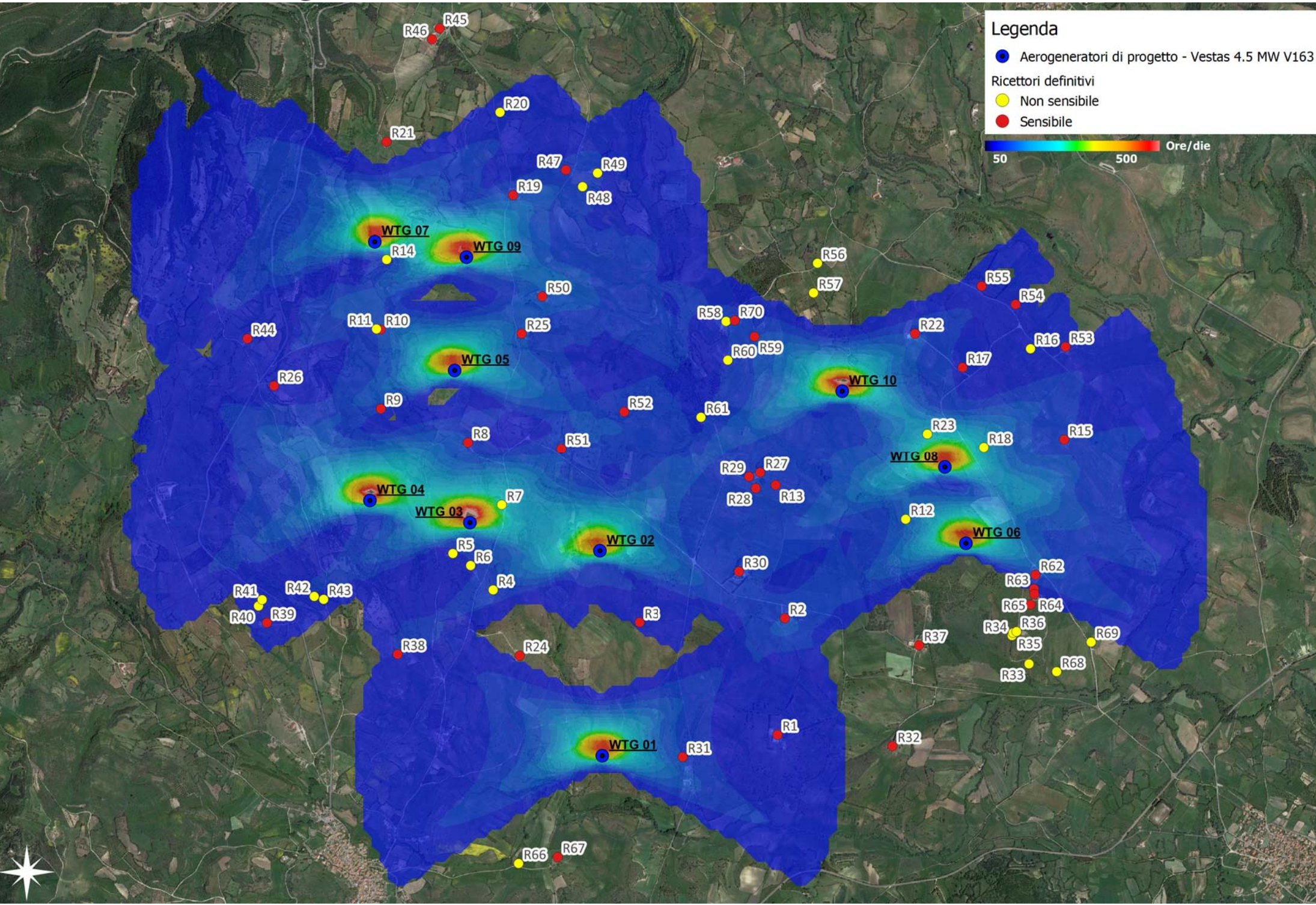
### Allegati

- Cartografia shadow flickering
- Tempo di ombreggiamento per ogni casa
- Ombreggiamento su singola finestra ipotizzata
- Tempo di ombreggiamento su singola casa di ogni turbina

# Analisi shadow flickering con analisi dei ricettori-Parco eolico di Usellus

**Legenda**

- Aerogeneratori di progetto - Vestas 4.5 MW V163
- Ricettori definitivi
  - Non sensibile
  - Sensibile



Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

SUMMARY OF MERGED SHADOW TIMES ON EACH HOUSE FROM ALL TURBINES

House	Easting	Northing	Days per year	Max hours per day	Mean hours per day	Total hours
1	489924	4407382	0	0.00	0.00	0.00
2	489970	4408107	0	0.00	0.00	0.00
3	489062	4408081	0	0.00	0.00	0.00
4	487994	4409205	97	0.93	0.68	66.04
5	487452	4409415	73	1.01	0.82	59.82
6	487451	4409909	142	1.19	0.85	120.16
7	489913	4408936	0	0.00	0.00	0.00
8	491708	4409223	87	0.85	0.56	48.85
9	491075	4409672	65	0.85	0.67	43.57
10	488274	4410742	149	1.24	0.86	128.06
11	487487	4411074	0	0.00	0.00	0.00
12	490780	4409883	111	1.11	0.96	106.67
13	488316	4407874	0	0.00	0.00	0.00
14	488328	4409883	121	1.32	0.98	118.76
15	486788	4409558	0	0.00	0.00	0.00
16	489816	4409014	0	0.00	0.00	0.00
17	489789	4408916	0	0.00	0.00	0.00
18	489748	4408988	0	0.00	0.00	0.00
19	489685	4408398	69	0.75	0.59	40.53
20	489335	4407243	108	1.25	0.96	104.03
21	490640	4407311	0	0.00	0.00	0.00
22	490805	4407938	0	0.00	0.00	0.00
23	487556	4407883	0	0.00	0.00	0.00
24	486744	4408078	0	0.00	0.00	0.00
25	486622	4409852	0	0.00	0.00	0.00
26	487818	4411780	0	0.00	0.00	0.00
27	487771	4411712	0	0.00	0.00	0.00
28	488602	4410899	86	0.79	0.69	59.63
29	488456	4410114	147	0.89	0.73	106.79
30	488575	4409166	98	0.87	0.78	76.31
31	488966	4409396	0	0.00	0.00	0.00
32	491716	4409801	0	0.00	0.00	0.00
33	491406	4410065	0	0.00	0.00	0.00
34	491194	4410178	0	0.00	0.00	0.00
35	489781	4409864	125	0.98	0.80	100.41
36	491529	4408377	92	1.25	1.03	95.03
37	491519	4408290	0	0.00	0.00	0.00
38	491522	4408257	0	0.00	0.00	0.00
39	491499	4408192	0	0.00	0.00	0.00
40	488552	4406621	0	0.00	0.00	0.00
41	489659	4409965	102	0.80	0.69	70.42

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

SUMMARY OF MERGED SHADOW TIMES ON EACH WINDOW FOR ALL TURBINES

House/ Window		Easting	Northing	Width (m)	Depth (m)	Height (m)	Degrees from North	Tilt angle	Days per year	Max hours per day	Mean hours per day	Total hours
1/	1	489924	4407382	1.0	1.0	2.0	15.0	0.0	0	0.00	0.00	0.00
1/	2	489924	4407382	1.0	1.0	2.0	105.0	0.0	0	0.00	0.00	0.00
1/	3	489924	4407382	1.0	1.0	2.0	195.0	0.0	0	0.00	0.00	0.00
1/	4	489924	4407382	1.0	1.0	2.0	285.0	0.0	0	0.00	0.00	0.00
2/	1	489970	4408107	1.0	1.0	2.0	70.0	0.0	0	0.00	0.00	0.00
2/	2	489970	4408107	1.0	1.0	2.0	160.0	0.0	0	0.00	0.00	0.00
2/	3	489970	4408107	1.0	1.0	2.0	250.0	0.0	0	0.00	0.00	0.00
2/	4	489970	4408107	1.0	1.0	2.0	340.0	0.0	0	0.00	0.00	0.00
3/	1	489062	4408081	1.0	1.0	2.0	45.0	0.0	0	0.00	0.00	0.00
3/	2	489062	4408081	1.0	1.0	2.0	135.0	0.0	0	0.00	0.00	0.00
3/	3	489062	4408081	1.0	1.0	2.0	225.0	0.0	0	0.00	0.00	0.00
3/	4	489062	4408081	1.0	1.0	2.0	315.0	0.0	0	0.00	0.00	0.00
4/	1	487994	4409205	1.0	1.0	2.0	45.0	0.0	0	0.00	0.00	0.00
4/	2	487994	4409205	1.0	1.0	2.0	135.0	0.0	0	0.00	0.00	0.00
4/	3	487994	4409205	1.0	1.0	2.0	225.0	0.0	97	0.93	0.68	65.97
4/	4	487994	4409205	1.0	1.0	2.0	315.0	0.0	97	0.93	0.68	65.69
5/	1	487452	4409415	1.0	1.0	2.0	80.0	0.0	73	1.01	0.82	59.82
5/	2	487452	4409415	1.0	1.0	2.0	170.0	0.0	0	0.00	0.00	0.00
5/	3	487452	4409415	1.0	1.0	2.0	260.0	0.0	0	0.00	0.00	0.00
5/	4	487452	4409415	1.0	1.0	2.0	350.0	0.0	72	1.00	0.82	59.22
6/	1	487451	4409909	1.0	1.0	2.0	15.0	0.0	0	0.00	0.00	0.00
6/	2	487451	4409909	1.0	1.0	2.0	105.0	0.0	142	1.19	0.84	119.98
6/	3	487451	4409909	1.0	1.0	2.0	195.0	0.0	142	1.19	0.84	119.78
6/	4	487451	4409909	1.0	1.0	2.0	285.0	0.0	0	0.00	0.00	0.00
7/	1	489913	4408936	1.0	1.0	2.0	30.0	0.0	0	0.00	0.00	0.00
7/	2	489913	4408936	1.0	1.0	2.0	120.0	0.0	0	0.00	0.00	0.00
7/	3	489913	4408936	1.0	1.0	2.0	210.0	0.0	0	0.00	0.00	0.00
7/	4	489913	4408936	1.0	1.0	2.0	300.0	0.0	0	0.00	0.00	0.00
8/	1	491708	4409223	1.0	1.0	2.0	70.0	0.0	0	0.00	0.00	0.00
8/	2	491708	4409223	1.0	1.0	2.0	160.0	0.0	21	0.30	0.22	4.71
8/	3	491708	4409223	1.0	1.0	2.0	250.0	0.0	87	0.84	0.56	48.79
8/	4	491708	4409223	1.0	1.0	2.0	340.0	0.0	66	0.85	0.66	43.71
9/	1	491075	4409672	1.0	1.0	2.0	80.0	0.0	0	0.00	0.00	0.00
9/	2	491075	4409672	1.0	1.0	2.0	170.0	0.0	65	0.85	0.67	43.32
9/	3	491075	4409672	1.0	1.0	2.0	260.0	0.0	65	0.85	0.67	43.55
9/	4	491075	4409672	1.0	1.0	2.0	350.0	0.0	0	0.00	0.00	0.00
10/	1	488274	4410742	1.0	1.0	2.0	15.0	0.0	0	0.00	0.00	0.00
10/	2	488274	4410742	1.0	1.0	2.0	105.0	0.0	0	0.00	0.00	0.00
10/	3	488274	4410742	1.0	1.0	2.0	195.0	0.0	149	1.24	0.86	127.63
10/	4	488274	4410742	1.0	1.0	2.0	285.0	0.0	149	1.24	0.86	127.91
11/	1	487487	4411074	1.0	1.0	2.0	45.0	0.0	0	0.00	0.00	0.00
11/	2	487487	4411074	1.0	1.0	2.0	135.0	0.0	0	0.00	0.00	0.00
11/	3	487487	4411074	1.0	1.0	2.0	225.0	0.0	0	0.00	0.00	0.00
11/	4	487487	4411074	1.0	1.0	2.0	315.0	0.0	0	0.00	0.00	0.00
12/	1	490780	4409883	1.0	1.0	2.0	35.0	0.0	0	0.00	0.00	0.00
12/	2	490780	4409883	1.0	1.0	2.0	125.0	0.0	0	0.00	0.00	0.00
12/	3	490780	4409883	1.0	1.0	2.0	215.0	0.0	111	1.11	0.96	106.52
12/	4	490780	4409883	1.0	1.0	2.0	305.0	0.0	111	1.11	0.96	106.45
13/	1	488316	4407874	1.0	1.0	2.0	60.0	0.0	0	0.00	0.00	0.00
13/	2	488316	4407874	1.0	1.0	2.0	150.0	0.0	0	0.00	0.00	0.00
13/	3	488316	4407874	1.0	1.0	2.0	240.0	0.0	0	0.00	0.00	0.00
13/	4	488316	4407874	1.0	1.0	2.0	330.0	0.0	0	0.00	0.00	0.00
14/	1	488328	4409883	1.0	1.0	2.0	60.0	0.0	0	0.00	0.00	0.00
14/	2	488328	4409883	1.0	1.0	2.0	150.0	0.0	0	0.00	0.00	0.00
14/	3	488328	4409883	1.0	1.0	2.0	240.0	0.0	121	1.32	0.98	118.58
14/	4	488328	4409883	1.0	1.0	2.0	330.0	0.0	120	1.32	0.98	117.99



Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

15/	1	486788	4409558	1.0	1.0	2.0	20.0	0.0	0	0.00	0.00	0.00
15/	2	486788	4409558	1.0	1.0	2.0	110.0	0.0	0	0.00	0.00	0.00
15/	3	486788	4409558	1.0	1.0	2.0	200.0	0.0	0	0.00	0.00	0.00
15/	4	486788	4409558	1.0	1.0	2.0	290.0	0.0	0	0.00	0.00	0.00
16/	1	489816	4409014	1.0	1.0	2.0	45.0	0.0	0	0.00	0.00	0.00
16/	2	489816	4409014	1.0	1.0	2.0	135.0	0.0	0	0.00	0.00	0.00
16/	3	489816	4409014	1.0	1.0	2.0	225.0	0.0	0	0.00	0.00	0.00
16/	4	489816	4409014	1.0	1.0	2.0	315.0	0.0	0	0.00	0.00	0.00
17/	1	489789	4408916	1.0	1.0	2.0	15.0	0.0	0	0.00	0.00	0.00
17/	2	489789	4408916	1.0	1.0	2.0	105.0	0.0	0	0.00	0.00	0.00
17/	3	489789	4408916	1.0	1.0	2.0	195.0	0.0	0	0.00	0.00	0.00
17/	4	489789	4408916	1.0	1.0	2.0	285.0	0.0	0	0.00	0.00	0.00
18/	1	489748	4408988	1.0	1.0	2.0	30.0	0.0	0	0.00	0.00	0.00
18/	2	489748	4408988	1.0	1.0	2.0	120.0	0.0	0	0.00	0.00	0.00
18/	3	489748	4408988	1.0	1.0	2.0	210.0	0.0	0	0.00	0.00	0.00
18/	4	489748	4408988	1.0	1.0	2.0	300.0	0.0	0	0.00	0.00	0.00
19/	1	489685	4408398	1.0	1.0	2.0	30.0	0.0	0	0.00	0.00	0.00
19/	2	489685	4408398	1.0	1.0	2.0	120.0	0.0	0	0.00	0.00	0.00
19/	3	489685	4408398	1.0	1.0	2.0	210.0	0.0	69	0.75	0.58	40.31
19/	4	489685	4408398	1.0	1.0	2.0	300.0	0.0	69	0.75	0.59	40.53
20/	1	489335	4407243	1.0	1.0	2.0	0.0	0.0	108	1.25	0.96	103.42
20/	2	489335	4407243	1.0	1.0	2.0	90.0	0.0	0	0.00	0.00	0.00
20/	3	489335	4407243	1.0	1.0	2.0	180.0	0.0	0	0.00	0.00	0.00
20/	4	489335	4407243	1.0	1.0	2.0	270.0	0.0	108	1.25	0.96	103.87
21/	1	490640	4407311	1.0	1.0	2.0	5.0	0.0	0	0.00	0.00	0.00
21/	2	490640	4407311	1.0	1.0	2.0	95.0	0.0	0	0.00	0.00	0.00
21/	3	490640	4407311	1.0	1.0	2.0	185.0	0.0	0	0.00	0.00	0.00
21/	4	490640	4407311	1.0	1.0	2.0	275.0	0.0	0	0.00	0.00	0.00
22/	1	490805	4407938	1.0	1.0	2.0	5.0	0.0	0	0.00	0.00	0.00
22/	2	490805	4407938	1.0	1.0	2.0	95.0	0.0	0	0.00	0.00	0.00
22/	3	490805	4407938	1.0	1.0	2.0	185.0	0.0	0	0.00	0.00	0.00
22/	4	490805	4407938	1.0	1.0	2.0	275.0	0.0	0	0.00	0.00	0.00
23/	1	487556	4407883	1.0	1.0	2.0	45.0	0.0	0	0.00	0.00	0.00
23/	2	487556	4407883	1.0	1.0	2.0	135.0	0.0	0	0.00	0.00	0.00
23/	3	487556	4407883	1.0	1.0	2.0	225.0	0.0	0	0.00	0.00	0.00
23/	4	487556	4407883	1.0	1.0	2.0	315.0	0.0	0	0.00	0.00	0.00
24/	1	486744	4408078	1.0	1.0	2.0	0.0	0.0	0	0.00	0.00	0.00
24/	2	486744	4408078	1.0	1.0	2.0	90.0	0.0	0	0.00	0.00	0.00
24/	3	486744	4408078	1.0	1.0	2.0	180.0	0.0	0	0.00	0.00	0.00
24/	4	486744	4408078	1.0	1.0	2.0	270.0	0.0	0	0.00	0.00	0.00
25/	1	486622	4409852	1.0	1.0	2.0	60.0	0.0	0	0.00	0.00	0.00
25/	2	486622	4409852	1.0	1.0	2.0	150.0	0.0	0	0.00	0.00	0.00
25/	3	486622	4409852	1.0	1.0	2.0	240.0	0.0	0	0.00	0.00	0.00
25/	4	486622	4409852	1.0	1.0	2.0	330.0	0.0	0	0.00	0.00	0.00
26/	1	487818	4411780	1.0	1.0	2.0	45.0	0.0	0	0.00	0.00	0.00
26/	2	487818	4411780	1.0	1.0	2.0	135.0	0.0	0	0.00	0.00	0.00
26/	3	487818	4411780	1.0	1.0	2.0	225.0	0.0	0	0.00	0.00	0.00
26/	4	487818	4411780	1.0	1.0	2.0	315.0	0.0	0	0.00	0.00	0.00
27/	1	487771	4411712	1.0	1.0	2.0	45.0	0.0	0	0.00	0.00	0.00
27/	2	487771	4411712	1.0	1.0	2.0	135.0	0.0	0	0.00	0.00	0.00
27/	3	487771	4411712	1.0	1.0	2.0	225.0	0.0	0	0.00	0.00	0.00
27/	4	487771	4411712	1.0	1.0	2.0	315.0	0.0	0	0.00	0.00	0.00
28/	1	488602	4410899	1.0	1.0	2.0	15.0	0.0	0	0.00	0.00	0.00
28/	2	488602	4410899	1.0	1.0	2.0	105.0	0.0	0	0.00	0.00	0.00
28/	3	488602	4410899	1.0	1.0	2.0	195.0	0.0	86	0.79	0.69	59.55
28/	4	488602	4410899	1.0	1.0	2.0	285.0	0.0	86	0.79	0.69	59.59
29/	1	488456	4410114	1.0	1.0	2.0	15.0	0.0	46	0.71	0.56	25.88
29/	2	488456	4410114	1.0	1.0	2.0	105.0	0.0	0	0.00	0.00	0.00
29/	3	488456	4410114	1.0	1.0	2.0	195.0	0.0	101	0.89	0.80	80.32
29/	4	488456	4410114	1.0	1.0	2.0	285.0	0.0	147	0.89	0.73	106.69
30/	1	488575	4409166	1.0	1.0	2.0	60.0	0.0	0	0.00	0.00	0.00
30/	2	488575	4409166	1.0	1.0	2.0	150.0	0.0	98	0.87	0.78	75.98

Project : USELLUS  
 Run Name : KUsellus002.WFK  
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30/	3	488575	4409166	1.0	1.0	2.0	240.0	0.0	98	0.87	0.78	76.29
30/	4	488575	4409166	1.0	1.0	2.0	330.0	0.0	0	0.00	0.00	0.00
31/	1	488966	4409396	1.0	1.0	2.0	70.0	0.0	0	0.00	0.00	0.00
31/	2	488966	4409396	1.0	1.0	2.0	160.0	0.0	0	0.00	0.00	0.00
31/	3	488966	4409396	1.0	1.0	2.0	250.0	0.0	0	0.00	0.00	0.00
31/	4	488966	4409396	1.0	1.0	2.0	340.0	0.0	0	0.00	0.00	0.00
32/	1	491716	4409801	1.0	1.0	2.0	25.0	0.0	0	0.00	0.00	0.00
32/	2	491716	4409801	1.0	1.0	2.0	115.0	0.0	0	0.00	0.00	0.00
32/	3	491716	4409801	1.0	1.0	2.0	205.0	0.0	0	0.00	0.00	0.00
32/	4	491716	4409801	1.0	1.0	2.0	295.0	0.0	0	0.00	0.00	0.00
33/	1	491406	4410065	1.0	1.0	2.0	45.0	0.0	0	0.00	0.00	0.00
33/	2	491406	4410065	1.0	1.0	2.0	135.0	0.0	0	0.00	0.00	0.00
33/	3	491406	4410065	1.0	1.0	2.0	225.0	0.0	0	0.00	0.00	0.00
33/	4	491406	4410065	1.0	1.0	2.0	315.0	0.0	0	0.00	0.00	0.00
34/	1	491194	4410178	1.0	1.0	2.0	30.0	0.0	0	0.00	0.00	0.00
34/	2	491194	4410178	1.0	1.0	2.0	120.0	0.0	0	0.00	0.00	0.00
34/	3	491194	4410178	1.0	1.0	2.0	210.0	0.0	0	0.00	0.00	0.00
34/	4	491194	4410178	1.0	1.0	2.0	300.0	0.0	0	0.00	0.00	0.00
35/	1	489781	4409864	1.0	1.0	2.0	70.0	0.0	125	0.98	0.80	100.19
35/	2	489781	4409864	1.0	1.0	2.0	160.0	0.0	125	0.98	0.80	100.40
35/	3	489781	4409864	1.0	1.0	2.0	250.0	0.0	0	0.00	0.00	0.00
35/	4	489781	4409864	1.0	1.0	2.0	340.0	0.0	0	0.00	0.00	0.00
36/	1	491529	4408377	1.0	1.0	2.0	45.0	0.0	0	0.00	0.00	0.00
36/	2	491529	4408377	1.0	1.0	2.0	135.0	0.0	0	0.00	0.00	0.00
36/	3	491529	4408377	1.0	1.0	2.0	225.0	0.0	92	1.25	1.03	94.75
36/	4	491529	4408377	1.0	1.0	2.0	315.0	0.0	92	1.25	1.03	95.03
37/	1	491519	4408290	1.0	1.0	2.0	5.0	0.0	0	0.00	0.00	0.00
37/	2	491519	4408290	1.0	1.0	2.0	95.0	0.0	0	0.00	0.00	0.00
37/	3	491519	4408290	1.0	1.0	2.0	185.0	0.0	0	0.00	0.00	0.00
37/	4	491519	4408290	1.0	1.0	2.0	275.0	0.0	0	0.00	0.00	0.00
38/	1	491522	4408257	1.0	1.0	2.0	5.0	0.0	0	0.00	0.00	0.00
38/	2	491522	4408257	1.0	1.0	2.0	95.0	0.0	0	0.00	0.00	0.00
38/	3	491522	4408257	1.0	1.0	2.0	185.0	0.0	0	0.00	0.00	0.00
38/	4	491522	4408257	1.0	1.0	2.0	275.0	0.0	0	0.00	0.00	0.00
39/	1	491499	4408192	1.0	1.0	2.0	10.0	0.0	0	0.00	0.00	0.00
39/	2	491499	4408192	1.0	1.0	2.0	100.0	0.0	0	0.00	0.00	0.00
39/	3	491499	4408192	1.0	1.0	2.0	190.0	0.0	0	0.00	0.00	0.00
39/	4	491499	4408192	1.0	1.0	2.0	280.0	0.0	0	0.00	0.00	0.00
40/	1	488552	4406621	1.0	1.0	2.0	70.0	0.0	0	0.00	0.00	0.00
40/	2	488552	4406621	1.0	1.0	2.0	160.0	0.0	0	0.00	0.00	0.00
40/	3	488552	4406621	1.0	1.0	2.0	250.0	0.0	0	0.00	0.00	0.00
40/	4	488552	4406621	1.0	1.0	2.0	340.0	0.0	0	0.00	0.00	0.00
41/	1	489659	4409965	1.0	1.0	2.0	45.0	0.0	102	0.80	0.69	70.11
41/	2	489659	4409965	1.0	1.0	2.0	135.0	0.0	102	0.80	0.69	70.42
41/	3	489659	4409965	1.0	1.0	2.0	225.0	0.0	0	0.00	0.00	0.00
41/	4	489659	4409965	1.0	1.0	2.0	315.0	0.0	0	0.00	0.00	0.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

SHADOW TIMES ON EACH HOUSE

House Easting Northing  
 1 489924 4407382

There are no shadows cast on this window

House Easting Northing  
 2 489970 4408107

There are no shadows cast on this window

House Easting Northing  
 3 489062 4408081

There are no shadows cast on this window

House Easting Northing  
 4 487994 4409205

Turbine	Easting	Northing	Date	Start Time	End Time	Duration	% Cover
4	487385	4408840	10-01	17:29:32	17:40:51	00:11:19	25.21
4	487385	4408840	11-01	17:27:23	17:43:51	00:16:27	53.91
4	487385	4408840	12-01	17:25:50	17:46:14	00:20:24	83.96
4	487385	4408840	13-01	17:24:34	17:48:18	00:23:44	100.00
4	487385	4408840	14-01	17:23:29	17:50:10	00:26:41	100.00
4	487385	4408840	15-01	17:22:32	17:51:47	00:29:15	100.00
4	487385	4408840	16-01	17:21:40	17:49:33	00:27:53	100.00
4	487385	4408840	17-01	17:20:54	17:51:03	00:30:09	100.00
4	487385	4408840	18-01	17:20:11	17:52:27	00:32:17	100.00
4	487385	4408840	19-01	17:19:32	17:53:47	00:34:16	100.00
4	487385	4408840	20-01	17:18:55	17:55:03	00:36:07	100.00
4	487385	4408840	21-01	17:18:22	17:56:14	00:37:52	100.00
4	487385	4408840	22-01	17:17:51	17:57:21	00:39:30	100.00
4	487385	4408840	23-01	17:17:22	17:58:24	00:41:02	100.00
4	487385	4408840	24-01	17:16:56	17:59:24	00:42:28	100.00
4	487385	4408840	25-01	17:16:32	18:00:19	00:43:48	100.00
4	487385	4408840	26-01	17:16:10	18:01:11	00:45:01	100.00
4	487385	4408840	27-01	17:15:50	18:01:59	00:46:09	100.00
4	487385	4408840	28-01	17:15:32	18:02:43	00:47:11	100.00
4	487385	4408840	29-01	17:15:16	18:03:23	00:48:07	100.00
4	487385	4408840	30-01	17:15:02	18:03:59	00:48:57	100.00
4	487385	4408840	31-01	17:14:51	18:04:32	00:49:41	100.00
4	487385	4408840	01-02	17:14:42	18:05:01	00:50:19	100.00
4	487385	4408840	02-02	17:14:34	18:05:25	00:50:51	100.00
4	487385	4408840	03-02	17:14:28	18:05:46	00:51:18	100.00
4	487385	4408840	04-02	17:14:24	18:06:02	00:51:38	100.00
4	487385	4408840	05-02	17:14:23	18:06:14	00:51:51	100.00
4	487385	4408840	06-02	17:14:24	18:06:22	00:51:58	100.00
4	487385	4408840	07-02	17:14:28	18:06:26	00:51:57	100.00
4	487385	4408840	08-02	17:14:35	18:10:21	00:55:46	100.00
4	487385	4408840	09-02	17:14:45	18:10:15	00:55:31	100.00
4	487385	4408840	10-02	17:14:57	18:10:05	00:55:08	100.00
4	487385	4408840	11-02	17:15:13	18:09:49	00:54:36	100.00
4	487385	4408840	12-02	17:15:32	18:09:28	00:53:56	100.00
4	487385	4408840	13-02	17:15:55	18:09:02	00:53:06	100.00
4	487385	4408840	14-02	17:16:23	18:08:30	00:52:07	100.00
4	487385	4408840	15-02	17:16:54	18:07:51	00:50:57	100.00
4	487385	4408840	16-02	17:17:31	18:07:06	00:49:35	100.00
4	487385	4408840	17-02	17:18:13	18:06:14	00:48:01	100.00
4	487385	4408840	18-02	17:19:01	18:05:14	00:46:13	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

4	487385	4408840	19-02	17:19:57	18:04:05	00:44:08	100.00
4	487385	4408840	20-02	17:21:01	18:02:46	00:41:45	100.00
4	487385	4408840	21-02	17:22:15	18:01:15	00:38:59	100.00
4	487385	4408840	22-02	17:23:43	17:59:32	00:35:49	100.00
4	487385	4408840	23-02	17:25:27	17:57:30	00:32:04	100.00
4	487385	4408840	24-02	17:27:35	17:55:04	00:27:29	100.00
4	487385	4408840	25-02	17:30:24	17:51:56	00:21:33	100.00
4	487385	4408840	26-02	17:34:47	17:47:14	00:12:27	34.33
4	487385	4408840	15-10	17:08:03	17:19:27	00:11:24	28.48
4	487385	4408840	16-10	17:03:06	17:23:58	00:20:53	96.22
4	487385	4408840	17-10	16:59:52	17:26:48	00:26:55	100.00
4	487385	4408840	18-10	16:57:22	17:28:56	00:31:34	100.00
4	487385	4408840	19-10	16:55:18	17:30:40	00:35:22	100.00
4	487385	4408840	20-10	16:53:32	17:32:06	00:38:34	100.00
4	487385	4408840	21-10	16:52:01	17:33:21	00:41:20	100.00
4	487385	4408840	22-10	16:50:41	17:34:26	00:43:45	100.00
4	487385	4408840	23-10	16:49:31	17:35:22	00:45:51	100.00
4	487385	4408840	24-10	16:48:29	17:36:11	00:47:41	100.00
4	487385	4408840	25-10	16:47:36	17:36:53	00:49:17	100.00
4	487385	4408840	26-10	16:46:49	17:37:30	00:50:41	100.00
4	487385	4408840	27-10	16:46:09	17:38:01	00:51:52	100.00
4	487385	4408840	28-10	16:45:34	17:38:28	00:52:53	100.00
4	487385	4408840	29-10	16:45:05	17:38:50	00:53:45	100.00
4	487385	4408840	30-10	16:44:42	17:39:09	00:54:27	100.00
4	487385	4408840	31-10	16:44:23	17:39:24	00:55:00	100.00
4	487385	4408840	01-11	16:44:10	17:39:35	00:55:26	100.00
4	487385	4408840	02-11	16:44:01	17:39:44	00:55:43	100.00
4	487385	4408840	03-11	16:43:56	17:39:49	00:55:53	100.00
4	487385	4408840	04-11	16:43:56	17:35:55	00:51:59	100.00
4	487385	4408840	05-11	16:43:59	17:35:55	00:51:55	100.00
4	487385	4408840	06-11	16:44:08	17:35:52	00:51:44	100.00
4	487385	4408840	07-11	16:44:20	17:35:46	00:51:26	100.00
4	487385	4408840	08-11	16:44:36	17:35:38	00:51:02	100.00
4	487385	4408840	09-11	16:44:55	17:35:28	00:50:32	100.00
4	487385	4408840	10-11	16:45:18	17:35:15	00:49:57	100.00
4	487385	4408840	11-11	16:45:44	17:35:00	00:49:16	100.00
4	487385	4408840	12-11	16:46:14	17:34:43	00:48:29	100.00
4	487385	4408840	13-11	16:46:48	17:34:24	00:47:36	100.00
4	487385	4408840	14-11	16:47:26	17:34:03	00:46:37	100.00
4	487385	4408840	15-11	16:48:07	17:33:39	00:45:33	100.00
4	487385	4408840	16-11	16:48:52	17:33:14	00:44:22	100.00
4	487385	4408840	17-11	16:49:40	17:32:46	00:43:06	100.00
4	487385	4408840	18-11	16:50:33	17:32:16	00:41:43	100.00
4	487385	4408840	19-11	16:51:29	17:31:44	00:40:15	100.00
4	487385	4408840	20-11	16:52:29	17:31:10	00:38:40	100.00
4	487385	4408840	21-11	16:53:33	17:30:33	00:36:59	100.00
4	487385	4408840	22-11	16:54:41	17:29:54	00:35:12	100.00
4	487385	4408840	23-11	16:55:54	17:29:12	00:33:18	100.00
4	487385	4408840	24-11	16:57:11	17:28:27	00:31:16	100.00
4	487385	4408840	25-11	16:58:34	17:27:39	00:29:05	100.00
4	487385	4408840	26-11	17:00:02	17:29:58	00:29:56	100.00
4	487385	4408840	27-11	17:01:37	17:29:45	00:28:08	100.00
4	487385	4408840	28-11	17:03:20	17:28:41	00:25:21	100.00
4	487385	4408840	29-11	17:05:13	17:27:28	00:22:15	100.00
4	487385	4408840	30-11	17:07:20	17:26:02	00:18:42	69.92
4	487385	4408840	01-12	17:09:52	17:24:13	00:14:22	40.71
4	487385	4408840	02-12	17:13:21	17:21:28	00:08:07	12.82

House Easting Northing  
 5 487452 4409415

Turbine Easting Northing Date Start Time End Time Duration % Cover

Project : USELLUS  
Run Name : KUsellus002.WFK  
Title : SHADOW 02  
Time : 15:40:13, 29 Jan 2024

5	487911	4409654	16-05	06:44:10	06:51:32	00:07:22	7.72
5	487911	4409654	17-05	06:38:28	06:57:08	00:18:40	50.04
5	487911	4409654	18-05	06:35:12	07:00:19	00:25:07	91.34
5	487911	4409654	19-05	06:32:44	07:02:45	00:30:01	100.00
5	487911	4409654	20-05	06:30:42	07:04:45	00:34:03	100.00
5	487911	4409654	21-05	06:28:59	07:06:29	00:37:30	100.00
5	487911	4409654	22-05	06:27:29	07:08:00	00:40:31	100.00
5	487911	4409654	23-05	06:26:10	07:09:22	00:43:12	100.00
5	487911	4409654	24-05	06:24:59	07:10:36	00:45:37	100.00
5	487911	4409654	25-05	06:23:59	07:07:47	00:43:48	100.00
5	487911	4409654	26-05	06:23:30	07:08:51	00:45:21	100.00
5	487911	4409654	27-05	06:23:09	07:09:50	00:46:42	100.00
5	487911	4409654	28-05	06:22:49	07:10:45	00:47:57	100.00
5	487911	4409654	29-05	06:22:30	07:11:37	00:49:07	100.00
5	487911	4409654	30-05	06:22:13	07:12:25	00:50:12	100.00
5	487911	4409654	31-05	06:21:57	07:13:10	00:51:13	100.00
5	487911	4409654	01-06	06:21:43	07:13:53	00:52:10	100.00
5	487911	4409654	02-06	06:21:30	07:14:33	00:53:03	100.00
5	487911	4409654	03-06	06:21:19	07:15:11	00:53:53	100.00
5	487911	4409654	04-06	06:21:09	07:15:47	00:54:39	100.00
5	487911	4409654	05-06	06:20:59	07:16:22	00:55:22	100.00
5	487911	4409654	06-06	06:20:53	07:16:54	00:56:01	100.00
5	487911	4409654	07-06	06:20:47	07:17:25	00:56:38	100.00
5	487911	4409654	08-06	06:20:42	07:17:54	00:57:12	100.00
5	487911	4409654	09-06	06:20:39	07:18:22	00:57:43	100.00
5	487911	4409654	10-06	06:20:38	07:18:48	00:58:11	100.00
5	487911	4409654	11-06	06:20:37	07:19:14	00:58:36	100.00
5	487911	4409654	12-06	06:20:38	07:19:37	00:58:59	100.00
5	487911	4409654	13-06	06:20:41	07:20:00	00:59:19	100.00
5	487911	4409654	14-06	06:20:44	07:20:21	00:59:37	100.00
5	487911	4409654	15-06	06:20:49	07:20:42	00:59:52	100.00
5	487911	4409654	16-06	06:20:56	07:21:01	01:00:05	100.00
5	487911	4409654	17-06	06:21:03	07:21:19	01:00:15	100.00
5	487911	4409654	18-06	06:21:12	07:21:35	01:00:23	100.00
5	487911	4409654	19-06	06:21:22	07:21:51	01:00:29	100.00
5	487911	4409654	20-06	06:21:33	07:22:06	01:00:32	100.00
5	487911	4409654	21-06	06:21:46	07:22:19	01:00:33	100.00
5	487911	4409654	22-06	06:21:59	07:22:31	01:00:32	100.00
5	487911	4409654	23-06	06:22:14	07:22:42	01:00:28	100.00
5	487911	4409654	24-06	06:22:30	07:22:52	01:00:21	100.00
5	487911	4409654	25-06	06:22:48	07:23:01	01:00:13	100.00
5	487911	4409654	26-06	06:23:06	07:23:08	01:00:02	100.00
5	487911	4409654	27-06	06:23:25	07:23:14	00:59:49	100.00
5	487911	4409654	28-06	06:23:45	07:23:18	00:59:33	100.00
5	487911	4409654	29-06	06:24:07	07:23:21	00:59:14	100.00
5	487911	4409654	30-06	06:24:29	07:23:22	00:58:53	100.00
5	487911	4409654	01-07	06:24:52	07:23:22	00:58:30	100.00
5	487911	4409654	02-07	06:25:16	07:23:20	00:58:04	100.00
5	487911	4409654	03-07	06:25:41	07:23:17	00:57:35	100.00
5	487911	4409654	04-07	06:26:07	07:23:11	00:57:04	100.00
5	487911	4409654	05-07	06:26:34	07:23:03	00:56:29	100.00
5	487911	4409654	06-07	06:27:01	07:22:53	00:55:52	100.00
5	487911	4409654	07-07	06:27:29	07:22:41	00:55:12	100.00
5	487911	4409654	08-07	06:27:58	07:22:26	00:54:28	100.00
5	487911	4409654	09-07	06:28:27	07:22:09	00:53:42	100.00
5	487911	4409654	10-07	06:28:57	07:21:49	00:52:52	100.00
5	487911	4409654	11-07	06:29:28	07:21:26	00:51:58	100.00
5	487911	4409654	12-07	06:29:59	07:20:59	00:51:00	100.00
5	487911	4409654	13-07	06:30:31	07:20:29	00:49:59	100.00
5	487911	4409654	14-07	06:31:03	07:19:55	00:48:53	100.00
5	487911	4409654	15-07	06:31:35	07:19:18	00:47:42	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

5	487911	4409654	16-07	06:32:08	07:18:35	00:46:27	100.00
5	487911	4409654	17-07	06:32:42	07:17:47	00:45:05	100.00
5	487911	4409654	18-07	06:33:24	07:16:54	00:43:29	100.00
5	487911	4409654	19-07	06:34:36	07:19:51	00:45:15	100.00
5	487911	4409654	20-07	06:35:56	07:18:45	00:42:50	100.00
5	487911	4409654	21-07	06:37:23	07:17:31	00:40:08	100.00
5	487911	4409654	22-07	06:39:00	07:16:05	00:37:05	100.00
5	487911	4409654	23-07	06:40:50	07:14:26	00:33:36	100.00
5	487911	4409654	24-07	06:42:58	07:12:28	00:29:30	100.00
5	487911	4409654	25-07	06:45:32	07:10:03	00:24:31	86.63
5	487911	4409654	26-07	06:48:55	07:06:49	00:17:53	45.71
5	487911	4409654	27-07	06:55:20	07:00:31	00:05:11	3.81

House Easting Northing  
 6 487451 4409909

Turbine	Easting	Northing	Date	Start Time	End Time	Duration	% Cover
5	487911	4409654	01-01	08:57:53	09:31:31	00:33:38	100.00
5	487911	4409654	02-01	08:58:00	09:32:20	00:34:20	100.00
5	487911	4409654	03-01	08:58:06	09:33:10	00:35:05	100.00
5	487911	4409654	04-01	08:58:08	09:34:01	00:35:53	100.00
5	487911	4409654	05-01	08:58:09	09:34:53	00:36:44	100.00
5	487911	4409654	06-01	08:58:07	09:35:45	00:37:38	100.00
5	487911	4409654	07-01	08:58:03	09:36:38	00:38:34	100.00
5	487911	4409654	08-01	08:57:57	09:37:30	00:39:33	100.00
5	487911	4409654	09-01	08:57:48	09:38:23	00:40:34	100.00
5	487911	4409654	10-01	08:57:38	09:39:15	00:41:38	100.00
5	487911	4409654	11-01	08:57:24	09:40:07	00:42:43	100.00
5	487911	4409654	12-01	08:57:09	09:40:58	00:43:49	100.00
5	487911	4409654	13-01	08:56:51	09:41:48	00:44:57	100.00
5	487911	4409654	14-01	08:56:32	09:42:38	00:46:06	100.00
5	487911	4409654	15-01	08:56:10	09:43:26	00:47:17	100.00
5	487911	4409654	16-01	08:55:45	09:44:13	00:48:28	100.00
5	487911	4409654	17-01	08:55:19	09:44:59	00:49:40	100.00
5	487911	4409654	18-01	08:54:50	09:45:44	00:50:53	100.00
5	487911	4409654	19-01	08:54:20	09:46:27	00:52:07	100.00
5	487911	4409654	20-01	08:53:47	09:47:08	00:53:21	100.00
5	487911	4409654	21-01	08:53:12	09:47:47	00:54:35	100.00
5	487911	4409654	22-01	08:52:35	09:48:24	00:55:49	100.00
5	487911	4409654	23-01	08:51:56	09:48:59	00:57:04	100.00
5	487911	4409654	24-01	08:51:15	09:49:33	00:58:18	100.00
5	487911	4409654	25-01	08:50:32	09:50:04	00:59:32	100.00
5	487911	4409654	26-01	08:49:48	09:50:33	01:00:46	100.00
5	487911	4409654	27-01	08:49:01	09:50:59	01:01:59	100.00
5	487911	4409654	28-01	08:48:12	09:51:24	01:03:12	100.00
5	487911	4409654	29-01	08:47:22	09:51:46	01:04:23	100.00
5	487911	4409654	30-01	08:46:30	09:52:04	01:05:34	100.00
5	487911	4409654	31-01	08:45:36	09:52:21	01:06:44	100.00
5	487911	4409654	01-02	08:44:41	09:52:34	01:07:53	100.00
5	487911	4409654	02-02	08:43:43	09:52:44	01:09:01	100.00
5	487911	4409654	03-02	08:42:45	09:52:52	01:10:07	100.00
5	487911	4409654	04-02	08:41:44	09:52:56	01:11:12	100.00
5	487911	4409654	05-02	08:41:23	09:52:57	01:11:35	100.00
5	487911	4409654	06-02	08:41:35	09:52:55	01:11:20	100.00
5	487911	4409654	07-02	08:41:49	09:52:49	01:11:00	100.00
5	487911	4409654	08-02	08:42:05	09:52:40	01:10:34	100.00
5	487911	4409654	09-02	08:42:24	09:52:27	01:10:03	100.00
5	487911	4409654	10-02	08:42:45	09:52:10	01:09:25	100.00
5	487911	4409654	11-02	08:43:09	09:51:49	01:08:40	100.00
5	487911	4409654	12-02	08:43:35	09:51:24	01:07:49	100.00
5	487911	4409654	13-02	08:44:05	09:54:51	01:10:46	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

5	487911	4409654	14-02	08:44:37	09:54:17	01:09:40	100.00
5	487911	4409654	15-02	08:45:13	09:53:39	01:08:26	100.00
5	487911	4409654	16-02	08:45:53	09:52:55	01:07:03	100.00
5	487911	4409654	17-02	08:46:37	09:52:07	01:05:30	100.00
5	487911	4409654	18-02	08:47:25	09:51:12	01:03:47	100.00
5	487911	4409654	19-02	08:48:18	09:50:12	01:01:53	100.00
5	487911	4409654	20-02	08:49:17	09:49:04	00:59:47	100.00
5	487911	4409654	21-02	08:50:22	09:47:49	00:57:27	100.00
5	487911	4409654	22-02	08:51:34	09:46:26	00:54:52	100.00
5	487911	4409654	23-02	08:52:55	09:44:53	00:51:59	100.00
5	487911	4409654	24-02	08:54:25	09:43:10	00:48:44	100.00
5	487911	4409654	25-02	08:56:08	09:41:12	00:45:04	100.00
5	487911	4409654	26-02	08:58:07	09:38:59	00:40:51	100.00
5	487911	4409654	27-02	09:00:28	09:36:22	00:35:54	100.00
5	487911	4409654	28-02	09:03:23	09:33:13	00:29:50	100.00
5	487911	4409654	29-02	09:07:21	09:29:04	00:21:43	72.04
5	487911	4409654	01-03	09:14:44	09:21:21	00:06:37	7.24
5	487911	4409654	12-10	08:45:55	08:58:35	00:12:40	26.50
5	487911	4409654	13-10	08:39:54	09:03:59	00:24:05	89.69
5	487911	4409654	14-10	08:35:55	09:07:21	00:31:26	100.00
5	487911	4409654	15-10	08:32:49	09:09:55	00:37:06	100.00
5	487911	4409654	16-10	08:30:12	09:12:00	00:41:48	100.00
5	487911	4409654	17-10	08:27:56	09:13:47	00:45:51	100.00
5	487911	4409654	18-10	08:25:57	09:15:19	00:49:22	100.00
5	487911	4409654	19-10	08:24:10	09:16:40	00:52:30	100.00
5	487911	4409654	20-10	08:22:34	09:17:52	00:55:18	100.00
5	487911	4409654	21-10	08:21:07	09:18:56	00:57:49	100.00
5	487911	4409654	22-10	08:19:48	09:19:53	01:00:05	100.00
5	487911	4409654	23-10	08:18:36	09:20:45	01:02:08	100.00
5	487911	4409654	24-10	08:17:32	09:21:31	01:03:59	100.00
5	487911	4409654	25-10	08:16:33	09:22:13	01:05:40	100.00
5	487911	4409654	26-10	08:15:40	09:22:51	01:07:10	100.00
5	487911	4409654	27-10	08:14:53	09:23:25	01:08:32	100.00
5	487911	4409654	28-10	08:14:10	09:23:55	01:09:45	100.00
5	487911	4409654	29-10	08:13:33	09:24:23	01:10:50	100.00
5	487911	4409654	30-10	08:13:00	09:20:51	01:07:51	100.00
5	487911	4409654	31-10	08:12:32	09:21:13	01:08:42	100.00
5	487911	4409654	01-11	08:12:07	09:21:33	01:09:26	100.00
5	487911	4409654	02-11	08:11:47	09:21:50	01:10:03	100.00
5	487911	4409654	03-11	08:11:31	09:22:06	01:10:35	100.00
5	487911	4409654	04-11	08:11:19	09:22:19	01:11:00	100.00
5	487911	4409654	05-11	08:11:10	09:22:30	01:11:20	100.00
5	487911	4409654	06-11	08:11:05	09:22:39	01:11:35	100.00
5	487911	4409654	07-11	08:11:28	09:22:47	01:11:19	100.00
5	487911	4409654	08-11	08:12:39	09:22:53	01:10:15	100.00
5	487911	4409654	09-11	08:13:49	09:22:58	01:09:09	100.00
5	487911	4409654	10-11	08:14:59	09:23:02	01:08:02	100.00
5	487911	4409654	11-11	08:16:10	09:23:04	01:06:54	100.00
5	487911	4409654	12-11	08:17:21	09:23:05	01:05:44	100.00
5	487911	4409654	13-11	08:18:31	09:23:05	01:04:34	100.00
5	487911	4409654	14-11	08:19:42	09:23:04	01:03:23	100.00
5	487911	4409654	15-11	08:20:52	09:23:03	01:02:11	100.00
5	487911	4409654	16-11	08:22:02	09:23:00	01:00:58	100.00
5	487911	4409654	17-11	08:23:12	09:22:57	00:59:45	100.00
5	487911	4409654	18-11	08:24:22	09:22:53	00:58:31	100.00
5	487911	4409654	19-11	08:25:31	09:22:49	00:57:18	100.00
5	487911	4409654	20-11	08:26:40	09:22:44	00:56:04	100.00
5	487911	4409654	21-11	08:27:49	09:22:38	00:54:50	100.00
5	487911	4409654	22-11	08:28:57	09:22:33	00:53:36	100.00
5	487911	4409654	23-11	08:30:05	09:22:27	00:52:22	100.00
5	487911	4409654	24-11	08:31:12	09:22:21	00:51:09	100.00
5	487911	4409654	25-11	08:32:18	09:22:14	00:49:56	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

5	487911	4409654	26-11	08:33:24	09:22:08	00:48:44	100.00
5	487911	4409654	27-11	08:34:30	09:22:02	00:47:33	100.00
5	487911	4409654	28-11	08:35:34	09:21:56	00:46:22	100.00
5	487911	4409654	29-11	08:36:38	09:21:51	00:45:13	100.00
5	487911	4409654	30-11	08:37:40	09:21:45	00:44:05	100.00
5	487911	4409654	01-12	08:38:42	09:21:41	00:42:58	100.00
5	487911	4409654	02-12	08:39:43	09:21:36	00:41:53	100.00
5	487911	4409654	03-12	08:40:43	09:21:33	00:40:50	100.00
5	487911	4409654	04-12	08:41:41	09:21:30	00:39:48	100.00
5	487911	4409654	05-12	08:42:39	09:21:28	00:38:49	100.00
5	487911	4409654	06-12	08:43:35	09:21:27	00:37:52	100.00
5	487911	4409654	07-12	08:44:29	09:21:27	00:36:58	100.00
5	487911	4409654	08-12	08:45:23	09:21:29	00:36:06	100.00
5	487911	4409654	09-12	08:46:15	09:21:32	00:35:18	100.00
5	487911	4409654	10-12	08:47:06	09:21:37	00:34:32	100.00
5	487911	4409654	11-12	08:47:55	09:21:44	00:33:49	100.00
5	487911	4409654	12-12	08:48:42	09:21:52	00:33:10	100.00
5	487911	4409654	13-12	08:49:28	09:22:02	00:32:34	100.00
5	487911	4409654	14-12	08:50:12	09:22:15	00:32:02	100.00
5	487911	4409654	15-12	08:50:55	09:22:29	00:31:34	100.00
5	487911	4409654	16-12	08:51:36	09:22:45	00:31:09	100.00
5	487911	4409654	17-12	08:52:15	09:23:04	00:30:49	100.00
5	487911	4409654	18-12	08:52:52	09:23:25	00:30:33	100.00
5	487911	4409654	19-12	08:53:27	09:23:48	00:30:21	100.00
5	487911	4409654	20-12	08:54:01	09:24:14	00:30:13	100.00
5	487911	4409654	21-12	08:54:32	09:24:42	00:30:10	100.00
5	487911	4409654	22-12	08:55:02	09:25:12	00:30:11	100.00
5	487911	4409654	23-12	08:55:29	09:25:45	00:30:16	100.00
5	487911	4409654	24-12	08:55:54	09:26:20	00:30:26	100.00
5	487911	4409654	25-12	08:56:18	09:26:58	00:30:40	100.00
5	487911	4409654	26-12	08:56:39	09:27:37	00:30:58	100.00
5	487911	4409654	27-12	08:56:58	09:28:18	00:31:20	100.00
5	487911	4409654	28-12	08:57:15	09:29:01	00:31:47	100.00
5	487911	4409654	29-12	08:57:29	09:29:46	00:32:17	100.00
5	487911	4409654	30-12	08:57:42	09:30:33	00:32:51	100.00
5	487911	4409654	31-12	08:57:52	09:31:20	00:33:29	100.00

House Easting Northing  
 7 489913 4408936

There are no shadows cast on this window

House Easting Northing  
 8 491708 4409223

Turbine	Easting	Northing	Date	Start Time	End Time	Duration	% Cover
6	491096	4408573	11-12	16:38:20	16:42:58	00:04:38	4.96
6	491096	4408573	12-12	16:36:36	16:45:39	00:09:03	19.03
6	491096	4408573	13-12	16:35:47	16:47:25	00:11:38	31.64
6	491096	4408573	14-12	16:35:21	16:48:51	00:13:30	42.79
6	491096	4408573	15-12	16:35:08	16:50:02	00:14:55	52.45
6	491096	4408573	16-12	16:35:04	16:51:05	00:16:00	60.63
6	491096	4408573	17-12	16:35:09	16:51:59	00:16:51	67.32
6	491096	4408573	18-12	16:35:20	16:52:48	00:17:28	72.51
6	491096	4408573	19-12	16:35:37	16:53:31	00:17:53	76.20
6	491096	4408573	20-12	16:35:59	16:54:08	00:18:08	78.39
6	491096	4408573	21-12	16:36:27	16:54:40	00:18:13	79.07
6	491096	4408573	22-12	16:37:00	16:55:07	00:18:07	78.25
6	491096	4408573	23-12	16:37:38	16:55:29	00:17:51	75.92
6	491096	4408573	24-12	16:38:21	16:55:45	00:17:25	72.08
6	491096	4408573	25-12	16:39:10	16:55:56	00:16:46	66.74



Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

6	491096	4408573	26-12	16:40:05	16:55:59	00:15:54	59.89
6	491096	4408573	27-12	16:41:08	16:55:55	00:14:47	51.54
6	491096	4408573	28-12	16:42:20	16:55:40	00:13:19	41.70
6	491096	4408573	29-12	16:43:47	16:55:10	00:11:24	30.37
6	491096	4408573	30-12	16:45:36	16:54:17	00:08:41	17.55
6	491096	4408573	31-12	16:48:32	16:52:17	00:03:45	3.25
8	490965	4409049	21-02	18:32:30	18:43:08	00:10:38	26.30
8	490965	4409049	22-02	18:27:45	18:47:39	00:19:54	95.02
8	490965	4409049	23-02	18:24:41	18:50:27	00:25:46	100.00
8	490965	4409049	24-02	18:22:18	18:52:33	00:30:14	100.00
8	490965	4409049	25-02	18:20:20	18:54:14	00:33:54	100.00
8	490965	4409049	26-02	18:18:38	18:55:36	00:36:58	100.00
8	490965	4409049	27-02	18:17:10	18:56:45	00:39:35	100.00
8	490965	4409049	28-02	18:15:52	18:57:43	00:41:51	100.00
8	490965	4409049	29-02	18:14:43	18:58:31	00:43:48	100.00
8	490965	4409049	01-03	18:13:43	18:59:10	00:45:27	100.00
8	490965	4409049	02-03	18:12:49	18:59:40	00:46:51	100.00
8	490965	4409049	03-03	18:12:01	19:00:03	00:48:02	100.00
8	490965	4409049	04-03	18:11:18	19:00:19	00:49:00	100.00
8	490965	4409049	05-03	18:10:42	19:00:28	00:49:46	100.00
8	490965	4409049	06-03	18:10:11	19:00:30	00:50:19	100.00
8	490965	4409049	07-03	18:09:46	19:00:26	00:50:40	100.00
8	490965	4409049	08-03	18:09:27	19:00:16	00:50:49	100.00
8	490965	4409049	09-03	18:09:12	18:59:59	00:50:47	100.00
8	490965	4409049	10-03	18:09:04	18:59:36	00:50:33	100.00
8	490965	4409049	11-03	18:09:01	18:59:07	00:50:06	100.00
8	490965	4409049	12-03	18:09:03	18:58:31	00:49:28	100.00
8	490965	4409049	13-03	18:09:12	18:57:49	00:48:37	100.00
8	490965	4409049	14-03	18:09:27	18:56:59	00:47:32	100.00
8	490965	4409049	15-03	18:09:50	18:56:03	00:46:13	100.00
8	490965	4409049	16-03	18:10:19	18:54:58	00:44:38	100.00
8	490965	4409049	17-03	18:10:58	18:53:44	00:42:46	100.00
8	490965	4409049	18-03	18:11:46	18:52:20	00:40:34	100.00
8	490965	4409049	19-03	18:12:45	18:50:44	00:37:59	100.00
8	490965	4409049	20-03	18:13:58	18:48:54	00:34:56	100.00
8	490965	4409049	21-03	18:15:29	18:46:46	00:31:18	100.00
8	490965	4409049	22-03	18:17:25	18:44:16	00:26:51	100.00
8	490965	4409049	23-03	18:19:59	18:41:05	00:21:05	100.00
8	490965	4409049	24-03	18:24:07	18:36:22	00:12:16	36.03
8	490965	4409049	18-09	18:09:55	18:26:16	00:16:21	64.37
8	490965	4409049	19-09	18:06:00	18:29:28	00:23:28	100.00
8	490965	4409049	20-09	18:03:05	18:31:39	00:28:35	100.00
8	490965	4409049	21-09	18:00:41	18:33:19	00:32:38	100.00
8	490965	4409049	22-09	17:58:39	18:34:40	00:36:01	100.00
8	490965	4409049	23-09	17:56:53	18:35:45	00:38:52	100.00
8	490965	4409049	24-09	17:55:20	18:36:37	00:41:17	100.00
8	490965	4409049	25-09	17:53:58	18:37:18	00:43:21	100.00
8	490965	4409049	26-09	17:52:45	18:37:51	00:45:06	100.00
8	490965	4409049	27-09	17:51:40	18:38:16	00:46:36	100.00
8	490965	4409049	28-09	17:50:43	18:38:33	00:47:50	100.00
8	490965	4409049	29-09	17:49:53	18:38:44	00:48:50	100.00
8	490965	4409049	30-09	17:49:10	18:38:48	00:49:38	100.00
8	490965	4409049	01-10	17:48:33	18:38:47	00:50:13	100.00
8	490965	4409049	02-10	17:48:03	18:38:40	00:50:37	100.00
8	490965	4409049	03-10	17:47:38	18:38:27	00:50:49	100.00
8	490965	4409049	04-10	17:47:20	18:38:09	00:50:49	100.00
8	490965	4409049	05-10	17:47:07	18:37:46	00:50:38	100.00
8	490965	4409049	06-10	17:47:01	18:37:17	00:50:16	100.00
8	490965	4409049	07-10	17:47:01	18:36:43	00:49:42	100.00
8	490965	4409049	08-10	17:47:07	18:36:03	00:48:56	100.00
8	490965	4409049	09-10	17:47:20	18:35:18	00:47:58	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

8	490965	4409049	10-10	17:47:39	18:34:26	00:46:47	100.00
8	490965	4409049	11-10	17:48:05	18:33:28	00:45:24	100.00
8	490965	4409049	12-10	17:48:38	18:32:23	00:43:45	100.00
8	490965	4409049	13-10	17:49:21	18:31:10	00:41:50	100.00
8	490965	4409049	14-10	17:50:13	18:29:48	00:39:35	100.00
8	490965	4409049	15-10	17:51:16	18:28:17	00:37:00	100.00
8	490965	4409049	16-10	17:52:34	18:26:33	00:33:59	100.00
8	490965	4409049	17-10	17:54:09	18:24:33	00:30:24	100.00
8	490965	4409049	18-10	17:56:08	18:22:10	00:26:02	100.00
8	490965	4409049	19-10	17:58:47	18:19:09	00:20:22	98.92
8	490965	4409049	20-10	18:02:58	18:14:38	00:11:40	31.50

House Easting Northing  
 9 491075 4409672

Turbine	Easting	Northing	Date	Start Time	End Time	Duration	% Cover
10	490327	4409525	25-02	18:36:02	18:51:14	00:15:12	54.76
10	490327	4409525	26-02	18:32:09	18:54:47	00:22:39	100.00
10	490327	4409525	27-02	18:29:21	18:57:14	00:27:53	100.00
10	490327	4409525	28-02	18:27:07	18:59:07	00:32:01	100.00
10	490327	4409525	29-02	18:25:13	19:00:38	00:35:25	100.00
10	490327	4409525	01-03	18:23:35	19:01:53	00:38:18	100.00
10	490327	4409525	02-03	18:22:10	19:02:56	00:40:46	100.00
10	490327	4409525	03-03	18:20:54	19:03:47	00:42:53	100.00
10	490327	4409525	04-03	18:19:47	19:04:29	00:44:42	100.00
10	490327	4409525	05-03	18:18:48	19:05:02	00:46:14	100.00
10	490327	4409525	06-03	18:17:56	19:05:28	00:47:31	100.00
10	490327	4409525	07-03	18:17:11	19:05:45	00:48:34	100.00
10	490327	4409525	08-03	18:16:31	19:05:56	00:49:25	100.00
10	490327	4409525	09-03	18:15:56	19:05:59	00:50:04	100.00
10	490327	4409525	10-03	18:15:27	19:05:57	00:50:30	100.00
10	490327	4409525	11-03	18:15:04	19:05:48	00:50:44	100.00
10	490327	4409525	12-03	18:14:47	19:05:33	00:50:47	100.00
10	490327	4409525	13-03	18:14:35	19:05:12	00:50:37	100.00
10	490327	4409525	14-03	18:14:29	19:04:44	00:50:16	100.00
10	490327	4409525	15-03	18:14:28	19:04:10	00:49:42	100.00
10	490327	4409525	16-03	18:14:34	19:03:30	00:48:56	100.00
10	490327	4409525	17-03	18:14:46	19:02:42	00:47:57	100.00
10	490327	4409525	18-03	18:15:05	19:01:48	00:46:43	100.00
10	490327	4409525	19-03	18:15:31	19:00:46	00:45:14	100.00
10	490327	4409525	20-03	18:16:05	18:59:35	00:43:30	100.00
10	490327	4409525	21-03	18:16:48	18:58:15	00:41:27	100.00
10	490327	4409525	22-03	18:17:41	18:56:44	00:39:02	100.00
10	490327	4409525	23-03	18:18:47	18:54:59	00:36:12	100.00
10	490327	4409525	24-03	18:20:09	18:52:59	00:32:50	100.00
10	490327	4409525	25-03	18:21:52	18:50:40	00:28:48	100.00
10	490327	4409525	26-03	18:24:07	18:47:49	00:23:42	100.00
10	490327	4409525	27-03	18:27:22	18:43:58	00:16:36	66.59
10	490327	4409525	14-09	18:20:33	18:31:11	00:10:38	26.66
10	490327	4409525	15-09	18:15:26	18:35:34	00:20:07	98.43
10	490327	4409525	16-09	18:12:07	18:38:10	00:26:03	100.00
10	490327	4409525	17-09	18:09:29	18:40:03	00:30:34	100.00
10	490327	4409525	18-09	18:07:18	18:41:33	00:34:15	100.00
10	490327	4409525	19-09	18:05:24	18:42:45	00:37:21	100.00
10	490327	4409525	20-09	18:03:45	18:43:43	00:39:59	100.00
10	490327	4409525	21-09	18:02:17	18:44:30	00:42:13	100.00
10	490327	4409525	22-09	18:00:59	18:45:07	00:44:08	100.00
10	490327	4409525	23-09	17:59:49	18:45:35	00:45:46	100.00
10	490327	4409525	24-09	17:58:47	18:45:55	00:47:08	100.00
10	490327	4409525	25-09	17:57:53	18:46:09	00:48:16	100.00
10	490327	4409525	26-09	17:57:05	18:46:16	00:49:11	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

10	490327	4409525	27-09	17:56:24	18:46:17	00:49:53	100.00
10	490327	4409525	28-09	17:55:49	18:46:12	00:50:23	100.00
10	490327	4409525	29-09	17:55:20	18:46:01	00:50:41	100.00
10	490327	4409525	30-09	17:54:57	18:45:45	00:50:48	100.00
10	490327	4409525	01-10	17:54:40	18:45:23	00:50:43	100.00
10	490327	4409525	02-10	17:54:30	18:44:56	00:50:27	100.00
10	490327	4409525	03-10	17:54:25	18:44:24	00:49:59	100.00
10	490327	4409525	04-10	17:54:27	18:43:45	00:49:19	100.00
10	490327	4409525	05-10	17:54:34	18:43:01	00:48:27	100.00
10	490327	4409525	06-10	17:54:48	18:42:11	00:47:23	100.00
10	490327	4409525	07-10	17:55:09	18:41:14	00:46:05	100.00
10	490327	4409525	08-10	17:55:38	18:40:10	00:44:33	100.00
10	490327	4409525	09-10	17:56:15	18:38:59	00:42:44	100.00
10	490327	4409525	10-10	17:57:01	18:37:39	00:40:37	100.00
10	490327	4409525	11-10	17:57:59	18:36:09	00:38:10	100.00
10	490327	4409525	12-10	17:59:10	18:34:28	00:35:18	100.00
10	490327	4409525	13-10	18:00:36	18:32:32	00:31:55	100.00
10	490327	4409525	14-10	18:02:25	18:30:15	00:27:50	100.00
10	490327	4409525	15-10	18:04:46	18:27:27	00:22:40	100.00
10	490327	4409525	16-10	18:08:13	18:23:35	00:15:22	55.61

House Easting Northing  
 10 488274 4410742

Turbine	Easting	Northing	Date	Start Time	End Time	Duration	% Cover
7	487415	4410454	20-02	18:07:29	18:18:15	00:10:47	32.16
7	487415	4410454	21-02	18:03:24	18:22:06	00:18:42	100.00
7	487415	4410454	22-02	18:00:44	18:24:33	00:23:49	100.00
7	487415	4410454	23-02	17:58:39	18:26:22	00:27:43	100.00
7	487415	4410454	24-02	17:56:57	18:27:48	00:30:52	100.00
7	487415	4410454	25-02	17:55:30	18:28:58	00:33:29	100.00
7	487415	4410454	26-02	17:54:15	18:29:55	00:35:40	100.00
7	487415	4410454	27-02	17:53:11	18:30:40	00:37:29	100.00
7	487415	4410454	28-02	17:52:16	18:31:15	00:38:59	100.00
7	487415	4410454	29-02	17:51:28	18:31:40	00:40:12	100.00
7	487415	4410454	01-03	17:50:48	18:31:58	00:41:10	100.00
7	487415	4410454	02-03	17:50:15	18:32:07	00:41:53	100.00
7	487415	4410454	03-03	17:49:47	18:32:10	00:42:22	100.00
7	487415	4410454	04-03	17:49:25	18:32:04	00:42:39	100.00
7	487415	4410454	05-03	17:49:10	18:31:52	00:42:42	100.00
7	487415	4410454	06-03	17:49:01	18:31:32	00:42:31	100.00
7	487415	4410454	07-03	17:48:59	18:31:05	00:42:06	100.00
7	487415	4410454	08-03	17:49:03	18:30:30	00:41:26	100.00
7	487415	4410454	09-03	17:49:15	18:29:47	00:40:32	100.00
7	487415	4410454	10-03	17:49:34	18:28:55	00:39:21	100.00
7	487415	4410454	11-03	17:50:02	18:27:54	00:37:52	100.00
7	487415	4410454	12-03	17:50:40	18:26:43	00:36:04	100.00
7	487415	4410454	13-03	17:51:28	18:25:20	00:33:52	100.00
7	487415	4410454	14-03	17:52:31	18:23:43	00:31:12	100.00
7	487415	4410454	15-03	17:53:51	18:21:47	00:27:56	100.00
7	487415	4410454	16-03	17:55:35	18:19:28	00:23:52	100.00
7	487415	4410454	17-03	17:58:01	18:16:27	00:18:27	100.00
7	487415	4410454	18-03	18:02:10	18:11:43	00:09:33	25.95
7	487415	4410454	24-09	17:44:33	17:57:12	00:12:39	45.59
7	487415	4410454	25-09	17:40:32	18:00:32	00:20:01	100.00
7	487415	4410454	26-09	17:37:43	18:02:40	00:24:57	100.00
7	487415	4410454	27-09	17:35:29	18:04:13	00:28:44	100.00
7	487415	4410454	28-09	17:33:38	18:05:26	00:31:49	100.00
7	487415	4410454	29-09	17:32:03	18:06:23	00:34:20	100.00
7	487415	4410454	30-09	17:30:41	18:07:07	00:36:26	100.00
7	487415	4410454	01-10	17:29:31	18:07:40	00:38:09	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

7	487415	4410454	02-10	17:28:30	18:08:04	00:39:34	100.00
7	487415	4410454	03-10	17:27:38	18:08:19	00:40:41	100.00
7	487415	4410454	04-10	17:26:54	18:08:27	00:41:33	100.00
7	487415	4410454	05-10	17:26:18	18:08:28	00:42:10	100.00
7	487415	4410454	06-10	17:25:49	18:08:22	00:42:33	100.00
7	487415	4410454	07-10	17:25:27	18:08:10	00:42:43	100.00
7	487415	4410454	08-10	17:25:13	18:07:52	00:42:39	100.00
7	487415	4410454	09-10	17:25:05	18:07:27	00:42:22	100.00
7	487415	4410454	10-10	17:25:04	18:06:56	00:41:53	100.00
7	487415	4410454	11-10	17:25:09	18:06:19	00:41:10	100.00
7	487415	4410454	12-10	17:25:22	18:05:35	00:40:13	100.00
7	487415	4410454	13-10	17:25:43	18:04:44	00:39:01	100.00
7	487415	4410454	14-10	17:26:13	18:03:45	00:37:32	100.00
7	487415	4410454	15-10	17:26:52	18:02:38	00:35:46	100.00
7	487415	4410454	16-10	17:27:43	18:01:20	00:33:38	100.00
7	487415	4410454	17-10	17:28:46	17:59:51	00:31:05	100.00
7	487415	4410454	18-10	17:30:06	17:58:07	00:28:01	100.00
7	487415	4410454	19-10	17:31:48	17:56:03	00:24:15	100.00
7	487415	4410454	20-10	17:34:04	17:53:26	00:19:22	100.00
7	487415	4410454	21-10	17:37:32	17:49:38	00:12:06	40.47
9	487985	4410359	01-01	15:29:02	16:42:29	01:13:26	100.00
9	487985	4410359	02-01	15:29:38	16:42:49	01:13:11	100.00
9	487985	4410359	03-01	15:30:14	16:43:08	01:12:54	100.00
9	487985	4410359	04-01	15:30:50	16:43:26	01:12:36	100.00
9	487985	4410359	05-01	15:31:27	16:43:42	01:12:15	100.00
9	487985	4410359	06-01	15:32:05	16:43:57	01:11:51	100.00
9	487985	4410359	07-01	15:32:44	16:44:09	01:11:26	100.00
9	487985	4410359	08-01	15:33:23	16:44:20	01:10:58	100.00
9	487985	4410359	09-01	15:34:03	16:44:29	01:10:27	100.00
9	487985	4410359	10-01	15:34:43	16:44:36	01:09:53	100.00
9	487985	4410359	11-01	15:35:25	16:44:41	01:09:16	100.00
9	487985	4410359	12-01	15:36:07	16:44:44	01:08:36	100.00
9	487985	4410359	13-01	15:36:51	16:44:43	01:07:52	100.00
9	487985	4410359	14-01	15:37:36	16:48:37	01:11:01	100.00
9	487985	4410359	15-01	15:38:22	16:48:32	01:10:10	100.00
9	487985	4410359	16-01	15:39:09	16:48:23	01:09:14	100.00
9	487985	4410359	17-01	15:39:58	16:48:12	01:08:13	100.00
9	487985	4410359	18-01	15:40:49	16:47:57	01:07:07	100.00
9	487985	4410359	19-01	15:41:42	16:47:38	01:05:56	100.00
9	487985	4410359	20-01	15:42:36	16:47:16	01:04:40	100.00
9	487985	4410359	21-01	15:43:33	16:46:51	01:03:17	100.00
9	487985	4410359	22-01	15:44:33	16:46:21	01:01:48	100.00
9	487985	4410359	23-01	15:45:35	16:45:47	01:00:11	100.00
9	487985	4410359	24-01	15:46:41	16:45:07	00:58:26	100.00
9	487985	4410359	25-01	15:47:50	16:44:23	00:56:32	100.00
9	487985	4410359	26-01	15:49:04	16:43:32	00:54:28	100.00
9	487985	4410359	27-01	15:50:22	16:42:35	00:52:12	100.00
9	487985	4410359	28-01	15:51:46	16:41:30	00:49:44	100.00
9	487985	4410359	29-01	15:53:17	16:40:17	00:46:59	100.00
9	487985	4410359	30-01	15:54:56	16:41:58	00:47:03	100.00
9	487985	4410359	31-01	15:56:44	16:41:16	00:44:32	100.00
9	487985	4410359	01-02	15:58:45	16:39:27	00:40:41	100.00
9	487985	4410359	02-02	16:01:04	16:37:18	00:36:15	100.00
9	487985	4410359	03-02	16:03:47	16:34:43	00:30:57	100.00
9	487985	4410359	04-02	16:07:11	16:31:25	00:24:14	87.18
9	487985	4410359	05-02	16:12:13	16:26:29	00:14:16	29.90
9	487985	4410359	05-11	15:46:25	15:51:40	00:05:15	4.00
9	487985	4410359	06-11	15:38:58	15:59:17	00:20:20	60.72
9	487985	4410359	07-11	15:35:13	16:03:15	00:28:02	100.00
9	487985	4410359	08-11	15:32:26	16:06:16	00:33:50	100.00
9	487985	4410359	09-11	15:30:11	16:08:47	00:38:36	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

9	487985	4410359	10-11	15:28:18	16:10:58	00:42:40	100.00
9	487985	4410359	11-11	15:26:40	16:12:54	00:46:14	100.00
9	487985	4410359	12-11	15:25:15	16:10:43	00:45:28	100.00
9	487985	4410359	13-11	15:23:59	16:12:19	00:48:19	100.00
9	487985	4410359	14-11	15:22:54	16:13:48	00:50:54	100.00
9	487985	4410359	15-11	15:21:55	16:15:11	00:53:15	100.00
9	487985	4410359	16-11	15:21:04	16:16:28	00:55:25	100.00
9	487985	4410359	17-11	15:20:18	16:17:41	00:57:23	100.00
9	487985	4410359	18-11	15:19:38	16:18:50	00:59:12	100.00
9	487985	4410359	19-11	15:19:03	16:19:56	01:00:53	100.00
9	487985	4410359	20-11	15:18:32	16:20:58	01:02:26	100.00
9	487985	4410359	21-11	15:18:06	16:21:58	01:03:52	100.00
9	487985	4410359	22-11	15:17:44	16:22:55	01:05:11	100.00
9	487985	4410359	23-11	15:17:26	16:23:51	01:06:25	100.00
9	487985	4410359	24-11	15:17:11	16:24:44	01:07:34	100.00
9	487985	4410359	25-11	15:16:59	16:25:36	01:08:37	100.00
9	487985	4410359	26-11	15:16:50	16:26:26	01:09:35	100.00
9	487985	4410359	27-11	15:16:45	16:27:14	01:10:29	100.00
9	487985	4410359	28-11	15:16:42	16:27:37	01:10:56	100.00
9	487985	4410359	29-11	15:16:41	16:24:50	01:08:09	100.00
9	487985	4410359	30-11	15:16:43	16:25:34	01:08:51	100.00
9	487985	4410359	01-12	15:16:47	16:26:17	01:09:30	100.00
9	487985	4410359	02-12	15:16:53	16:26:59	01:10:05	100.00
9	487985	4410359	03-12	15:17:02	16:27:40	01:10:38	100.00
9	487985	4410359	04-12	15:17:12	16:28:20	01:11:08	100.00
9	487985	4410359	05-12	15:17:24	16:28:59	01:11:35	100.00
9	487985	4410359	06-12	15:17:38	16:29:37	01:11:59	100.00
9	487985	4410359	07-12	15:17:53	16:30:15	01:12:22	100.00
9	487985	4410359	08-12	15:18:10	16:30:52	01:12:42	100.00
9	487985	4410359	09-12	15:18:28	16:31:28	01:13:00	100.00
9	487985	4410359	10-12	15:18:47	16:32:04	01:13:16	100.00
9	487985	4410359	11-12	15:19:08	16:32:39	01:13:31	100.00
9	487985	4410359	12-12	15:19:30	16:33:14	01:13:44	100.00
9	487985	4410359	13-12	15:19:53	16:33:48	01:13:55	100.00
9	487985	4410359	14-12	15:20:17	16:34:21	01:14:05	100.00
9	487985	4410359	15-12	15:20:42	16:34:55	01:14:13	100.00
9	487985	4410359	16-12	15:21:08	16:35:27	01:14:20	100.00
9	487985	4410359	17-12	15:21:34	16:35:59	01:14:25	100.00
9	487985	4410359	18-12	15:22:02	16:36:31	01:14:29	100.00
9	487985	4410359	19-12	15:22:30	16:37:03	01:14:32	100.00
9	487985	4410359	20-12	15:22:59	16:37:33	01:14:34	100.00
9	487985	4410359	21-12	15:23:29	16:38:03	01:14:35	100.00
9	487985	4410359	22-12	15:23:59	16:38:33	01:14:34	100.00
9	487985	4410359	23-12	15:24:30	16:39:02	01:14:32	100.00
9	487985	4410359	24-12	15:25:01	16:39:30	01:14:29	100.00
9	487985	4410359	25-12	15:25:33	16:39:58	01:14:25	100.00
9	487985	4410359	26-12	15:26:05	16:40:25	01:14:19	100.00
9	487985	4410359	27-12	15:26:38	16:40:51	01:14:12	100.00
9	487985	4410359	28-12	15:27:12	16:41:16	01:14:04	100.00
9	487985	4410359	29-12	15:27:45	16:41:40	01:13:54	100.00
9	487985	4410359	30-12	15:28:20	16:42:03	01:13:43	100.00
9	487985	4410359	31-12	15:28:54	16:42:24	01:13:30	100.00

House Easting Northing  
 11 487487 4411074

There are no shadows cast on this window

House Easting Northing  
 12 490780 4409883

Turbine Easting Northing Date Start Time End Time Duration % Cover

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

10	490327	4409525	01-01	16:37:28	17:38:51	01:01:23	100.00
10	490327	4409525	02-01	16:37:53	17:39:24	01:01:31	100.00
10	490327	4409525	03-01	16:38:17	17:39:57	01:01:40	100.00
10	490327	4409525	04-01	16:38:40	17:40:29	01:01:49	100.00
10	490327	4409525	05-01	16:39:04	17:41:01	01:01:58	100.00
10	490327	4409525	06-01	16:39:27	17:41:33	01:02:06	100.00
10	490327	4409525	07-01	16:39:49	17:42:04	01:02:15	100.00
10	490327	4409525	08-01	16:40:11	17:42:34	01:02:23	100.00
10	490327	4409525	09-01	16:40:33	17:43:03	01:02:30	100.00
10	490327	4409525	10-01	16:40:55	17:43:31	01:02:36	100.00
10	490327	4409525	11-01	16:41:17	17:43:58	01:02:41	100.00
10	490327	4409525	12-01	16:41:38	17:44:24	01:02:45	100.00
10	490327	4409525	13-01	16:42:00	17:44:48	01:02:47	100.00
10	490327	4409525	14-01	16:42:23	17:45:10	01:02:48	100.00
10	490327	4409525	15-01	16:42:45	17:45:31	01:02:46	100.00
10	490327	4409525	16-01	16:43:08	17:45:50	01:02:43	100.00
10	490327	4409525	17-01	16:43:31	17:50:04	01:06:33	100.00
10	490327	4409525	18-01	16:43:55	17:50:19	01:06:24	100.00
10	490327	4409525	19-01	16:44:19	17:50:31	01:06:12	100.00
10	490327	4409525	20-01	16:44:44	17:50:42	01:05:58	100.00
10	490327	4409525	21-01	16:45:10	17:50:50	01:05:39	100.00
10	490327	4409525	22-01	16:45:37	17:50:55	01:05:18	100.00
10	490327	4409525	23-01	16:46:05	17:50:57	01:04:52	100.00
10	490327	4409525	24-01	16:46:35	17:50:56	01:04:22	100.00
10	490327	4409525	25-01	16:47:05	17:50:52	01:03:47	100.00
10	490327	4409525	26-01	16:47:38	17:50:45	01:03:07	100.00
10	490327	4409525	27-01	16:48:12	17:50:34	01:02:23	100.00
10	490327	4409525	28-01	16:48:48	17:50:20	01:01:32	100.00
10	490327	4409525	29-01	16:49:26	17:50:01	01:00:36	100.00
10	490327	4409525	30-01	16:50:06	17:49:39	00:59:33	100.00
10	490327	4409525	31-01	16:50:49	17:49:12	00:58:22	100.00
10	490327	4409525	01-02	16:51:35	17:48:40	00:57:05	100.00
10	490327	4409525	02-02	16:52:25	17:48:03	00:55:38	100.00
10	490327	4409525	03-02	16:53:18	17:47:21	00:54:03	100.00
10	490327	4409525	04-02	16:54:15	17:46:32	00:52:17	100.00
10	490327	4409525	05-02	16:55:16	17:45:37	00:50:21	100.00
10	490327	4409525	06-02	16:56:24	17:48:31	00:52:07	100.00
10	490327	4409525	07-02	16:57:37	17:47:21	00:49:44	100.00
10	490327	4409525	08-02	16:58:58	17:46:03	00:47:05	100.00
10	490327	4409525	09-02	17:00:28	17:44:34	00:44:06	100.00
10	490327	4409525	10-02	17:02:09	17:42:52	00:40:43	100.00
10	490327	4409525	11-02	17:04:05	17:40:53	00:36:48	100.00
10	490327	4409525	12-02	17:06:22	17:38:32	00:32:10	100.00
10	490327	4409525	13-02	17:09:11	17:35:38	00:26:27	100.00
10	490327	4409525	14-02	17:13:01	17:31:41	00:18:40	60.54
10	490327	4409525	27-10	16:44:04	17:00:01	00:15:57	43.56
10	490327	4409525	28-10	16:39:40	17:04:18	00:24:38	100.00
10	490327	4409525	29-10	16:36:36	17:07:18	00:30:42	100.00
10	490327	4409525	30-10	16:34:10	17:09:42	00:35:32	100.00
10	490327	4409525	31-10	16:32:08	17:11:43	00:39:35	100.00
10	490327	4409525	01-11	16:30:23	17:13:28	00:43:05	100.00
10	490327	4409525	02-11	16:28:52	17:15:01	00:46:09	100.00
10	490327	4409525	03-11	16:27:32	17:16:25	00:48:53	100.00
10	490327	4409525	04-11	16:26:22	17:17:41	00:51:19	100.00
10	490327	4409525	05-11	16:25:19	17:14:55	00:49:36	100.00
10	490327	4409525	06-11	16:24:24	17:15:59	00:51:36	100.00
10	490327	4409525	07-11	16:23:35	17:16:59	00:53:24	100.00
10	490327	4409525	08-11	16:22:52	17:17:54	00:55:02	100.00
10	490327	4409525	09-11	16:22:14	17:18:45	00:56:31	100.00
10	490327	4409525	10-11	16:21:41	17:19:33	00:57:51	100.00
10	490327	4409525	11-11	16:21:13	17:20:17	00:59:04	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
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10	490327	4409525	12-11	16:20:50	17:20:59	01:00:09	100.00
10	490327	4409525	13-11	16:20:30	17:21:38	01:01:08	100.00
10	490327	4409525	14-11	16:20:14	17:22:15	01:02:01	100.00
10	490327	4409525	15-11	16:20:02	17:22:49	01:02:48	100.00
10	490327	4409525	16-11	16:19:53	17:23:22	01:03:29	100.00
10	490327	4409525	17-11	16:19:47	17:23:53	01:04:06	100.00
10	490327	4409525	18-11	16:19:44	17:24:22	01:04:38	100.00
10	490327	4409525	19-11	16:19:45	17:24:50	01:05:06	100.00
10	490327	4409525	20-11	16:19:48	17:25:17	01:05:29	100.00
10	490327	4409525	21-11	16:19:54	17:25:43	01:05:49	100.00
10	490327	4409525	22-11	16:20:02	17:26:07	01:06:06	100.00
10	490327	4409525	23-11	16:20:12	17:26:31	01:06:19	100.00
10	490327	4409525	24-11	16:20:25	17:26:54	01:06:29	100.00
10	490327	4409525	25-11	16:20:40	17:27:16	01:06:36	100.00
10	490327	4409525	26-11	16:20:56	17:23:41	01:02:45	100.00
10	490327	4409525	27-11	16:21:15	17:24:03	01:02:48	100.00
10	490327	4409525	28-11	16:21:35	17:24:23	01:02:48	100.00
10	490327	4409525	29-11	16:21:57	17:24:44	01:02:47	100.00
10	490327	4409525	30-11	16:22:20	17:25:04	01:02:44	100.00
10	490327	4409525	01-12	16:22:45	17:25:25	01:02:40	100.00
10	490327	4409525	02-12	16:23:11	17:25:45	01:02:34	100.00
10	490327	4409525	03-12	16:23:38	17:26:05	01:02:27	100.00
10	490327	4409525	04-12	16:24:05	17:26:25	01:02:20	100.00
10	490327	4409525	05-12	16:24:34	17:26:46	01:02:12	100.00
10	490327	4409525	06-12	16:25:03	17:27:06	01:02:03	100.00
10	490327	4409525	07-12	16:25:33	17:27:27	01:01:54	100.00
10	490327	4409525	08-12	16:26:03	17:27:49	01:01:46	100.00
10	490327	4409525	09-12	16:26:34	17:28:11	01:01:37	100.00
10	490327	4409525	10-12	16:27:05	17:28:33	01:01:28	100.00
10	490327	4409525	11-12	16:27:37	17:28:56	01:01:19	100.00
10	490327	4409525	12-12	16:28:08	17:29:20	01:01:11	100.00
10	490327	4409525	13-12	16:28:40	17:29:44	01:01:04	100.00
10	490327	4409525	14-12	16:29:12	17:30:09	01:00:57	100.00
10	490327	4409525	15-12	16:29:43	17:30:34	01:00:51	100.00
10	490327	4409525	16-12	16:30:15	17:31:00	01:00:45	100.00
10	490327	4409525	17-12	16:30:46	17:31:27	01:00:41	100.00
10	490327	4409525	18-12	16:31:18	17:31:55	01:00:37	100.00
10	490327	4409525	19-12	16:31:48	17:32:23	01:00:35	100.00
10	490327	4409525	20-12	16:32:19	17:32:52	01:00:33	100.00
10	490327	4409525	21-12	16:32:49	17:33:22	01:00:33	100.00
10	490327	4409525	22-12	16:33:19	17:33:52	01:00:33	100.00
10	490327	4409525	23-12	16:33:48	17:34:23	01:00:35	100.00
10	490327	4409525	24-12	16:34:17	17:34:54	01:00:38	100.00
10	490327	4409525	25-12	16:34:45	17:35:26	01:00:41	100.00
10	490327	4409525	26-12	16:35:13	17:35:58	01:00:46	100.00
10	490327	4409525	27-12	16:35:40	17:36:31	01:00:51	100.00
10	490327	4409525	28-12	16:36:06	17:37:04	01:00:58	100.00
10	490327	4409525	29-12	16:36:32	17:37:37	01:01:05	100.00
10	490327	4409525	30-12	16:36:58	17:38:10	01:01:12	100.00
10	490327	4409525	31-12	16:37:23	17:38:43	01:01:21	100.00

House Easting Northing  
 13 488316 4407874

There are no shadows cast on this window

House Easting Northing  
 14 488328 4409883

Turbine	Easting	Northing	Date	Start Time	End Time	Duration	% Cover
5	487911	4409654	17-01	17:27:16	17:39:41	00:12:24	21.42

Project : USELLUS  
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5	487911	4409654	18-01	17:23:34	17:44:04	00:20:31	59.23
5	487911	4409654	19-01	17:21:02	17:47:17	00:26:15	98.28
5	487911	4409654	20-01	17:18:59	17:49:58	00:30:58	100.00
5	487911	4409654	21-01	17:17:15	17:50:49	00:33:34	100.00
5	487911	4409654	22-01	17:15:43	17:50:31	00:34:48	100.00
5	487911	4409654	23-01	17:14:20	17:52:28	00:38:08	100.00
5	487911	4409654	24-01	17:13:04	17:54:16	00:41:12	100.00
5	487911	4409654	25-01	17:11:54	17:55:57	00:44:03	100.00
5	487911	4409654	26-01	17:10:49	17:57:32	00:46:43	100.00
5	487911	4409654	27-01	17:09:48	17:59:02	00:49:13	100.00
5	487911	4409654	28-01	17:08:51	18:00:26	00:51:35	100.00
5	487911	4409654	29-01	17:07:57	18:01:45	00:53:47	100.00
5	487911	4409654	30-01	17:07:07	18:02:59	00:55:52	100.00
5	487911	4409654	31-01	17:06:19	18:04:09	00:57:50	100.00
5	487911	4409654	01-02	17:05:34	18:05:15	00:59:41	100.00
5	487911	4409654	02-02	17:04:51	18:06:16	01:01:25	100.00
5	487911	4409654	03-02	17:04:11	18:07:14	01:03:03	100.00
5	487911	4409654	04-02	17:03:33	18:08:07	01:04:34	100.00
5	487911	4409654	05-02	17:02:58	18:08:57	01:05:59	100.00
5	487911	4409654	06-02	17:02:24	18:09:42	01:07:18	100.00
5	487911	4409654	07-02	17:01:53	18:10:24	01:08:31	100.00
5	487911	4409654	08-02	17:01:24	18:11:02	01:09:38	100.00
5	487911	4409654	09-02	17:00:57	18:11:36	01:10:39	100.00
5	487911	4409654	10-02	17:00:32	18:12:06	01:11:34	100.00
5	487911	4409654	11-02	17:00:08	18:12:32	01:12:25	100.00
5	487911	4409654	12-02	16:59:45	18:12:55	01:13:09	100.00
5	487911	4409654	13-02	16:59:25	18:13:13	01:13:48	100.00
5	487911	4409654	14-02	16:59:08	18:13:28	01:14:21	100.00
5	487911	4409654	15-02	16:58:52	18:17:36	01:18:44	100.00
5	487911	4409654	16-02	16:58:39	18:17:43	01:19:04	100.00
5	487911	4409654	17-02	16:58:28	18:17:46	01:19:19	100.00
5	487911	4409654	18-02	16:58:19	18:17:46	01:19:27	100.00
5	487911	4409654	19-02	16:58:12	18:17:42	01:19:29	100.00
5	487911	4409654	20-02	16:58:08	18:17:33	01:19:25	100.00
5	487911	4409654	21-02	16:58:07	18:17:21	01:19:14	100.00
5	487911	4409654	22-02	16:58:08	18:17:04	01:18:56	100.00
5	487911	4409654	23-02	16:58:12	18:16:44	01:18:32	100.00
5	487911	4409654	24-02	16:58:19	18:16:19	01:18:00	100.00
5	487911	4409654	25-02	16:58:29	18:15:50	01:17:21	100.00
5	487911	4409654	26-02	16:58:42	18:15:17	01:16:35	100.00
5	487911	4409654	27-02	16:58:58	18:14:39	01:15:41	100.00
5	487911	4409654	28-02	16:59:18	18:13:56	01:14:38	100.00
5	487911	4409654	29-02	16:59:42	18:13:09	01:13:27	100.00
5	487911	4409654	01-03	17:00:09	18:12:17	01:12:07	100.00
5	487911	4409654	02-03	17:00:41	18:11:19	01:10:38	100.00
5	487911	4409654	03-03	17:01:18	18:10:16	01:08:58	100.00
5	487911	4409654	04-03	17:01:59	18:09:06	01:07:07	100.00
5	487911	4409654	05-03	17:02:46	18:07:51	01:05:05	100.00
5	487911	4409654	06-03	17:03:39	18:06:28	01:02:49	100.00
5	487911	4409654	07-03	17:04:38	18:04:58	01:00:19	100.00
5	487911	4409654	08-03	17:05:46	18:03:19	00:57:33	100.00
5	487911	4409654	09-03	17:07:02	18:01:30	00:54:28	100.00
5	487911	4409654	10-03	17:08:29	17:59:32	00:51:03	100.00
5	487911	4409654	11-03	17:10:09	17:57:21	00:47:12	100.00
5	487911	4409654	12-03	17:12:06	17:54:53	00:42:47	100.00
5	487911	4409654	13-03	17:14:25	17:52:02	00:37:37	100.00
5	487911	4409654	14-03	17:17:18	17:48:38	00:31:21	100.00
5	487911	4409654	15-03	17:21:11	17:44:14	00:23:03	84.98
5	487911	4409654	16-03	17:28:20	17:36:32	00:08:11	10.52
5	487911	4409654	26-09	17:08:53	17:21:25	00:12:33	24.60
5	487911	4409654	27-09	17:02:26	17:27:10	00:24:45	94.03
5	487911	4409654	28-09	16:58:12	17:30:40	00:32:28	100.00



Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
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5	487911	4409654	29-09	16:54:51	17:33:18	00:38:27	100.00
5	487911	4409654	30-09	16:52:02	17:35:27	00:43:25	100.00
5	487911	4409654	01-10	16:49:34	17:37:15	00:47:41	100.00
5	487911	4409654	02-10	16:47:23	17:38:48	00:51:26	100.00
5	487911	4409654	03-10	16:45:24	17:40:10	00:54:46	100.00
5	487911	4409654	04-10	16:43:36	17:41:23	00:57:47	100.00
5	487911	4409654	05-10	16:41:58	17:42:27	01:00:29	100.00
5	487911	4409654	06-10	16:40:27	17:43:24	01:02:56	100.00
5	487911	4409654	07-10	16:39:04	17:44:14	01:05:09	100.00
5	487911	4409654	08-10	16:37:48	17:44:58	01:07:10	100.00
5	487911	4409654	09-10	16:36:38	17:45:36	01:08:59	100.00
5	487911	4409654	10-10	16:35:33	17:46:10	01:10:37	100.00
5	487911	4409654	11-10	16:34:34	17:46:40	01:12:05	100.00
5	487911	4409654	12-10	16:33:40	17:47:05	01:13:25	100.00
5	487911	4409654	13-10	16:32:51	17:47:26	01:14:35	100.00
5	487911	4409654	14-10	16:32:07	17:47:44	01:15:37	100.00
5	487911	4409654	15-10	16:31:27	17:47:58	01:16:31	100.00
5	487911	4409654	16-10	16:30:51	17:48:09	01:17:18	100.00
5	487911	4409654	17-10	16:30:20	17:48:16	01:17:57	100.00
5	487911	4409654	18-10	16:29:52	17:48:21	01:18:29	100.00
5	487911	4409654	19-10	16:29:29	17:48:23	01:18:54	100.00
5	487911	4409654	20-10	16:29:10	17:48:22	01:19:12	100.00
5	487911	4409654	21-10	16:28:54	17:48:18	01:19:24	100.00
5	487911	4409654	22-10	16:28:43	17:48:12	01:19:30	100.00
5	487911	4409654	23-10	16:28:35	17:48:04	01:19:29	100.00
5	487911	4409654	24-10	16:28:31	17:47:53	01:19:22	100.00
5	487911	4409654	25-10	16:28:31	17:47:39	01:19:09	100.00
5	487911	4409654	26-10	16:28:34	17:47:23	01:18:50	100.00
5	487911	4409654	27-10	16:28:41	17:43:09	01:14:28	100.00
5	487911	4409654	28-10	16:28:51	17:42:49	01:13:57	100.00
5	487911	4409654	29-10	16:29:06	17:42:26	01:13:21	100.00
5	487911	4409654	30-10	16:29:23	17:42:02	01:12:38	100.00
5	487911	4409654	31-10	16:29:45	17:41:35	01:11:50	100.00
5	487911	4409654	01-11	16:30:09	17:41:06	01:10:57	100.00
5	487911	4409654	02-11	16:30:37	17:40:35	01:09:58	100.00
5	487911	4409654	03-11	16:31:08	17:40:01	01:08:54	100.00
5	487911	4409654	04-11	16:31:42	17:39:26	01:07:44	100.00
5	487911	4409654	05-11	16:32:21	17:38:48	01:06:28	100.00
5	487911	4409654	06-11	16:33:03	17:38:08	01:05:06	100.00
5	487911	4409654	07-11	16:33:49	17:37:26	01:03:37	100.00
5	487911	4409654	08-11	16:34:38	17:36:42	01:02:03	100.00
5	487911	4409654	09-11	16:35:32	17:35:55	01:00:23	100.00
5	487911	4409654	10-11	16:36:30	17:35:05	00:58:35	100.00
5	487911	4409654	11-11	16:37:32	17:34:14	00:56:42	100.00
5	487911	4409654	12-11	16:38:38	17:33:19	00:54:41	100.00
5	487911	4409654	13-11	16:39:49	17:32:22	00:52:33	100.00
5	487911	4409654	14-11	16:41:05	17:31:22	00:50:17	100.00
5	487911	4409654	15-11	16:42:26	17:30:18	00:47:52	100.00
5	487911	4409654	16-11	16:43:52	17:29:11	00:45:18	100.00
5	487911	4409654	17-11	16:45:25	17:27:59	00:42:34	100.00
5	487911	4409654	18-11	16:47:05	17:26:42	00:39:37	100.00
5	487911	4409654	19-11	16:48:53	17:25:19	00:36:27	100.00
5	487911	4409654	20-11	16:50:50	17:23:48	00:32:59	100.00
5	487911	4409654	21-11	16:52:59	17:25:38	00:32:39	100.00
5	487911	4409654	22-11	16:55:24	17:24:08	00:28:44	100.00
5	487911	4409654	23-11	16:58:13	17:21:50	00:23:37	78.75
5	487911	4409654	24-11	17:01:46	17:18:51	00:17:05	40.68
5	487911	4409654	25-11	17:07:58	17:13:13	00:05:16	3.82

House Easting Northing  
 15 486788 4409558

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

There are no shadows cast on this window

House Easting Northing  
 16 489816 4409014

There are no shadows cast on this window

House Easting Northing  
 17 489789 4408916

There are no shadows cast on this window

House Easting Northing  
 18 489748 4408988

There are no shadows cast on this window

House Easting Northing  
 19 489685 4408398

Turbine	Easting	Northing	Date	Start Time	End Time	Duration	% Cover
2	488815	4408527	07-04	19:13:27	19:22:32	00:09:06	22.14
2	488815	4408527	08-04	19:08:36	19:26:51	00:18:15	92.09
2	488815	4408527	09-04	19:05:34	19:29:21	00:23:47	100.00
2	488815	4408527	10-04	19:03:14	19:31:10	00:27:56	100.00
2	488815	4408527	11-04	19:01:19	19:32:35	00:31:16	100.00
2	488815	4408527	12-04	18:59:41	19:33:42	00:34:01	100.00
2	488815	4408527	13-04	18:58:18	19:34:38	00:36:20	100.00
2	488815	4408527	14-04	18:57:05	19:35:22	00:38:17	100.00
2	488815	4408527	15-04	18:56:02	19:35:58	00:39:56	100.00
2	488815	4408527	16-04	18:55:07	19:36:26	00:41:18	100.00
2	488815	4408527	17-04	18:54:20	19:36:47	00:42:27	100.00
2	488815	4408527	18-04	18:53:40	19:37:01	00:43:21	100.00
2	488815	4408527	19-04	18:53:05	19:37:10	00:44:05	100.00
2	488815	4408527	20-04	18:52:36	19:37:14	00:44:38	100.00
2	488815	4408527	21-04	18:52:13	19:37:12	00:44:59	100.00
2	488815	4408527	22-04	18:51:56	19:37:06	00:45:10	100.00
2	488815	4408527	23-04	18:51:43	19:36:55	00:45:12	100.00
2	488815	4408527	24-04	18:51:37	19:36:40	00:45:03	100.00
2	488815	4408527	25-04	18:51:35	19:36:20	00:44:45	100.00
2	488815	4408527	26-04	18:51:38	19:35:56	00:44:17	100.00
2	488815	4408527	27-04	18:51:47	19:35:27	00:43:40	100.00
2	488815	4408527	28-04	18:52:01	19:34:54	00:42:54	100.00
2	488815	4408527	29-04	18:52:20	19:34:17	00:41:57	100.00
2	488815	4408527	30-04	18:52:45	19:33:35	00:40:50	100.00
2	488815	4408527	01-05	18:53:16	19:32:48	00:39:32	100.00
2	488815	4408527	02-05	18:53:53	19:31:56	00:38:03	100.00
2	488815	4408527	03-05	18:54:36	19:30:58	00:36:21	100.00
2	488815	4408527	04-05	18:55:27	19:29:53	00:34:26	100.00
2	488815	4408527	05-05	18:56:27	19:28:41	00:32:14	100.00
2	488815	4408527	06-05	18:57:36	19:27:19	00:29:44	100.00
2	488815	4408527	07-05	18:58:57	19:25:48	00:26:51	100.00
2	488815	4408527	08-05	19:00:34	19:24:02	00:23:28	100.00
2	488815	4408527	09-05	19:02:35	19:21:54	00:19:19	94.94
2	488815	4408527	10-05	19:05:19	19:19:03	00:13:44	46.72
2	488815	4408527	31-07	19:20:06	19:24:14	00:04:08	4.12
2	488815	4408527	01-08	19:14:57	19:29:17	00:14:20	50.80
2	488815	4408527	02-08	19:12:13	19:31:55	00:19:42	98.40
2	488815	4408527	03-08	19:10:08	19:33:52	00:23:44	100.00
2	488815	4408527	04-08	19:08:24	19:35:27	00:27:02	100.00
2	488815	4408527	05-08	19:06:54	19:36:47	00:29:52	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

2	488815	4408527	06-08	19:05:35	19:37:55	00:32:20	100.00
2	488815	4408527	07-08	19:04:25	19:38:54	00:34:30	100.00
2	488815	4408527	08-08	19:03:21	19:39:44	00:36:24	100.00
2	488815	4408527	09-08	19:02:23	19:40:27	00:38:04	100.00
2	488815	4408527	10-08	19:01:31	19:41:03	00:39:32	100.00
2	488815	4408527	11-08	19:00:44	19:41:33	00:40:49	100.00
2	488815	4408527	12-08	19:00:01	19:41:57	00:41:56	100.00
2	488815	4408527	13-08	18:59:23	19:42:15	00:42:52	100.00
2	488815	4408527	14-08	18:58:49	19:42:27	00:43:39	100.00
2	488815	4408527	15-08	18:58:18	19:42:34	00:44:16	100.00
2	488815	4408527	16-08	18:57:53	19:42:36	00:44:44	100.00
2	488815	4408527	17-08	18:57:31	19:42:33	00:45:02	100.00
2	488815	4408527	18-08	18:57:12	19:42:24	00:45:12	100.00
2	488815	4408527	19-08	18:56:59	19:42:10	00:45:12	100.00
2	488815	4408527	20-08	18:56:49	19:41:51	00:45:02	100.00
2	488815	4408527	21-08	18:56:44	19:41:26	00:44:42	100.00
2	488815	4408527	22-08	18:56:44	19:40:56	00:44:12	100.00
2	488815	4408527	23-08	18:56:49	19:40:19	00:43:31	100.00
2	488815	4408527	24-08	18:56:58	19:39:36	00:42:39	100.00
2	488815	4408527	25-08	18:57:13	19:38:47	00:41:34	100.00
2	488815	4408527	26-08	18:57:34	19:37:49	00:40:15	100.00
2	488815	4408527	27-08	18:58:03	19:36:44	00:38:42	100.00
2	488815	4408527	28-08	18:58:39	19:35:30	00:36:51	100.00
2	488815	4408527	29-08	18:59:26	19:34:05	00:34:39	100.00
2	488815	4408527	30-08	19:00:25	19:32:28	00:32:04	100.00
2	488815	4408527	31-08	19:01:39	19:30:36	00:28:57	100.00
2	488815	4408527	01-09	19:03:14	19:28:21	00:25:08	100.00
2	488815	4408527	02-09	19:05:22	19:25:33	00:20:11	100.00
2	488815	4408527	03-09	19:08:41	19:21:34	00:12:53	44.52

House Easting Northing  
 20 489335 4407243

Turbine	Easting	Northing	Date	Start Time	End Time	Duration	% Cover
1	488829	4407251	18-03	18:52:19	18:59:18	00:06:59	8.04
1	488829	4407251	19-03	18:44:25	19:06:35	00:22:10	82.45
1	488829	4407251	20-03	18:40:03	19:10:19	00:30:16	100.00
1	488829	4407251	21-03	18:36:42	19:13:04	00:36:22	100.00
1	488829	4407251	22-03	18:33:53	19:15:15	00:41:22	100.00
1	488829	4407251	23-03	18:31:27	19:17:04	00:45:37	100.00
1	488829	4407251	24-03	18:29:18	19:18:37	00:49:19	100.00
1	488829	4407251	25-03	18:27:21	19:19:56	00:52:35	100.00
1	488829	4407251	26-03	18:25:36	19:21:06	00:55:30	100.00
1	488829	4407251	27-03	18:23:59	19:22:06	00:58:07	100.00
1	488829	4407251	28-03	18:22:31	19:22:59	01:00:28	100.00
1	488829	4407251	29-03	18:21:11	19:23:45	01:02:35	100.00
1	488829	4407251	30-03	18:19:56	19:24:25	01:04:29	100.00
1	488829	4407251	31-03	18:18:47	19:24:59	01:06:12	100.00
1	488829	4407251	01-04	18:17:43	19:25:28	01:07:45	100.00
1	488829	4407251	02-04	18:16:44	19:25:51	01:09:07	100.00
1	488829	4407251	03-04	18:15:50	19:26:10	01:10:20	100.00
1	488829	4407251	04-04	18:15:01	19:26:24	01:11:23	100.00
1	488829	4407251	05-04	18:14:16	19:26:34	01:12:17	100.00
1	488829	4407251	06-04	18:13:36	19:26:40	01:13:04	100.00
1	488829	4407251	07-04	18:13:00	19:26:42	01:13:42	100.00
1	488829	4407251	08-04	18:12:28	19:26:40	01:14:12	100.00
1	488829	4407251	09-04	18:12:00	19:26:35	01:14:35	100.00
1	488829	4407251	10-04	18:11:36	19:26:27	01:14:50	100.00
1	488829	4407251	11-04	18:11:16	19:26:15	01:14:58	100.00
1	488829	4407251	12-04	18:10:59	19:25:59	01:14:59	100.00
1	488829	4407251	13-04	18:10:47	19:25:41	01:14:53	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

1	488829	4407251	14-04	18:10:38	19:25:19	01:14:41	100.00
1	488829	4407251	15-04	18:10:33	19:24:54	01:14:21	100.00
1	488829	4407251	16-04	18:10:32	19:24:26	01:13:55	100.00
1	488829	4407251	17-04	18:10:34	19:23:55	01:13:21	100.00
1	488829	4407251	18-04	18:10:40	19:23:21	01:12:42	100.00
1	488829	4407251	19-04	18:10:49	19:22:44	01:11:55	100.00
1	488829	4407251	20-04	18:11:03	19:22:04	01:11:01	100.00
1	488829	4407251	21-04	18:11:20	19:21:21	01:10:01	100.00
1	488829	4407251	22-04	18:11:41	19:20:34	01:08:53	100.00
1	488829	4407251	23-04	18:12:07	19:19:45	01:07:38	100.00
1	488829	4407251	24-04	18:12:36	19:18:52	01:06:15	100.00
1	488829	4407251	25-04	18:13:10	19:17:56	01:04:45	100.00
1	488829	4407251	26-04	18:13:49	19:16:56	01:03:07	100.00
1	488829	4407251	27-04	18:14:32	19:15:52	01:01:20	100.00
1	488829	4407251	28-04	18:15:20	19:14:44	00:59:25	100.00
1	488829	4407251	29-04	18:16:13	19:13:32	00:57:19	100.00
1	488829	4407251	30-04	18:17:12	19:12:16	00:55:03	100.00
1	488829	4407251	01-05	18:18:18	19:10:54	00:52:36	100.00
1	488829	4407251	02-05	18:19:30	19:09:26	00:49:56	100.00
1	488829	4407251	03-05	18:20:50	19:07:51	00:47:01	100.00
1	488829	4407251	04-05	18:22:19	19:06:10	00:43:50	100.00
1	488829	4407251	05-05	18:23:59	19:04:19	00:40:20	100.00
1	488829	4407251	06-05	18:25:52	19:02:17	00:36:24	100.00
1	488829	4407251	07-05	18:28:02	18:59:57	00:31:55	100.00
1	488829	4407251	08-05	18:30:38	18:57:13	00:26:35	100.00
1	488829	4407251	09-05	18:34:01	18:53:44	00:19:43	58.05
1	488829	4407251	10-05	18:39:44	18:47:55	00:08:11	9.82
1	488829	4407251	01-08	18:49:12	18:58:21	00:09:09	12.23
1	488829	4407251	02-08	18:43:41	19:03:45	00:20:04	59.80
1	488829	4407251	03-08	18:40:16	19:07:02	00:26:46	100.00
1	488829	4407251	04-08	18:37:33	19:09:35	00:32:02	100.00
1	488829	4407251	05-08	18:35:15	19:11:42	00:36:27	100.00
1	488829	4407251	06-08	18:33:12	19:13:33	00:40:20	100.00
1	488829	4407251	07-08	18:31:21	19:15:09	00:43:49	100.00
1	488829	4407251	08-08	18:29:39	19:16:36	00:46:57	100.00
1	488829	4407251	09-08	18:28:05	19:17:56	00:49:50	100.00
1	488829	4407251	10-08	18:26:38	19:19:07	00:52:29	100.00
1	488829	4407251	11-08	18:25:16	19:20:12	00:54:56	100.00
1	488829	4407251	12-08	18:23:59	19:21:10	00:57:10	100.00
1	488829	4407251	13-08	18:22:47	19:22:02	00:59:15	100.00
1	488829	4407251	14-08	18:21:39	19:22:49	01:01:10	100.00
1	488829	4407251	15-08	18:20:35	19:23:31	01:02:56	100.00
1	488829	4407251	16-08	18:19:34	19:24:09	01:04:34	100.00
1	488829	4407251	17-08	18:18:37	19:24:42	01:06:04	100.00
1	488829	4407251	18-08	18:17:43	19:25:10	01:07:27	100.00
1	488829	4407251	19-08	18:16:52	19:25:34	01:08:42	100.00
1	488829	4407251	20-08	18:16:05	19:25:55	01:09:50	100.00
1	488829	4407251	21-08	18:15:20	19:26:11	01:10:51	100.00
1	488829	4407251	22-08	18:14:38	19:26:23	01:11:45	100.00
1	488829	4407251	23-08	18:13:59	19:26:32	01:12:33	100.00
1	488829	4407251	24-08	18:13:23	19:26:37	01:13:14	100.00
1	488829	4407251	25-08	18:12:50	19:26:38	01:13:48	100.00
1	488829	4407251	26-08	18:12:19	19:26:35	01:14:16	100.00
1	488829	4407251	27-08	18:11:52	19:26:29	01:14:37	100.00
1	488829	4407251	28-08	18:11:27	19:26:18	01:14:51	100.00
1	488829	4407251	29-08	18:11:05	19:26:05	01:14:59	100.00
1	488829	4407251	30-08	18:10:47	19:25:47	01:15:00	100.00
1	488829	4407251	31-08	18:10:31	19:25:25	01:14:54	100.00
1	488829	4407251	01-09	18:10:19	19:25:00	01:14:41	100.00
1	488829	4407251	02-09	18:10:09	19:24:31	01:14:22	100.00
1	488829	4407251	03-09	18:10:04	19:23:58	01:13:54	100.00
1	488829	4407251	04-09	18:10:01	19:23:21	01:13:20	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

1	488829	4407251	05-09	18:10:02	19:22:39	01:12:37	100.00
1	488829	4407251	06-09	18:10:07	19:21:54	01:11:47	100.00
1	488829	4407251	07-09	18:10:16	19:21:04	01:10:48	100.00
1	488829	4407251	08-09	18:10:29	19:20:09	01:09:40	100.00
1	488829	4407251	09-09	18:10:46	19:19:10	01:08:23	100.00
1	488829	4407251	10-09	18:11:08	19:18:05	01:06:57	100.00
1	488829	4407251	11-09	18:11:36	19:16:56	01:05:20	100.00
1	488829	4407251	12-09	18:12:07	19:15:40	01:03:33	100.00
1	488829	4407251	13-09	18:12:44	19:14:19	01:01:35	100.00
1	488829	4407251	14-09	18:13:27	19:12:51	00:59:23	100.00
1	488829	4407251	15-09	18:14:18	19:11:16	00:56:58	100.00
1	488829	4407251	16-09	18:15:17	19:09:32	00:54:15	100.00
1	488829	4407251	17-09	18:16:26	19:07:40	00:51:14	100.00
1	488829	4407251	18-09	18:17:46	19:05:37	00:47:51	100.00
1	488829	4407251	19-09	18:19:20	19:03:20	00:44:00	100.00
1	488829	4407251	20-09	18:21:13	19:00:46	00:39:33	100.00
1	488829	4407251	21-09	18:23:30	18:57:47	00:34:17	100.00
1	488829	4407251	22-09	18:26:26	18:54:09	00:27:43	100.00
1	488829	4407251	23-09	18:30:42	18:49:13	00:18:31	56.75

House Easting Northing  
 21 490640 4407311

There are no shadows cast on this window

House Easting Northing  
 22 490805 4407938

There are no shadows cast on this window

House Easting Northing  
 23 487556 4407883

There are no shadows cast on this window

House Easting Northing  
 24 486744 4408078

There are no shadows cast on this window

House Easting Northing  
 25 486622 4409852

There are no shadows cast on this window

House Easting Northing  
 26 487818 4411780

There are no shadows cast on this window

House Easting Northing  
 27 487771 4411712

There are no shadows cast on this window

House Easting Northing  
 28 488602 4410899

Turbine	Easting	Northing	Date	Start Time	End Time	Duration	% Cover
9	487985	4410359	01-01	16:36:34	17:23:42	00:47:08	100.00
9	487985	4410359	02-01	16:37:02	17:24:10	00:47:08	100.00

Project : USELLUS  
Run Name : KUsellus002.WFK  
Title : SHADOW 02  
Time : 15:40:13, 29 Jan 2024

9	487985	4410359	03-01	16:37:30	17:24:38	00:47:08	100.00
9	487985	4410359	04-01	16:37:58	17:25:05	00:47:07	100.00
9	487985	4410359	05-01	16:38:26	17:25:31	00:47:05	100.00
9	487985	4410359	06-01	16:38:55	17:25:56	00:47:01	100.00
9	487985	4410359	07-01	16:39:23	17:26:20	00:46:56	100.00
9	487985	4410359	08-01	16:39:52	17:26:42	00:46:50	100.00
9	487985	4410359	09-01	16:40:22	17:27:03	00:46:41	100.00
9	487985	4410359	10-01	16:40:52	17:27:22	00:46:30	100.00
9	487985	4410359	11-01	16:41:22	17:27:39	00:46:17	100.00
9	487985	4410359	12-01	16:41:54	17:27:54	00:46:00	100.00
9	487985	4410359	13-01	16:42:26	17:28:07	00:45:41	100.00
9	487985	4410359	14-01	16:42:59	17:28:17	00:45:18	100.00
9	487985	4410359	15-01	16:43:34	17:28:25	00:44:51	100.00
9	487985	4410359	16-01	16:44:09	17:28:29	00:44:20	100.00
9	487985	4410359	17-01	16:44:47	17:28:31	00:43:44	100.00
9	487985	4410359	18-01	16:45:26	17:28:29	00:43:03	100.00
9	487985	4410359	19-01	16:46:07	17:28:24	00:42:16	100.00
9	487985	4410359	20-01	16:46:51	17:28:14	00:41:23	100.00
9	487985	4410359	21-01	16:47:37	17:28:00	00:40:23	100.00
9	487985	4410359	22-01	16:48:26	17:27:41	00:39:15	100.00
9	487985	4410359	23-01	16:49:19	17:27:17	00:37:59	100.00
9	487985	4410359	24-01	16:50:15	17:26:47	00:36:32	100.00
9	487985	4410359	25-01	16:51:17	17:26:11	00:34:54	100.00
9	487985	4410359	26-01	16:52:24	17:29:24	00:36:59	100.00
9	487985	4410359	27-01	16:53:38	17:28:32	00:34:54	100.00
9	487985	4410359	28-01	16:55:01	17:27:30	00:32:29	100.00
9	487985	4410359	29-01	16:56:35	17:26:15	00:29:41	100.00
9	487985	4410359	30-01	16:58:23	17:24:43	00:26:20	100.00
9	487985	4410359	31-01	17:00:35	17:22:47	00:22:13	100.00
9	487985	4410359	01-02	17:03:25	17:20:10	00:16:44	67.14
9	487985	4410359	02-02	17:08:14	17:15:33	00:07:20	12.60
9	487985	4410359	09-11	16:35:20	16:49:00	00:13:41	44.21
9	487985	4410359	10-11	16:32:15	16:52:20	00:20:05	97.38
9	487985	4410359	11-11	16:30:07	16:54:46	00:24:39	100.00
9	487985	4410359	12-11	16:28:28	16:56:43	00:28:15	100.00
9	487985	4410359	13-11	16:27:08	16:58:24	00:31:15	100.00
9	487985	4410359	14-11	16:26:02	16:59:51	00:33:49	100.00
9	487985	4410359	15-11	16:25:07	17:01:09	00:36:02	100.00
9	487985	4410359	16-11	16:24:22	16:58:23	00:34:02	100.00
9	487985	4410359	17-11	16:23:43	16:59:29	00:35:45	100.00
9	487985	4410359	18-11	16:23:12	17:00:29	00:37:17	100.00
9	487985	4410359	19-11	16:22:47	17:01:24	00:38:38	100.00
9	487985	4410359	20-11	16:22:26	17:02:16	00:39:49	100.00
9	487985	4410359	21-11	16:22:11	17:03:04	00:40:53	100.00
9	487985	4410359	22-11	16:21:59	17:03:49	00:41:49	100.00
9	487985	4410359	23-11	16:21:53	17:04:32	00:42:39	100.00
9	487985	4410359	24-11	16:21:50	17:05:12	00:43:23	100.00
9	487985	4410359	25-11	16:21:50	17:05:51	00:44:01	100.00
9	487985	4410359	26-11	16:21:53	17:06:27	00:44:35	100.00
9	487985	4410359	27-11	16:21:59	17:07:02	00:45:04	100.00
9	487985	4410359	28-11	16:22:07	17:07:36	00:45:29	100.00
9	487985	4410359	29-11	16:22:18	17:08:08	00:45:50	100.00
9	487985	4410359	30-11	16:22:32	17:08:40	00:46:08	100.00
9	487985	4410359	01-12	16:22:47	17:09:10	00:46:23	100.00
9	487985	4410359	02-12	16:23:04	17:09:40	00:46:35	100.00
9	487985	4410359	03-12	16:23:24	17:10:09	00:46:45	100.00
9	487985	4410359	04-12	16:23:44	17:10:37	00:46:53	100.00
9	487985	4410359	05-12	16:24:06	17:11:05	00:46:59	100.00
9	487985	4410359	06-12	16:24:30	17:11:33	00:47:03	100.00
9	487985	4410359	07-12	16:24:54	17:11:59	00:47:06	100.00
9	487985	4410359	08-12	16:25:20	17:12:27	00:47:07	100.00
9	487985	4410359	09-12	16:25:46	17:12:54	00:47:08	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

9	487985	4410359	10-12	16:26:13	17:13:21	00:47:08	100.00
9	487985	4410359	11-12	16:26:41	17:13:49	00:47:07	100.00
9	487985	4410359	12-12	16:27:10	17:14:16	00:47:06	100.00
9	487985	4410359	13-12	16:27:39	17:14:44	00:47:05	100.00
9	487985	4410359	14-12	16:28:08	17:15:11	00:47:04	100.00
9	487985	4410359	15-12	16:28:37	17:15:40	00:47:02	100.00
9	487985	4410359	16-12	16:29:07	17:16:08	00:47:01	100.00
9	487985	4410359	17-12	16:29:37	17:16:36	00:46:59	100.00
9	487985	4410359	18-12	16:30:07	17:17:05	00:46:58	100.00
9	487985	4410359	19-12	16:30:37	17:17:35	00:46:58	100.00
9	487985	4410359	20-12	16:31:07	17:18:04	00:46:57	100.00
9	487985	4410359	21-12	16:31:37	17:18:34	00:46:57	100.00
9	487985	4410359	22-12	16:32:07	17:19:04	00:46:57	100.00
9	487985	4410359	23-12	16:32:37	17:19:34	00:46:58	100.00
9	487985	4410359	24-12	16:33:06	17:20:05	00:46:59	100.00
9	487985	4410359	25-12	16:33:36	17:20:35	00:46:59	100.00
9	487985	4410359	26-12	16:34:05	17:21:06	00:47:01	100.00
9	487985	4410359	27-12	16:34:34	17:21:36	00:47:02	100.00
9	487985	4410359	28-12	16:35:03	17:22:06	00:47:04	100.00
9	487985	4410359	29-12	16:35:31	17:22:36	00:47:05	100.00
9	487985	4410359	30-12	16:35:59	17:23:06	00:47:06	100.00
9	487985	4410359	31-12	16:36:28	17:23:35	00:47:07	100.00

House Easting Northing  
 29 488456 4410114

Turbine	Easting	Northing	Date	Start Time	End Time	Duration	% Cover
5	487911	4409654	01-01	16:34:39	17:26:51	00:52:12	100.00
5	487911	4409654	02-01	16:35:03	17:27:25	00:52:21	100.00
5	487911	4409654	03-01	16:35:27	17:27:58	00:52:31	100.00
5	487911	4409654	04-01	16:35:50	17:28:31	00:52:41	100.00
5	487911	4409654	05-01	16:36:12	17:29:03	00:52:51	100.00
5	487911	4409654	06-01	16:36:35	17:29:35	00:53:00	100.00
5	487911	4409654	07-01	16:36:57	17:30:06	00:53:09	100.00
5	487911	4409654	08-01	16:37:20	17:30:36	00:53:17	100.00
5	487911	4409654	09-01	16:37:42	17:31:06	00:53:24	100.00
5	487911	4409654	10-01	16:38:04	17:31:34	00:53:29	100.00
5	487911	4409654	11-01	16:38:27	17:32:00	00:53:34	100.00
5	487911	4409654	12-01	16:38:49	17:32:25	00:53:36	100.00
5	487911	4409654	13-01	16:39:11	17:32:49	00:53:37	100.00
5	487911	4409654	14-01	16:39:34	17:33:10	00:53:36	100.00
5	487911	4409654	15-01	16:39:58	17:33:30	00:53:32	100.00
5	487911	4409654	16-01	16:40:22	17:33:47	00:53:26	100.00
5	487911	4409654	17-01	16:40:46	17:34:03	00:53:16	100.00
5	487911	4409654	18-01	16:41:12	17:34:15	00:53:04	100.00
5	487911	4409654	19-01	16:41:39	17:34:26	00:52:47	100.00
5	487911	4409654	20-01	16:42:06	17:34:33	00:52:27	100.00
5	487911	4409654	21-01	16:42:35	17:34:37	00:52:02	100.00
5	487911	4409654	22-01	16:43:06	17:34:39	00:51:33	100.00
5	487911	4409654	23-01	16:43:38	17:34:36	00:50:58	100.00
5	487911	4409654	24-01	16:44:12	17:34:30	00:50:18	100.00
5	487911	4409654	25-01	16:44:49	17:34:21	00:49:32	100.00
5	487911	4409654	26-01	16:45:27	17:34:07	00:48:39	100.00
5	487911	4409654	27-01	16:46:09	17:33:48	00:47:40	100.00
5	487911	4409654	28-01	16:46:53	17:33:25	00:46:32	100.00
5	487911	4409654	29-01	16:47:41	17:32:57	00:45:16	100.00
5	487911	4409654	30-01	16:48:32	17:32:22	00:43:50	100.00
5	487911	4409654	31-01	16:49:28	17:31:42	00:42:14	100.00
5	487911	4409654	01-02	16:50:29	17:34:51	00:44:22	100.00
5	487911	4409654	02-02	16:51:36	17:33:56	00:42:19	100.00
5	487911	4409654	03-02	16:52:51	17:32:52	00:40:02	100.00

Project : USELLUS  
Run Name : KUsellus002.WFK  
Title : SHADOW 02  
Time : 15:40:13, 29 Jan 2024

5	487911	4409654	04-02	16:54:14	17:31:38	00:37:25	100.00
5	487911	4409654	05-02	16:55:48	17:30:12	00:34:24	100.00
5	487911	4409654	06-02	16:57:37	17:28:28	00:30:51	100.00
5	487911	4409654	07-02	16:59:47	17:26:22	00:26:34	100.00
5	487911	4409654	08-02	17:02:32	17:23:39	00:21:07	96.94
5	487911	4409654	09-02	17:06:34	17:19:38	00:13:04	36.37
5	487911	4409654	01-11	16:38:07	16:46:54	00:08:47	16.19
5	487911	4409654	02-11	16:33:07	16:51:56	00:18:49	75.99
5	487911	4409654	03-11	16:30:09	16:54:59	00:24:50	100.00
5	487911	4409654	04-11	16:27:54	16:57:18	00:29:24	100.00
5	487911	4409654	05-11	16:26:06	16:59:14	00:33:09	100.00
5	487911	4409654	06-11	16:24:35	17:00:54	00:36:18	100.00
5	487911	4409654	07-11	16:23:18	17:02:21	00:39:02	100.00
5	487911	4409654	08-11	16:22:12	17:03:38	00:41:26	100.00
5	487911	4409654	09-11	16:21:16	17:04:48	00:43:32	100.00
5	487911	4409654	10-11	16:20:27	17:01:56	00:41:29	100.00
5	487911	4409654	11-11	16:19:45	17:02:55	00:43:10	100.00
5	487911	4409654	12-11	16:19:09	17:03:49	00:44:39	100.00
5	487911	4409654	13-11	16:18:40	17:04:38	00:45:59	100.00
5	487911	4409654	14-11	16:18:15	17:05:24	00:47:10	100.00
5	487911	4409654	15-11	16:17:55	17:06:07	00:48:12	100.00
5	487911	4409654	16-11	16:17:39	17:06:47	00:49:08	100.00
5	487911	4409654	17-11	16:17:28	17:07:24	00:49:56	100.00
5	487911	4409654	18-11	16:17:20	17:07:59	00:50:39	100.00
5	487911	4409654	19-11	16:17:16	17:08:32	00:51:16	100.00
5	487911	4409654	20-11	16:17:15	17:09:03	00:51:48	100.00
5	487911	4409654	21-11	16:17:17	17:09:32	00:52:15	100.00
5	487911	4409654	22-11	16:17:23	17:09:59	00:52:37	100.00
5	487911	4409654	23-11	16:17:31	17:10:26	00:52:56	100.00
5	487911	4409654	24-11	16:17:41	17:10:52	00:53:10	100.00
5	487911	4409654	25-11	16:17:54	17:11:16	00:53:21	100.00
5	487911	4409654	26-11	16:18:10	17:11:39	00:53:29	100.00
5	487911	4409654	27-11	16:18:27	17:12:02	00:53:35	100.00
5	487911	4409654	28-11	16:18:47	17:12:24	00:53:37	100.00
5	487911	4409654	29-11	16:19:08	17:12:45	00:53:37	100.00
5	487911	4409654	30-11	16:19:31	17:13:06	00:53:35	100.00
5	487911	4409654	01-12	16:19:54	17:13:27	00:53:32	100.00
5	487911	4409654	02-12	16:20:20	17:13:47	00:53:28	100.00
5	487911	4409654	03-12	16:20:46	17:14:08	00:53:21	100.00
5	487911	4409654	04-12	16:21:14	17:14:28	00:53:14	100.00
5	487911	4409654	05-12	16:21:42	17:14:48	00:53:06	100.00
5	487911	4409654	06-12	16:22:12	17:15:09	00:52:57	100.00
5	487911	4409654	07-12	16:22:42	17:15:29	00:52:47	100.00
5	487911	4409654	08-12	16:23:13	17:15:50	00:52:38	100.00
5	487911	4409654	09-12	16:23:44	17:16:12	00:52:28	100.00
5	487911	4409654	10-12	16:24:16	17:16:34	00:52:18	100.00
5	487911	4409654	11-12	16:24:48	17:16:56	00:52:08	100.00
5	487911	4409654	12-12	16:25:20	17:17:19	00:51:59	100.00
5	487911	4409654	13-12	16:25:53	17:17:43	00:51:50	100.00
5	487911	4409654	14-12	16:26:25	17:18:07	00:51:42	100.00
5	487911	4409654	15-12	16:26:57	17:18:32	00:51:35	100.00
5	487911	4409654	16-12	16:27:29	17:18:58	00:51:29	100.00
5	487911	4409654	17-12	16:28:01	17:19:25	00:51:24	100.00
5	487911	4409654	18-12	16:28:32	17:19:52	00:51:20	100.00
5	487911	4409654	19-12	16:29:04	17:20:20	00:51:17	100.00
5	487911	4409654	20-12	16:29:34	17:20:49	00:51:15	100.00
5	487911	4409654	21-12	16:30:04	17:21:19	00:51:14	100.00
5	487911	4409654	22-12	16:30:34	17:21:49	00:51:15	100.00
5	487911	4409654	23-12	16:31:03	17:22:20	00:51:17	100.00
5	487911	4409654	24-12	16:31:32	17:22:52	00:51:20	100.00
5	487911	4409654	25-12	16:31:59	17:23:24	00:51:24	100.00
5	487911	4409654	26-12	16:32:27	17:23:56	00:51:30	100.00



Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

5	487911	4409654	27-12	16:32:53	17:24:29	00:51:36	100.00
5	487911	4409654	28-12	16:33:19	17:25:03	00:51:43	100.00
5	487911	4409654	29-12	16:33:45	17:25:36	00:51:51	100.00
5	487911	4409654	30-12	16:34:10	17:26:10	00:52:00	100.00
5	487911	4409654	31-12	16:34:34	17:26:44	00:52:09	100.00
9	487985	4410359	29-05	19:36:38	19:47:13	00:10:35	15.81
9	487985	4410359	30-05	19:33:24	19:50:51	00:17:27	43.27
9	487985	4410359	31-05	19:31:18	19:53:21	00:22:04	69.53
9	487985	4410359	01-06	19:29:42	19:55:22	00:25:40	94.59
9	487985	4410359	02-06	19:28:25	19:57:03	00:28:38	100.00
9	487985	4410359	03-06	19:27:22	19:58:32	00:31:11	100.00
9	487985	4410359	04-06	19:26:29	19:59:51	00:33:23	100.00
9	487985	4410359	05-06	19:25:44	19:59:44	00:34:00	100.00
9	487985	4410359	06-06	19:25:06	19:58:10	00:33:04	100.00
9	487985	4410359	07-06	19:24:34	19:59:09	00:34:35	100.00
9	487985	4410359	08-06	19:24:07	20:00:02	00:35:55	100.00
9	487985	4410359	09-06	19:23:45	20:00:52	00:37:07	100.00
9	487985	4410359	10-06	19:23:27	20:01:37	00:38:10	100.00
9	487985	4410359	11-06	19:23:13	20:02:18	00:39:05	100.00
9	487985	4410359	12-06	19:23:02	20:02:56	00:39:54	100.00
9	487985	4410359	13-06	19:22:54	20:03:31	00:40:36	100.00
9	487985	4410359	14-06	19:22:50	20:04:02	00:41:12	100.00
9	487985	4410359	15-06	19:22:48	20:04:31	00:41:43	100.00
9	487985	4410359	16-06	19:22:49	20:04:57	00:42:08	100.00
9	487985	4410359	17-06	19:22:53	20:05:20	00:42:27	100.00
9	487985	4410359	18-06	19:22:59	20:05:41	00:42:41	100.00
9	487985	4410359	19-06	19:23:08	20:05:58	00:42:51	100.00
9	487985	4410359	20-06	19:23:19	20:06:14	00:42:55	100.00
9	487985	4410359	21-06	19:23:32	20:06:26	00:42:54	100.00
9	487985	4410359	22-06	19:23:48	20:06:36	00:42:48	100.00
9	487985	4410359	23-06	19:24:06	20:06:43	00:42:37	100.00
9	487985	4410359	24-06	19:24:26	20:06:47	00:42:21	100.00
9	487985	4410359	25-06	19:24:49	20:06:49	00:42:00	100.00
9	487985	4410359	26-06	19:25:14	20:06:47	00:41:34	100.00
9	487985	4410359	27-06	19:25:41	20:06:43	00:41:01	100.00
9	487985	4410359	28-06	19:26:12	20:06:35	00:40:23	100.00
9	487985	4410359	29-06	19:26:45	20:06:24	00:39:39	100.00
9	487985	4410359	30-06	19:27:20	20:06:09	00:38:48	100.00
9	487985	4410359	01-07	19:27:59	20:05:50	00:37:51	100.00
9	487985	4410359	02-07	19:28:42	20:05:27	00:36:45	100.00
9	487985	4410359	03-07	19:29:28	20:04:59	00:35:31	100.00
9	487985	4410359	04-07	19:30:18	20:04:26	00:34:08	100.00
9	487985	4410359	05-07	19:31:13	20:03:48	00:32:34	100.00
9	487985	4410359	06-07	19:32:14	20:06:32	00:34:18	100.00
9	487985	4410359	07-07	19:33:21	20:06:06	00:32:45	100.00
9	487985	4410359	08-07	19:34:36	20:05:04	00:30:28	100.00
9	487985	4410359	09-07	19:36:01	20:03:51	00:27:50	100.00
9	487985	4410359	10-07	19:37:40	20:02:23	00:24:43	87.40
9	487985	4410359	11-07	19:39:39	20:00:33	00:20:54	62.19
9	487985	4410359	12-07	19:42:13	19:58:08	00:15:55	35.81
9	487985	4410359	13-07	19:46:24	19:54:04	00:07:40	8.28

House Easting Northing  
 30 488575 4409166

Turbine	Easting	Northing	Date	Start Time	End Time	Duration	% Cover
3	488006	4408702	01-01	16:41:21	17:32:45	00:51:23	100.00
3	488006	4408702	02-01	16:41:46	17:33:18	00:51:31	100.00
3	488006	4408702	03-01	16:42:10	17:33:50	00:51:39	100.00
3	488006	4408702	04-01	16:42:35	17:34:22	00:51:47	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

3	488006	4408702	05-01	16:42:58	17:34:53	00:51:55	100.00
3	488006	4408702	06-01	16:43:22	17:35:24	00:52:02	100.00
3	488006	4408702	07-01	16:43:46	17:35:54	00:52:08	100.00
3	488006	4408702	08-01	16:44:09	17:36:22	00:52:13	100.00
3	488006	4408702	09-01	16:44:33	17:36:50	00:52:17	100.00
3	488006	4408702	10-01	16:44:56	17:37:17	00:52:20	100.00
3	488006	4408702	11-01	16:45:20	17:37:42	00:52:22	100.00
3	488006	4408702	12-01	16:45:44	17:38:05	00:52:21	100.00
3	488006	4408702	13-01	16:46:08	17:38:27	00:52:18	100.00
3	488006	4408702	14-01	16:46:33	17:38:46	00:52:13	100.00
3	488006	4408702	15-01	16:46:58	17:39:04	00:52:06	100.00
3	488006	4408702	16-01	16:47:24	17:39:19	00:51:55	100.00
3	488006	4408702	17-01	16:47:51	17:39:32	00:51:41	100.00
3	488006	4408702	18-01	16:48:19	17:39:43	00:51:24	100.00
3	488006	4408702	19-01	16:48:48	17:39:50	00:51:02	100.00
3	488006	4408702	20-01	16:49:19	17:39:55	00:50:36	100.00
3	488006	4408702	21-01	16:49:51	17:39:57	00:50:06	100.00
3	488006	4408702	22-01	16:50:24	17:39:55	00:49:31	100.00
3	488006	4408702	23-01	16:50:59	17:39:49	00:48:50	100.00
3	488006	4408702	24-01	16:51:38	17:39:40	00:48:02	100.00
3	488006	4408702	25-01	16:52:18	17:39:27	00:47:09	100.00
3	488006	4408702	26-01	16:53:01	17:39:08	00:46:08	100.00
3	488006	4408702	27-01	16:53:46	17:38:46	00:44:59	100.00
3	488006	4408702	28-01	16:54:36	17:38:17	00:43:42	100.00
3	488006	4408702	29-01	16:55:29	17:37:43	00:42:15	100.00
3	488006	4408702	30-01	16:56:26	17:37:03	00:40:37	100.00
3	488006	4408702	31-01	16:57:29	17:40:12	00:42:42	100.00
3	488006	4408702	01-02	16:58:38	17:39:16	00:40:38	100.00
3	488006	4408702	02-02	16:59:55	17:38:12	00:38:17	100.00
3	488006	4408702	03-02	17:01:21	17:36:57	00:35:36	100.00
3	488006	4408702	04-02	17:02:59	17:35:28	00:32:29	100.00
3	488006	4408702	05-02	17:04:54	17:33:41	00:28:47	100.00
3	488006	4408702	06-02	17:07:13	17:31:27	00:24:14	100.00
3	488006	4408702	07-02	17:10:16	17:28:28	00:18:13	72.96
3	488006	4408702	08-02	17:15:28	17:23:18	00:07:49	13.18
3	488006	4408702	03-11	16:41:06	16:56:37	00:15:31	52.27
3	488006	4408702	04-11	16:37:44	17:00:04	00:22:20	100.00
3	488006	4408702	05-11	16:35:20	17:02:35	00:27:15	100.00
3	488006	4408702	06-11	16:33:27	17:04:37	00:31:10	100.00
3	488006	4408702	07-11	16:31:53	17:06:21	00:34:27	100.00
3	488006	4408702	08-11	16:30:35	17:07:51	00:37:16	100.00
3	488006	4408702	09-11	16:29:28	17:09:11	00:39:43	100.00
3	488006	4408702	10-11	16:28:31	17:10:23	00:41:52	100.00
3	488006	4408702	11-11	16:27:42	17:07:33	00:39:51	100.00
3	488006	4408702	12-11	16:26:59	17:08:33	00:41:33	100.00
3	488006	4408702	13-11	16:26:25	17:09:29	00:43:04	100.00
3	488006	4408702	14-11	16:25:55	17:10:20	00:44:25	100.00
3	488006	4408702	15-11	16:25:30	17:11:07	00:45:37	100.00
3	488006	4408702	16-11	16:25:10	17:11:51	00:46:41	100.00
3	488006	4408702	17-11	16:24:55	17:12:32	00:47:38	100.00
3	488006	4408702	18-11	16:24:43	17:13:11	00:48:27	100.00
3	488006	4408702	19-11	16:24:36	17:13:47	00:49:11	100.00
3	488006	4408702	20-11	16:24:32	17:14:21	00:49:49	100.00
3	488006	4408702	21-11	16:24:31	17:14:53	00:50:22	100.00
3	488006	4408702	22-11	16:24:34	17:15:24	00:50:50	100.00
3	488006	4408702	23-11	16:24:39	17:15:53	00:51:13	100.00
3	488006	4408702	24-11	16:24:48	17:16:20	00:51:33	100.00
3	488006	4408702	25-11	16:24:58	17:16:47	00:51:48	100.00
3	488006	4408702	26-11	16:25:12	17:17:12	00:52:01	100.00
3	488006	4408702	27-11	16:25:27	17:17:37	00:52:10	100.00
3	488006	4408702	28-11	16:25:44	17:18:01	00:52:16	100.00
3	488006	4408702	29-11	16:26:04	17:18:24	00:52:20	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

3	488006	4408702	30-11	16:26:25	17:18:47	00:52:22	100.00
3	488006	4408702	01-12	16:26:48	17:19:09	00:52:21	100.00
3	488006	4408702	02-12	16:27:12	17:19:31	00:52:19	100.00
3	488006	4408702	03-12	16:27:37	17:19:53	00:52:16	100.00
3	488006	4408702	04-12	16:28:03	17:20:14	00:52:11	100.00
3	488006	4408702	05-12	16:28:30	17:20:36	00:52:06	100.00
3	488006	4408702	06-12	16:28:59	17:20:58	00:51:59	100.00
3	488006	4408702	07-12	16:29:28	17:21:20	00:51:52	100.00
3	488006	4408702	08-12	16:29:57	17:21:42	00:51:44	100.00
3	488006	4408702	09-12	16:30:28	17:22:04	00:51:36	100.00
3	488006	4408702	10-12	16:30:59	17:22:27	00:51:28	100.00
3	488006	4408702	11-12	16:31:30	17:22:50	00:51:21	100.00
3	488006	4408702	12-12	16:32:01	17:23:14	00:51:13	100.00
3	488006	4408702	13-12	16:32:33	17:23:39	00:51:06	100.00
3	488006	4408702	14-12	16:33:05	17:24:04	00:50:59	100.00
3	488006	4408702	15-12	16:33:36	17:24:29	00:50:53	100.00
3	488006	4408702	16-12	16:34:08	17:24:55	00:50:47	100.00
3	488006	4408702	17-12	16:34:39	17:25:22	00:50:43	100.00
3	488006	4408702	18-12	16:35:11	17:25:50	00:50:39	100.00
3	488006	4408702	19-12	16:35:42	17:26:18	00:50:37	100.00
3	488006	4408702	20-12	16:36:12	17:26:47	00:50:35	100.00
3	488006	4408702	21-12	16:36:42	17:27:17	00:50:35	100.00
3	488006	4408702	22-12	16:37:12	17:27:47	00:50:35	100.00
3	488006	4408702	23-12	16:37:41	17:28:18	00:50:37	100.00
3	488006	4408702	24-12	16:38:10	17:28:49	00:50:40	100.00
3	488006	4408702	25-12	16:38:38	17:29:21	00:50:43	100.00
3	488006	4408702	26-12	16:39:06	17:29:53	00:50:48	100.00
3	488006	4408702	27-12	16:39:33	17:30:26	00:50:53	100.00
3	488006	4408702	28-12	16:39:59	17:30:59	00:50:59	100.00
3	488006	4408702	29-12	16:40:25	17:31:32	00:51:06	100.00
3	488006	4408702	30-12	16:40:51	17:32:05	00:51:14	100.00
3	488006	4408702	31-12	16:41:16	17:32:38	00:51:21	100.00

House Easting Northing  
 31 488966 4409396

There are no shadows cast on this window

House Easting Northing  
 32 491716 4409801

There are no shadows cast on this window

House Easting Northing  
 33 491406 4410065

There are no shadows cast on this window

House Easting Northing  
 34 491194 4410178

There are no shadows cast on this window

House Easting Northing  
 35 489781 4409864

Turbine	Easting	Northing	Date	Start Time	End Time	Duration	% Cover
10	490327	4409525	01-01	08:57:53	09:38:34	00:40:41	100.00
10	490327	4409525	02-01	08:58:00	09:39:21	00:41:20	100.00
10	490327	4409525	03-01	08:58:06	09:40:09	00:42:03	100.00
10	490327	4409525	04-01	08:58:08	09:40:58	00:42:49	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

10	490327	4409525	05-01	08:58:09	09:41:47	00:43:38	100.00
10	490327	4409525	06-01	08:58:07	09:42:36	00:44:29	100.00
10	490327	4409525	07-01	08:58:03	09:43:26	00:45:23	100.00
10	490327	4409525	08-01	08:57:57	09:44:15	00:46:18	100.00
10	490327	4409525	09-01	08:57:48	09:45:04	00:47:16	100.00
10	490327	4409525	10-01	08:57:38	09:45:52	00:48:15	100.00
10	490327	4409525	11-01	08:57:24	09:46:40	00:49:16	100.00
10	490327	4409525	12-01	08:57:09	09:47:27	00:50:18	100.00
10	490327	4409525	13-01	08:56:51	09:48:13	00:51:21	100.00
10	490327	4409525	14-01	08:56:36	09:48:57	00:52:22	100.00
10	490327	4409525	15-01	08:56:34	09:49:41	00:53:06	100.00
10	490327	4409525	16-01	08:56:33	09:50:23	00:53:49	100.00
10	490327	4409525	17-01	08:56:32	09:51:03	00:54:30	100.00
10	490327	4409525	18-01	08:56:32	09:51:41	00:55:09	100.00
10	490327	4409525	19-01	08:56:32	09:52:18	00:55:46	100.00
10	490327	4409525	20-01	08:56:32	09:52:53	00:56:20	100.00
10	490327	4409525	21-01	08:56:34	09:53:26	00:56:52	100.00
10	490327	4409525	22-01	08:56:36	09:53:56	00:57:20	100.00
10	490327	4409525	23-01	08:56:39	09:54:24	00:57:46	100.00
10	490327	4409525	24-01	08:56:43	09:54:50	00:58:07	100.00
10	490327	4409525	25-01	08:56:48	09:55:13	00:58:25	100.00
10	490327	4409525	26-01	08:56:54	09:55:34	00:58:40	100.00
10	490327	4409525	27-01	08:57:02	09:55:52	00:58:50	100.00
10	490327	4409525	28-01	08:57:11	09:56:06	00:58:56	100.00
10	490327	4409525	29-01	08:57:22	09:56:18	00:58:57	100.00
10	490327	4409525	30-01	08:57:34	09:56:27	00:58:53	100.00
10	490327	4409525	31-01	08:57:48	09:56:33	00:58:44	100.00
10	490327	4409525	01-02	08:58:05	09:56:35	00:58:30	100.00
10	490327	4409525	02-02	08:58:23	09:56:33	00:58:10	100.00
10	490327	4409525	03-02	08:58:44	09:56:28	00:57:44	100.00
10	490327	4409525	04-02	08:59:07	09:56:19	00:57:12	100.00
10	490327	4409525	05-02	08:59:33	09:56:05	00:56:32	100.00
10	490327	4409525	06-02	09:00:02	09:55:48	00:55:46	100.00
10	490327	4409525	07-02	09:00:34	09:55:25	00:54:52	100.00
10	490327	4409525	08-02	09:01:09	09:54:58	00:53:49	100.00
10	490327	4409525	09-02	09:01:49	09:58:23	00:56:34	100.00
10	490327	4409525	10-02	09:02:32	09:57:45	00:55:13	100.00
10	490327	4409525	11-02	09:03:20	09:57:01	00:53:41	100.00
10	490327	4409525	12-02	09:04:13	09:56:11	00:51:57	100.00
10	490327	4409525	13-02	09:05:12	09:55:13	00:50:01	100.00
10	490327	4409525	14-02	09:06:18	09:54:07	00:47:49	100.00
10	490327	4409525	15-02	09:07:32	09:52:52	00:45:20	100.00
10	490327	4409525	16-02	09:08:55	09:51:26	00:42:32	100.00
10	490327	4409525	17-02	09:10:30	09:49:48	00:39:18	100.00
10	490327	4409525	18-02	09:12:20	09:47:52	00:35:32	100.00
10	490327	4409525	19-02	09:14:32	09:45:35	00:31:03	100.00
10	490327	4409525	20-02	09:17:16	09:42:44	00:25:27	100.00
10	490327	4409525	21-02	09:21:07	09:38:48	00:17:41	59.15
10	490327	4409525	20-10	08:58:51	09:03:31	00:04:40	4.25
10	490327	4409525	21-10	08:51:18	09:10:29	00:19:11	69.74
10	490327	4409525	22-10	08:47:29	09:13:52	00:26:23	100.00
10	490327	4409525	23-10	08:44:38	09:16:21	00:31:43	100.00
10	490327	4409525	24-10	08:42:18	09:18:21	00:36:03	100.00
10	490327	4409525	25-10	08:40:20	09:20:01	00:39:41	100.00
10	490327	4409525	26-10	08:38:38	09:21:27	00:42:50	100.00
10	490327	4409525	27-10	08:37:08	09:22:43	00:45:35	100.00
10	490327	4409525	28-10	08:35:49	09:23:49	00:48:00	100.00
10	490327	4409525	29-10	08:34:39	09:24:48	00:50:09	100.00
10	490327	4409525	30-10	08:33:37	09:25:40	00:52:04	100.00
10	490327	4409525	31-10	08:32:42	09:26:27	00:53:45	100.00
10	490327	4409525	01-11	08:31:54	09:27:10	00:55:16	100.00
10	490327	4409525	02-11	08:31:12	09:27:47	00:56:36	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

10	490327	4409525	03-11	08:30:35	09:24:25	00:53:50	100.00
10	490327	4409525	04-11	08:30:04	09:24:56	00:54:52	100.00
10	490327	4409525	05-11	08:29:38	09:25:23	00:55:45	100.00
10	490327	4409525	06-11	08:29:16	09:25:48	00:56:32	100.00
10	490327	4409525	07-11	08:28:59	09:26:10	00:57:11	100.00
10	490327	4409525	08-11	08:28:46	09:26:29	00:57:43	100.00
10	490327	4409525	09-11	08:28:38	09:26:47	00:58:09	100.00
10	490327	4409525	10-11	08:28:33	09:27:02	00:58:29	100.00
10	490327	4409525	11-11	08:28:32	09:27:16	00:58:44	100.00
10	490327	4409525	12-11	08:28:34	09:27:27	00:58:53	100.00
10	490327	4409525	13-11	08:28:40	09:27:37	00:58:57	100.00
10	490327	4409525	14-11	08:28:50	09:27:46	00:58:56	100.00
10	490327	4409525	15-11	08:29:02	09:27:53	00:58:51	100.00
10	490327	4409525	16-11	08:29:18	09:27:59	00:58:42	100.00
10	490327	4409525	17-11	08:29:36	09:28:05	00:58:28	100.00
10	490327	4409525	18-11	08:29:58	09:28:09	00:58:11	100.00
10	490327	4409525	19-11	08:30:22	09:28:12	00:57:50	100.00
10	490327	4409525	20-11	08:30:49	09:28:14	00:57:25	100.00
10	490327	4409525	21-11	08:31:18	09:28:16	00:56:57	100.00
10	490327	4409525	22-11	08:31:50	09:28:17	00:56:27	100.00
10	490327	4409525	23-11	08:32:24	09:28:17	00:55:53	100.00
10	490327	4409525	24-11	08:33:00	09:28:17	00:55:17	100.00
10	490327	4409525	25-11	08:33:38	09:28:17	00:54:39	100.00
10	490327	4409525	26-11	08:34:18	09:28:16	00:53:58	100.00
10	490327	4409525	27-11	08:34:59	09:28:15	00:53:16	100.00
10	490327	4409525	28-11	08:35:43	09:28:15	00:52:32	100.00
10	490327	4409525	29-11	08:36:38	09:28:14	00:51:36	100.00
10	490327	4409525	30-11	08:37:40	09:28:13	00:50:33	100.00
10	490327	4409525	01-12	08:38:42	09:28:13	00:49:30	100.00
10	490327	4409525	02-12	08:39:43	09:28:12	00:48:29	100.00
10	490327	4409525	03-12	08:40:43	09:28:13	00:47:30	100.00
10	490327	4409525	04-12	08:41:41	09:28:14	00:46:32	100.00
10	490327	4409525	05-12	08:42:39	09:28:15	00:45:36	100.00
10	490327	4409525	06-12	08:43:35	09:28:17	00:44:43	100.00
10	490327	4409525	07-12	08:44:29	09:28:20	00:43:51	100.00
10	490327	4409525	08-12	08:45:23	09:28:25	00:43:02	100.00
10	490327	4409525	09-12	08:46:15	09:28:30	00:42:15	100.00
10	490327	4409525	10-12	08:47:06	09:28:37	00:41:32	100.00
10	490327	4409525	11-12	08:47:55	09:28:46	00:40:51	100.00
10	490327	4409525	12-12	08:48:42	09:28:56	00:40:14	100.00
10	490327	4409525	13-12	08:49:28	09:29:08	00:39:40	100.00
10	490327	4409525	14-12	08:50:12	09:29:21	00:39:09	100.00
10	490327	4409525	15-12	08:50:55	09:29:37	00:38:42	100.00
10	490327	4409525	16-12	08:51:36	09:29:54	00:38:19	100.00
10	490327	4409525	17-12	08:52:15	09:30:14	00:37:59	100.00
10	490327	4409525	18-12	08:52:52	09:30:35	00:37:44	100.00
10	490327	4409525	19-12	08:53:27	09:30:59	00:37:32	100.00
10	490327	4409525	20-12	08:54:01	09:31:25	00:37:25	100.00
10	490327	4409525	21-12	08:54:32	09:31:54	00:37:21	100.00
10	490327	4409525	22-12	08:55:02	09:32:24	00:37:22	100.00
10	490327	4409525	23-12	08:55:29	09:32:57	00:37:28	100.00
10	490327	4409525	24-12	08:55:54	09:33:31	00:37:37	100.00
10	490327	4409525	25-12	08:56:18	09:34:08	00:37:50	100.00
10	490327	4409525	26-12	08:56:39	09:34:47	00:38:08	100.00
10	490327	4409525	27-12	08:56:58	09:35:27	00:38:29	100.00
10	490327	4409525	28-12	08:57:15	09:36:09	00:38:54	100.00
10	490327	4409525	29-12	08:57:29	09:36:52	00:39:23	100.00
10	490327	4409525	30-12	08:57:42	09:37:37	00:39:56	100.00
10	490327	4409525	31-12	08:57:52	09:38:23	00:40:31	100.00

House Easting Northing  
 36 491529 4408377

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

Turbine	Easting	Northing	Date	Start Time	End Time	Duration	% Cover
6	491096	4408573	06-05	19:36:51	19:45:34	00:08:43	10.43
6	491096	4408573	07-05	19:30:40	19:51:46	00:21:06	61.74
6	491096	4408573	08-05	19:27:05	19:55:23	00:28:18	100.00
6	491096	4408573	09-05	19:24:21	19:58:09	00:33:49	100.00
6	491096	4408573	10-05	19:22:06	20:00:28	00:38:22	100.00
6	491096	4408573	11-05	19:20:11	20:02:28	00:42:17	100.00
6	491096	4408573	12-05	19:18:30	20:04:14	00:45:44	100.00
6	491096	4408573	13-05	19:17:01	20:05:49	00:48:48	100.00
6	491096	4408573	14-05	19:15:42	20:07:16	00:51:34	100.00
6	491096	4408573	15-05	19:14:30	20:04:39	00:50:09	100.00
6	491096	4408573	16-05	19:13:26	20:05:53	00:52:26	100.00
6	491096	4408573	17-05	19:12:28	20:07:01	00:54:33	100.00
6	491096	4408573	18-05	19:11:35	20:08:04	00:56:29	100.00
6	491096	4408573	19-05	19:10:48	20:09:04	00:58:16	100.00
6	491096	4408573	20-05	19:10:04	20:09:59	00:59:55	100.00
6	491096	4408573	21-05	19:09:25	20:10:52	01:01:27	100.00
6	491096	4408573	22-05	19:08:50	20:11:42	01:02:52	100.00
6	491096	4408573	23-05	19:08:18	20:12:30	01:04:12	100.00
6	491096	4408573	24-05	19:07:50	20:13:15	01:05:25	100.00
6	491096	4408573	25-05	19:07:24	20:13:57	01:06:33	100.00
6	491096	4408573	26-05	19:07:02	20:14:38	01:07:37	100.00
6	491096	4408573	27-05	19:06:42	20:15:17	01:08:35	100.00
6	491096	4408573	28-05	19:06:24	20:15:54	01:09:29	100.00
6	491096	4408573	29-05	19:06:09	20:16:29	01:10:20	100.00
6	491096	4408573	30-05	19:05:56	20:17:03	01:11:06	100.00
6	491096	4408573	31-05	19:05:45	20:17:35	01:11:50	100.00
6	491096	4408573	01-06	19:05:37	20:18:06	01:12:29	100.00
6	491096	4408573	02-06	19:05:29	20:18:36	01:13:06	100.00
6	491096	4408573	03-06	19:05:24	20:19:04	01:13:40	100.00
6	491096	4408573	04-06	19:05:20	20:19:31	01:14:11	100.00
6	491096	4408573	05-06	19:05:18	20:19:58	01:14:39	100.00
6	491096	4408573	06-06	19:05:18	20:20:23	01:15:05	100.00
6	491096	4408573	07-06	19:05:18	20:16:51	01:11:33	100.00
6	491096	4408573	08-06	19:05:20	20:17:14	01:11:54	100.00
6	491096	4408573	09-06	19:05:23	20:17:36	01:12:13	100.00
6	491096	4408573	10-06	19:05:27	20:17:58	01:12:31	100.00
6	491096	4408573	11-06	19:05:32	20:18:19	01:12:46	100.00
6	491096	4408573	12-06	19:05:39	20:18:38	01:12:59	100.00
6	491096	4408573	13-06	19:05:46	20:18:57	01:13:12	100.00
6	491096	4408573	14-06	19:05:54	20:19:16	01:13:22	100.00
6	491096	4408573	15-06	19:06:02	20:19:33	01:13:31	100.00
6	491096	4408573	16-06	19:06:12	20:19:50	01:13:38	100.00
6	491096	4408573	17-06	19:06:22	20:20:06	01:13:43	100.00
6	491096	4408573	18-06	19:06:34	20:20:21	01:13:47	100.00
6	491096	4408573	19-06	19:06:45	20:20:35	01:13:50	100.00
6	491096	4408573	20-06	19:06:58	20:20:49	01:13:51	100.00
6	491096	4408573	21-06	19:07:11	20:21:02	01:13:51	100.00
6	491096	4408573	22-06	19:07:24	20:21:14	01:13:49	100.00
6	491096	4408573	23-06	19:07:39	20:21:25	01:13:46	100.00
6	491096	4408573	24-06	19:07:54	20:21:35	01:13:42	100.00
6	491096	4408573	25-06	19:08:09	20:21:45	01:13:36	100.00
6	491096	4408573	26-06	19:08:25	20:21:53	01:13:28	100.00
6	491096	4408573	27-06	19:08:42	20:22:00	01:13:19	100.00
6	491096	4408573	28-06	19:08:59	20:22:07	01:13:08	100.00
6	491096	4408573	29-06	19:09:16	20:22:12	01:12:56	100.00
6	491096	4408573	30-06	19:09:35	20:22:16	01:12:41	100.00
6	491096	4408573	01-07	19:09:53	20:22:19	01:12:25	100.00
6	491096	4408573	02-07	19:10:13	20:22:20	01:12:08	100.00
6	491096	4408573	03-07	19:10:33	20:22:20	01:11:48	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

6	491096	4408573	04-07	19:10:54	20:22:19	01:11:26	100.00
6	491096	4408573	05-07	19:11:15	20:26:13	01:14:58	100.00
6	491096	4408573	06-07	19:11:37	20:26:08	01:14:31	100.00
6	491096	4408573	07-07	19:11:59	20:26:02	01:14:02	100.00
6	491096	4408573	08-07	19:12:23	20:25:54	01:13:30	100.00
6	491096	4408573	09-07	19:12:48	20:25:43	01:12:56	100.00
6	491096	4408573	10-07	19:13:13	20:25:31	01:12:19	100.00
6	491096	4408573	11-07	19:13:39	20:25:17	01:11:38	100.00
6	491096	4408573	12-07	19:14:06	20:25:01	01:10:54	100.00
6	491096	4408573	13-07	19:14:35	20:24:42	01:10:07	100.00
6	491096	4408573	14-07	19:15:05	20:24:21	01:09:16	100.00
6	491096	4408573	15-07	19:15:36	20:23:57	01:08:21	100.00
6	491096	4408573	16-07	19:16:09	20:23:30	01:07:22	100.00
6	491096	4408573	17-07	19:16:43	20:23:00	01:06:18	100.00
6	491096	4408573	18-07	19:17:19	20:22:28	01:05:09	100.00
6	491096	4408573	19-07	19:17:57	20:21:52	01:03:54	100.00
6	491096	4408573	20-07	19:18:37	20:21:12	01:02:34	100.00
6	491096	4408573	21-07	19:19:20	20:20:28	01:01:08	100.00
6	491096	4408573	22-07	19:20:06	20:19:41	00:59:36	100.00
6	491096	4408573	23-07	19:20:54	20:18:50	00:57:56	100.00
6	491096	4408573	24-07	19:21:46	20:17:54	00:56:08	100.00
6	491096	4408573	25-07	19:22:42	20:16:53	00:54:11	100.00
6	491096	4408573	26-07	19:23:42	20:15:46	00:52:04	100.00
6	491096	4408573	27-07	19:24:47	20:17:33	00:52:46	100.00
6	491096	4408573	28-07	19:25:58	20:17:08	00:51:09	100.00
6	491096	4408573	29-07	19:27:16	20:15:38	00:48:22	100.00
6	491096	4408573	30-07	19:28:43	20:13:59	00:45:17	100.00
6	491096	4408573	31-07	19:30:20	20:12:08	00:41:48	100.00
6	491096	4408573	01-08	19:32:11	20:10:02	00:37:51	100.00
6	491096	4408573	02-08	19:34:21	20:07:35	00:33:15	100.00
6	491096	4408573	03-08	19:36:59	20:04:39	00:27:40	100.00
6	491096	4408573	04-08	19:40:30	20:00:48	00:20:17	56.74
6	491096	4408573	05-08	19:47:07	19:53:50	00:06:43	6.15

House Easting Northing  
 37 491519 4408290

There are no shadows cast on this window

House Easting Northing  
 38 491522 4408257

There are no shadows cast on this window

House Easting Northing  
 39 491499 4408192

There are no shadows cast on this window

House Easting Northing  
 40 488552 4406621

There are no shadows cast on this window

House Easting Northing  
 41 489659 4409965

Turbine	Easting	Northing	Date	Start Time	End Time	Duration	% Cover
10	490327	4409525	01-01	08:57:53	09:37:55	00:40:02	100.00
10	490327	4409525	02-01	08:58:00	09:38:33	00:40:32	100.00
10	490327	4409525	03-01	08:58:06	09:39:11	00:41:05	100.00

Project : USELLUS  
 Run Name : KUsellus002.WFK  
 Title : SHADOW 02  
 Time : 15:40:13, 29 Jan 2024

10	490327	4409525	04-01	08:58:08	09:39:48	00:41:40	100.00
10	490327	4409525	05-01	08:58:09	09:40:26	00:42:17	100.00
10	490327	4409525	06-01	08:58:07	09:41:03	00:42:56	100.00
10	490327	4409525	07-01	08:58:03	09:41:40	00:43:37	100.00
10	490327	4409525	08-01	08:57:57	09:42:16	00:44:19	100.00
10	490327	4409525	09-01	08:57:48	09:42:51	00:45:03	100.00
10	490327	4409525	10-01	08:57:38	09:43:25	00:45:48	100.00
10	490327	4409525	11-01	08:57:24	09:43:59	00:46:34	100.00
10	490327	4409525	12-01	08:57:21	09:44:31	00:47:10	100.00
10	490327	4409525	13-01	08:57:36	09:45:01	00:47:25	100.00
10	490327	4409525	14-01	08:57:51	09:45:30	00:47:39	100.00
10	490327	4409525	15-01	08:58:07	09:45:57	00:47:50	100.00
10	490327	4409525	16-01	08:58:24	09:46:23	00:47:59	100.00
10	490327	4409525	17-01	08:58:41	09:46:46	00:48:05	100.00
10	490327	4409525	18-01	08:58:59	09:47:07	00:48:08	100.00
10	490327	4409525	19-01	08:59:19	09:47:26	00:48:07	100.00
10	490327	4409525	20-01	08:59:39	09:47:42	00:48:03	100.00
10	490327	4409525	21-01	09:00:01	09:47:56	00:47:55	100.00
10	490327	4409525	22-01	09:00:24	09:48:06	00:47:42	100.00
10	490327	4409525	23-01	09:00:49	09:48:14	00:47:25	100.00
10	490327	4409525	24-01	09:01:16	09:48:19	00:47:03	100.00
10	490327	4409525	25-01	09:01:45	09:48:19	00:46:35	100.00
10	490327	4409525	26-01	09:02:16	09:48:17	00:46:01	100.00
10	490327	4409525	27-01	09:02:50	09:48:10	00:45:20	100.00
10	490327	4409525	28-01	09:03:27	09:47:59	00:44:33	100.00
10	490327	4409525	29-01	09:04:06	09:47:44	00:43:37	100.00
10	490327	4409525	30-01	09:04:50	09:47:23	00:42:33	100.00
10	490327	4409525	31-01	09:05:37	09:46:57	00:41:20	100.00
10	490327	4409525	01-02	09:06:29	09:50:22	00:43:52	100.00
10	490327	4409525	02-02	09:07:27	09:49:43	00:42:16	100.00
10	490327	4409525	03-02	09:08:30	09:48:57	00:40:27	100.00
10	490327	4409525	04-02	09:09:41	09:48:02	00:38:22	100.00
10	490327	4409525	05-02	09:11:00	09:46:58	00:35:58	100.00
10	490327	4409525	06-02	09:12:30	09:45:40	00:33:10	100.00
10	490327	4409525	07-02	09:14:15	09:44:07	00:29:52	100.00
10	490327	4409525	08-02	09:16:21	09:42:12	00:25:52	100.00
10	490327	4409525	09-02	09:18:59	09:39:43	00:20:44	99.77
10	490327	4409525	10-02	09:22:51	09:36:05	00:13:14	38.68
10	490327	4409525	01-11	08:52:06	09:05:38	00:13:32	40.30
10	490327	4409525	02-11	08:48:21	09:09:12	00:20:50	100.00
10	490327	4409525	03-11	08:45:47	09:11:41	00:25:54	100.00
10	490327	4409525	04-11	08:43:47	09:13:38	00:29:51	100.00
10	490327	4409525	05-11	08:42:09	09:15:16	00:33:07	100.00
10	490327	4409525	06-11	08:40:46	09:16:40	00:35:54	100.00
10	490327	4409525	07-11	08:39:36	09:17:53	00:38:17	100.00
10	490327	4409525	08-11	08:38:36	09:18:58	00:40:22	100.00
10	490327	4409525	09-11	08:37:45	09:19:55	00:42:11	100.00
10	490327	4409525	10-11	08:37:01	09:20:48	00:43:46	100.00
10	490327	4409525	11-11	08:36:25	09:17:38	00:41:14	100.00
10	490327	4409525	12-11	08:35:54	09:18:21	00:42:27	100.00
10	490327	4409525	13-11	08:35:29	09:19:01	00:43:31	100.00
10	490327	4409525	14-11	08:35:10	09:19:37	00:44:27	100.00
10	490327	4409525	15-11	08:34:55	09:20:10	00:45:15	100.00
10	490327	4409525	16-11	08:34:44	09:20:40	00:45:56	100.00
10	490327	4409525	17-11	08:34:38	09:21:09	00:46:31	100.00
10	490327	4409525	18-11	08:34:36	09:21:35	00:46:59	100.00
10	490327	4409525	19-11	08:34:37	09:21:59	00:47:22	100.00
10	490327	4409525	20-11	08:34:42	09:22:22	00:47:40	100.00
10	490327	4409525	21-11	08:34:50	09:22:43	00:47:53	100.00
10	490327	4409525	22-11	08:35:01	09:23:03	00:48:02	100.00
10	490327	4409525	23-11	08:35:15	09:23:22	00:48:07	100.00
10	490327	4409525	24-11	08:35:32	09:23:40	00:48:08	100.00



Project : USELLUS  
Run Name : KUsellus002.WFK  
Title : SHADOW 02  
Time : 15:40:13, 29 Jan 2024

10	490327	4409525	25-11	08:35:51	09:23:57	00:48:06	100.00
10	490327	4409525	26-11	08:36:13	09:24:14	00:48:01	100.00
10	490327	4409525	27-11	08:36:37	09:24:29	00:47:52	100.00
10	490327	4409525	28-11	08:37:03	09:24:45	00:47:42	100.00
10	490327	4409525	29-11	08:37:31	09:24:59	00:47:29	100.00
10	490327	4409525	30-11	08:38:00	09:25:14	00:47:14	100.00
10	490327	4409525	01-12	08:38:42	09:25:28	00:46:46	100.00
10	490327	4409525	02-12	08:39:43	09:25:43	00:45:59	100.00
10	490327	4409525	03-12	08:40:43	09:25:57	00:45:14	100.00
10	490327	4409525	04-12	08:41:41	09:26:12	00:44:30	100.00
10	490327	4409525	05-12	08:42:39	09:26:26	00:43:48	100.00
10	490327	4409525	06-12	08:43:35	09:26:41	00:43:07	100.00
10	490327	4409525	07-12	08:44:29	09:26:57	00:42:27	100.00
10	490327	4409525	08-12	08:45:23	09:27:13	00:41:50	100.00
10	490327	4409525	09-12	08:46:15	09:27:29	00:41:15	100.00
10	490327	4409525	10-12	08:47:06	09:27:47	00:40:41	100.00
10	490327	4409525	11-12	08:47:55	09:28:05	00:40:10	100.00
10	490327	4409525	12-12	08:48:42	09:28:24	00:39:42	100.00
10	490327	4409525	13-12	08:49:28	09:28:44	00:39:16	100.00
10	490327	4409525	14-12	08:50:12	09:29:05	00:38:53	100.00
10	490327	4409525	15-12	08:50:55	09:29:27	00:38:32	100.00
10	490327	4409525	16-12	08:51:36	09:29:50	00:38:14	100.00
10	490327	4409525	17-12	08:52:15	09:30:14	00:37:59	100.00
10	490327	4409525	18-12	08:52:52	09:30:40	00:37:48	100.00
10	490327	4409525	19-12	08:53:27	09:31:06	00:37:39	100.00
10	490327	4409525	20-12	08:54:01	09:31:34	00:37:34	100.00
10	490327	4409525	21-12	08:54:32	09:32:03	00:37:31	100.00
10	490327	4409525	22-12	08:55:02	09:32:34	00:37:32	100.00
10	490327	4409525	23-12	08:55:29	09:33:05	00:37:36	100.00
10	490327	4409525	24-12	08:55:54	09:33:37	00:37:43	100.00
10	490327	4409525	25-12	08:56:18	09:34:11	00:37:53	100.00
10	490327	4409525	26-12	08:56:39	09:34:45	00:38:06	100.00
10	490327	4409525	27-12	08:56:58	09:35:20	00:38:22	100.00
10	490327	4409525	28-12	08:57:15	09:35:56	00:38:41	100.00
10	490327	4409525	29-12	08:57:29	09:36:32	00:39:03	100.00
10	490327	4409525	30-12	08:57:42	09:37:09	00:39:28	100.00
10	490327	4409525	31-12	08:57:52	09:37:47	00:39:55	100.00