

# RAPPORT

## Windpark IJsselwind

Onderzoek slagschaduw

Klant: IJsselwind B.V.

Referentie: T&PBE4157R001F0.1

Versie: 2.0/Finale versie

Datum: 14 november 2018

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**Projectnummer:** BE4157  
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**Datum/Initialen:** 14-11-2018, MG

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**Goedgekeurd door:** Mark Groen

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Classificatie
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## Inhoud

<b>1</b>	<b>INLEIDING</b>	<b>1</b>
<b>2</b>	<b>BELEID EN WETGEVING</b>	<b>1</b>
<b>3</b>	<b>HUIDIGE SITUATIE EN AUTONOME ONTWIKKELINGEN</b>	<b>1</b>
3.1	Huidige situatie	1
3.2	Autonome ontwikkelingen	2
<b>4</b>	<b>METHODE EN UITGANGSPUNTEN</b>	<b>2</b>
<b>5</b>	<b>RESULTATEN</b>	<b>4</b>
5.1	Alternatieven en scenario's in MER	4
5.2	Voorkeursalternatief (VKA)	5
5.3	Aanvullende informatie	7

## Bijlagen

Bijlage 1 Slagschaduwcontouren alternatieven en scenario's

Bijlage 2 Slagschaduw op maatgevende adressen

Bijlage 3 Slagschaduw op maatgevende adressen grafisch over het jaar

Bijlage 4 Uitgangspunten en invoergegevens

Bijlage 5 Slagschaduw per windturbine

## 1 INLEIDING

Windturbines kunnen leiden tot slagschaduw wanneer de zon op de wieken schijnt.

Slagschaduw op bijvoorbeeld ramen van woningen kan als hinderlijk worden ervaren. De mate van hinder wordt bepaald door de duur van de slagschaduw en de wisseling tussen wel en geen schaduw. Bij moderne windturbines met drie rotorbladen is de slagschaduw in de praktijk beperkt. Deze windturbines hebben een maximale omwentelingssnelheid van 8 tot 18 toeren per minuut. Het maximale aantal bladpassages is daardoor 54 per minuut, dit komt overeen met een frequentie van 0.9 Hz. Uit onderzoek is gebleken dat mensen vooral last hebben van het afwisselen van schaduw en licht bij een hogere frequentie, tussen de 2,5 en 14 Hz<sup>1</sup>.

Voor het initiatief is de nabijheid van bebouwing tot de windturbines onderzocht. Op basis daarvan is beoordeeld of sprake is van hinder door slagschaduw. Hierbij zijn de afstand tot bebouwing en de hoeveelheid bebouwing van belang. In dit rapport worden de effecten van de verschillende alternatieven van het windmolenplan voor slagschaduw bepaald.

## 2 BELEID EN WETGEVING

### Activiteitenbesluit

In de milieuwetgeving zijn voorschriften opgenomen om hinder door slagschaduw te beperken. In het Activiteitenbesluit milieubeheer staat hoe vaak en hoe lang per dag de slagschaduw van een windturbine een gevoelige functie<sup>2</sup> mag raken. De Regeling algemene regels voor inrichtingen milieubeheer (Activiteitenregeling (Rarim)) stelt dat windturbines voorzien moeten worden van een automatische stilstandvoorziening indien slagschaduw optreedt ter plaatse van gevoelige objecten. Een stilstandvoorziening is nodig wanneer:

- De afstand van de windturbine tot de woningen en andere ‘gevoelige bestemmingen’ (bijvoorbeeld scholen) minder dan twaalf maal de rotordiameter is. Bij een rotordiameter van 100 meter (straal van 50 meter) geldt dan: binnen een afstand van 1.200 meter.
- Gemiddeld meer dan 17 dagen per jaar gedurende meer dan 20 minuten per dag (6 uur per jaar) slagschaduw kan optreden en voorzover zich in de door de slagschaduw getroffen uitwendige scheidingsconstructie van gevoelige gebouwen of woonwagens ramen bevinden. De afstand geldt van een punt op ashoopte van de windturbine tot de gevel van het gevoelige object.

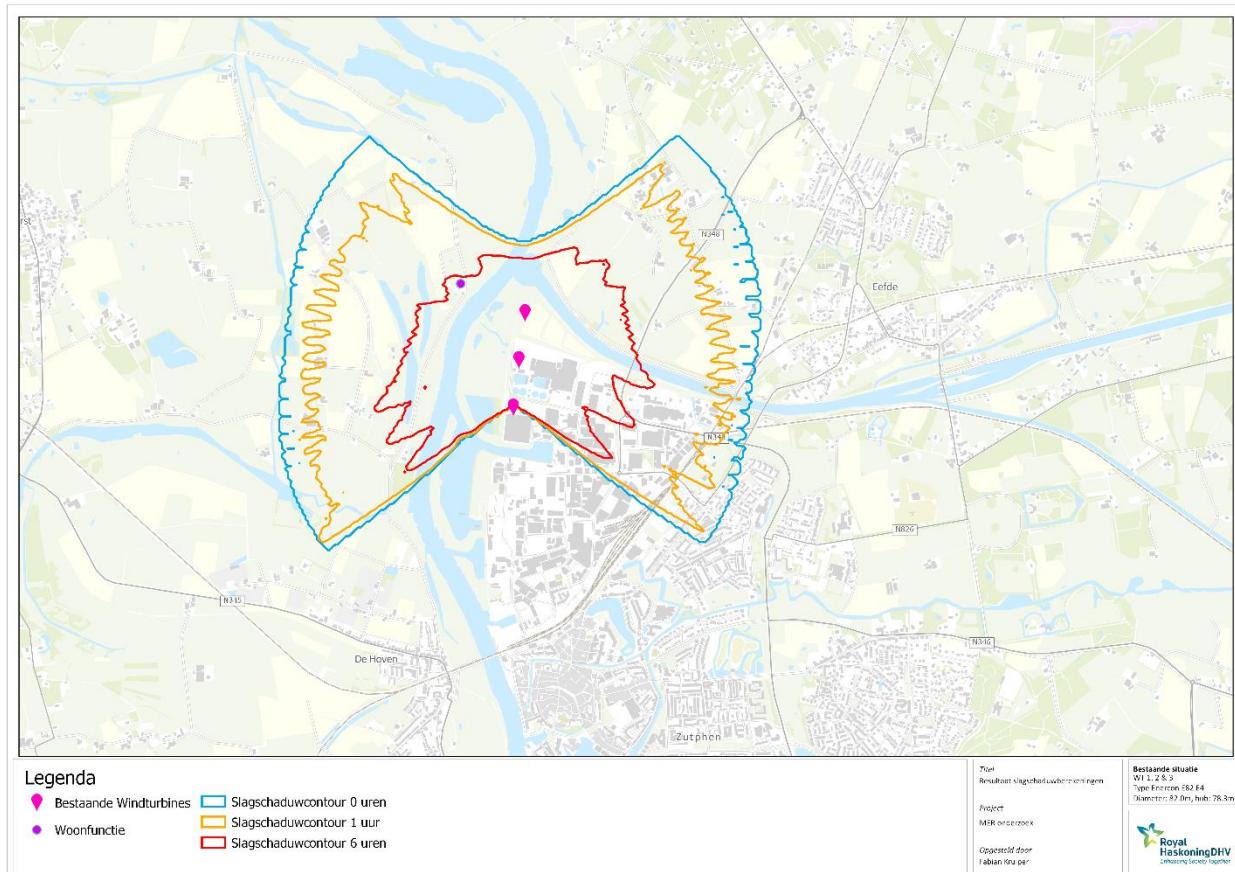
## 3 HUIDIGE SITUATIE EN AUTONOME ONTWIKKELINGEN

### 3.1 Huidige situatie

Sinds 2005 staan op bedrijfenterrein De Mars drie windturbines (3 x 2 MW), langs de Letlandsestraat. Deze zijn de oudste van de huidige windturbines van de Provincie Gelderland. Ze produceren circa 5 procent van de totale elektriciteitsvraag van Zutphen. Op de woningen en andere gevoelige bestemmingen in de omgeving is in de huidige situatie dan mogelijk ook sprake van slagschaduw. Figuur 1 toont de huidige slagschaduwcontouren van het windpark op bedrijfenterrein De Mars. Op basis van deze contouren kan worden gesteld dat 1 gevoelige bestemming (woning) binnen de 6 uur-contour ligt.

<sup>1</sup> <http://www.rvo.nl/onderwerpen/duurzaam-ondernemen/duurzame-energie-opwekken/windenergie-op-land/milieu-en-omgeving/slagschaduw>

<sup>2</sup> Onder gevoelige objecten (art 1, Wet geluidhinder) worden onder andere woningen van derden, onderwijsgebouwen, ziekenhuizen, verpleeghuizen verstaan.



Figuur 1 – Slagschaduwcontouren windturbines De Mars

### 3.2 Autonome ontwikkelingen

Op dit moment zijn geen autonome ontwikkelingen (ontwikkelingen waarover een besluit is genomen) in beeld die in de omgeving van de projectlocatie extra slagschaduw kunnen veroorzaken.

## 4 METHODE EN UITGANGSPUNTE

### Methodiek

Voor de beoordeling van effecten van slagschaduw zijn slagschaduwberekeningen uitgevoerd. Deze berekeningen zijn uitgevoerd met het programma WindPRO, waarmee slagschaduwcontouren worden bepaald. Door deze contouren op kaart te projecteren, kan worden bepaald of gevoelige bestemmingen hinder kunnen ondervinden van slagschaduw.

Met de slagschaduwberekeningen zijn de volgende contouren bepaald:

1. De contour waarbinnen er een kans bestaat op overschrijding van de norm uit de Activiteitenregeling (Rarim). Dit is de contour waarbij maximaal 6 uur slagschaduw per jaar ontstaat. Daarbij is uitgegaan van 17 dagen per jaar meer dan 20 minuten schaduw (de norm uit de Rarim, artikel 3.12), wat overeenkomt met  $17 * 20/60 = 5,67 = 6$  uur per jaar. Op de berekende contour zijn alle combinaties van tijden mogelijk die leiden tot maximaal 6 uur slagschaduw per jaar. Deze contour is een overschatting, omdat ook gebieden met bijvoorbeeld 34 dagen met 10 minuten schaduw worden meegenomen. Buiten deze contour is er geen kans op overschrijding van de norm.

2. De contour waarbij maximaal 1 uur slagschaduw per jaar ontstaat. Binnen deze contour ontstaat maximaal 1 uur per jaar slagschaduw. Dit is de contour waarbij een (zeer) beperkte kans op slagschaduw bestaat.
3. De contour waarop 0 uur slagschaduw per jaar ontstaat. Binnen deze contour kan in theorie slagschaduw ontstaan, buiten deze contour niet.

Aan de hand van rekenmethodes is van tevoren vast te stellen op welke dagen en op welk moment van de dag slagschaduw kan optreden. Of de slagschaduw ook echt optreedt op de voorspelde dagen, hangt af van de volgende punten:

- of die dagen onbewolkt zijn;
- of er op die dagen genoeg wind is om de windturbines te laten draaien;
- of de wind precies waait uit de richting waar de zon staat, omdat de oppervlakte van de schaduw die de windturbine werpt dan het grootste is;
- of de windturbine wordt uitgerust met een stilstandvoorziening, die geïmplementeerd is in de besturingssoftware. Hierdoor schakelt de turbine alleen uit als slagschaduw daadwerkelijk optreedt of de norm overschrijdt.

### **Uitgangspunten**

De volgende uitgangspunten zijn gehanteerd voor de berekeningen:

- Er is van uitgegaan dat turbines 95% van de tijd in bedrijf zijn. Per windrichting is het aantal uren op jaarrichting bepaald op basis van data van het KNMI;
- Bij de berekeningen is ervan uitgegaan dat de windturbines aan de hand van de windrichtingen steeds een zo groot mogelijke schaduw geven (zie tabel 1.2 met het aantal uren per windrichting, waarbij zuidwestenwind de meest voorkomende windrichting is);
- Er is geen rekening gehouden met eventuele obstakels (grote gebouwen, bomen, hoogtevariatie in het landschap);
- De norm voor de maximale rekenafstand is vastgelegd op 12 keer de rotordiameter (in dit geval  $12 \times 120\text{m} = 1440\text{m}$ );
- De hellingshoek waarboven de zon slagschaduw kan veroorzaken is ingesteld op 3 graden.

Slagschaduw treedt alleen op wanneer de zon schijnt. In onderstaande tabel 1.1 is weergegeven hoe vaak de zon per dag per maand schijnt, daarvoor is de gemiddelde zonneschijn genomen van de periode 1991 tot 2016 (25 jaar) van meetpunt Twenthe (bron KNMI, 2017).

Tabel 1.1 Zonneschijn (afgerond)

	Jan	Feb	Mrt	Apr	Mei	Jun	Jul	Aug	Sep	Okt	Nov	Dec
Factor	0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

Tabel 1.2 Uren per windrichting op basis van een bedrijfstijd van 95%

	N	NNO	ONO	O	OZO	ZZO	Z	ZZW	WZW	W	WNW	NNW
Uren	337	460	739	530	550	486	879	1683	1093	643	509	412

## 5 RESULTATEN

### 5.1 Alternatieven en scenario's in MER

Tabel 2 toont de alternatieven en scenario's die in het MER zijn beoordeeld.

Tabel 2 –Alternatieven en scenario's

	Alternatief 1 (3 turbines)			Alternatief 2 (2 turbines)		
	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
Te beschouwen scenario	Ashoogte: 123 m Rotordiameter: 100 m Tiphoopte: 173 m Vermogen: 2,5 MW	Ashoogte: 99 m Rotordiameter: 100 m Tiphoopte: 149 m Vermogen: 2,5 MW	Ashoogte: 85 m Rotordiameter: 92 m Tiphoopte: 131 m Vermogen: 2,35 MW	Ashoogte: 123 m Rotordiameter: 100 m Tiphoopte: 173 m Vermogen: 2,5 MW	Ashoogte: 99 m Rotordiameter: 100 m Tiphoopte: 149 m Vermogen: 2,5 MW	Ashoogte: 85 m Rotordiameter: 92 m Tiphoopte: 131 m Vermogen: 2,35 MW
Opgesteld vermogen	7,5 MW	7,5 MW	7,05 MW	5 MW	5 MW	4,7 MW

Per scenario zijn met de WindPRO-berekeningen de slagschaduwcontouren vastgesteld. Voor de alternatieven en scenario's zijn deze weergegeven in bijlage 1. Zo laten de figuren in bijlage 1 zien welk gebied binnen 6 uur per jaar valt voor het betreffende alternatief. De scenario's 1 en 2 in beide alternatieven hebben de grootste impact op het gebied van slagschaduw. Het betreft enkele agrarische bedrijven en woningen. De scenario's 3 kennen een iets kleinere impact op het gebied van slagschaduw door de lagere turbines. Ook bij deze scenario's betreft het enkele agrarische bedrijven en woningen.

Om het effect van slagschaduw te bepalen is het aantal woningen (en overige gevoelige functies) binnen de 6 uur-contour vastgesteld. Op basis van deze analyse kan worden bepaald in hoeverre mitigatie noodzakelijk is en tot hoeveel stilstand dit zal leiden. Het feit dat de woning aan de Meijerinkstraat 40 onderdeel uitmaakt van het plan, betekent dat deze niet wordt meegenomen in de beoordeling van slagschaduw.

In tabel 3 zijn de resultaten van de slagschaduwberekeningen weergegeven. Uit deze tabel blijkt dat het aantal gevoelige objecten dat binnen de slagschaduwcontour ligt, varieert tussen de 31 en 43. Voor alle alternatieven en scenario's is sprake van overschrijding van de norm voor slagschaduw voor gevoelige bestemmingen (binnen de 6 uur-contour). Voor alternatief 1 en 2, scenario's 1 en 2 betreft het tussen de 34 en 43 gevoelige bestemmingen. Bij de overige scenario's betreft het tussen de 31 en 36 gevoelige bestemmingen. De gevoelige bestemmingen binnen de 6 uur-contour zijn allen gelegen aan de Valkeweg, Meijerinkstraat en Mettrayweg in Eefde en de Meijerinkstraat en Mettrayweg in Zutphen.

Door schaduwwerking van hoge gebouwen en bomen kan (een deel van) de slagschaduw worden weggenomen. Wanneer ramen zich niet aan de zijde van het gebouw bevinden waar slagschaduw plaatsvindt, treedt eveneens geen hinder op.

Tabel 3 – Resultaten slagschaduwberekeningen alternatieven en scenario's

Alternatief	Afmeting	Aantal gevoelige bestemmingen binnen de 6 uurs slagschaduwcontour* conform BAG
Alternatief 1, Scenario 1	Ashoogte: 123 m. Rotordiameter: 100 m.	43
Alternatief 1, Scenario 2	Ashoogte: 99 m. Rotordiameter: 100 m.	39
Alternatief 1, Scenario 3	Ashoogte: 85 m. Rotordiameter: 92 m.	36
Alternatief 2, Scenario 1	Ashoogte: 123 m. Rotordiameter: 100 m	35
Alternatief 2, Scenario 2	Ashoogte: 99 m. Rotordiameter: 100 m	34
Alternatief 2, Scenario 3	Ashoogte: 85 m. Rotordiameter: 92 m.	31

\* Binnen een gebied van 12x de rotordiameter vanaf de windturbines

Bovenstaande effectbeoordeling zegt iets over het aantal gevoelige bestemmingen, dat mogelijk getroffen wordt door slagschaduw. Dit betekent dat mitigerende maatregelen in de vorm van stilstandvoorziening noodzakelijk is om de hinder veroorzaakt door slagschaduw voor de woningen binnen de 6 uur-contour te voorkomen. Na toepassing van de mitigerende maatregelen zijn er geen woningen waar meer dan 6 uur slagschaduwhinder per jaar optreedt. Voor woningen met minder dan 6 uur slagschaduw per jaar, hoeven geen maatregelen te worden getroffen. Een stilstandvoorziening voor een woning met meer dan 6 uur slagschaduwduur heeft ook invloed op eventuele achterliggende woningen die gelijktijdig slagschaduw ondervinden.

Dit betekent echter wel dat hoe langer de stilstandvoorziening in werking wordt gesteld, hoe groter de invloed op het rendement van het windpark IJsselwind zal zijn.

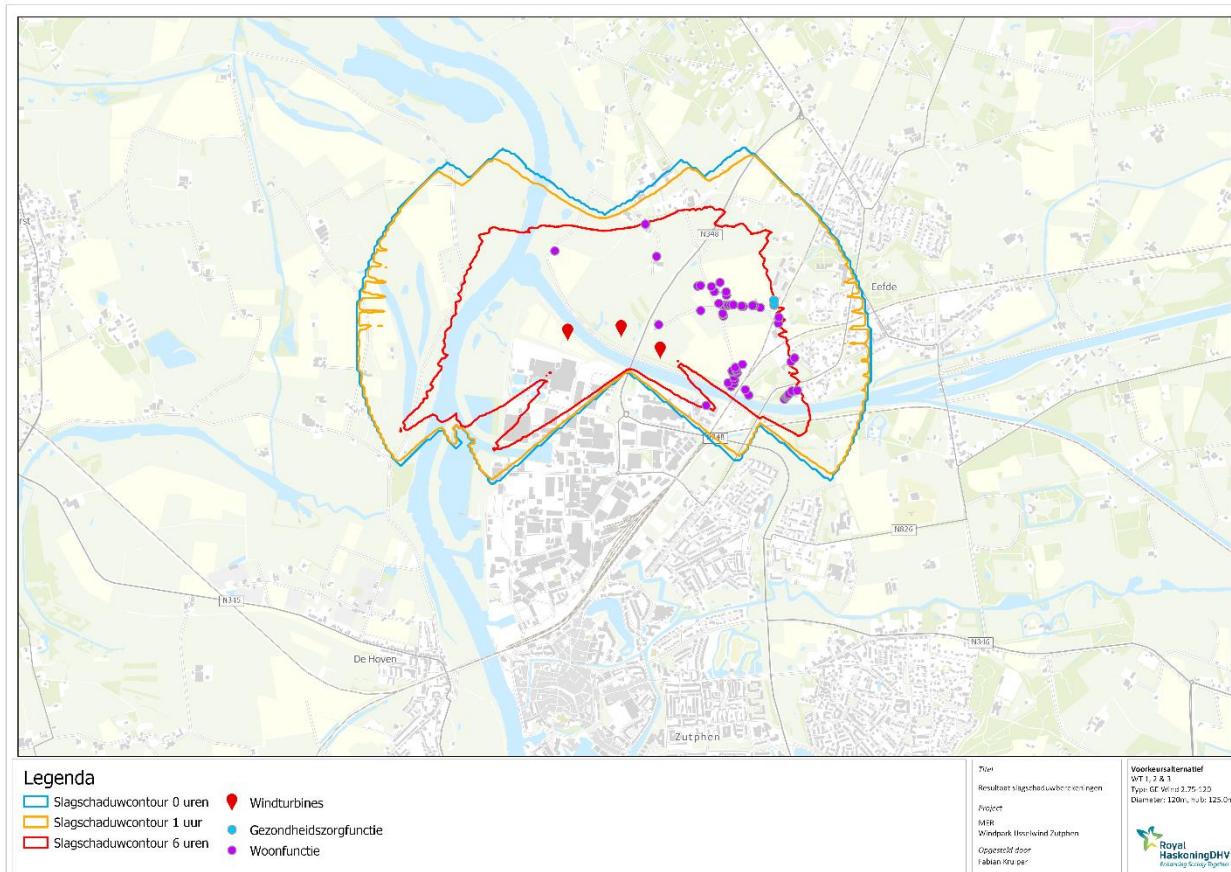
## 5.2 Voorkeursalternatief (VKA)

Het VKA ten behoeve van bestemmingsplan en vergunningen betreft de realisatie van 3 windturbines in het plangebied voor IJsselwind, met geoptimaliseerde posities ten aanzien van veiligheid. Ten opzichte van de turbinelocaties die in het MER zijn beoordeeld is de locatie van turbine 1 circa 15 meter verschoven in noordoostelijke richting en de locatie van turbine 3 circa 40 meter in zuidwestelijke richting. Voorwaarde is dat de binnen het VKA gehanteerde turbine past binnen de normen voor het betreffende milieuaspect en een maximale energieopbrengst heeft.

Als referentieturbine wordt voor de meeste aspecten de GE2.75-120 gehanteerd. Deze referentieturbine heeft de volgende afmetingen:

- Ashoogte 125 meter
- Rotordiameter 120 meter
- Tiproogte 185 meter

Voor het VKA zijn met WindPRO de slagschaduwcontouren vastgesteld. Figuur 2 laat de 6 uur slagschaduwcontour zien. In vergelijking met het in het MER beoordeelde Alternatief 1, Scenario 1, neemt de slagschaduwimpact met het VKA toe vanwege de grotere tiphoogte en rotordiameter. De toename betreft vooral een aantal woningen langs de Rustoordlaan en Meijerinkstraat in Eefde.



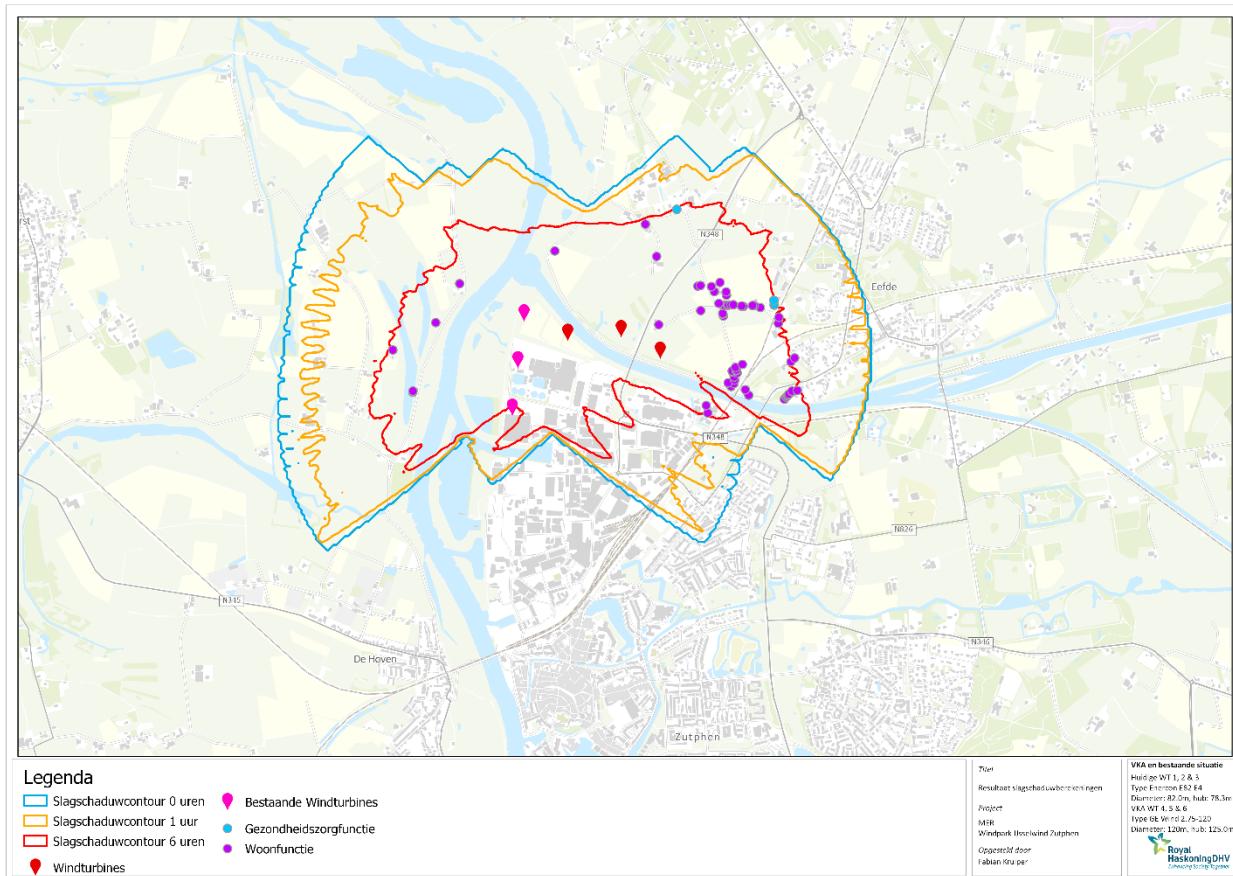
**Figuur 2.** Slagschaduwcontouren voorkeursalternatief, inclusief aantal gevoelige functies binnen 6 uur contour

Om het effect van slagschaduw te bepalen is het aantal woningen (en overige gevoelige functies) binnen de 6 uur-contour vastgesteld. Op basis van deze analyse kan worden bepaald in hoeverre mitigatie noodzakelijk is en tot hoeveel stilstand dit zal leiden.

Voor het VKA is in beginsel sprake van overschrijding van de norm voor slagschaduw voor gevoelige bestemmingen (binnen de 6 uur-contour). Het gaat om 55 gevoelige bestemmingen. Op basis hiervan zou de effectbeoordeling voor het VKA sterk negatief zijn, evenals voor de overige onderzochte alternatieven. Echter wordt met het toepassen van mitigerende maatregelen, in de vorm van stilstandvoorzieningen, ervoor gezorgd dat aan de normstelling voor slagschaduw wordt voldaan. Dit wordt beoordeeld als een licht negatief effect. Deze maatregel heeft tot gevolg dat er een opbrengstverlies optreedt van circa 5,7%.

#### Cumulatie met huidige situatie

Voor het voorkeursalternatief zijn ook de gecumuleerde slagschaduwcontouren bepaald voor windpark IJsselwind samen met de reeds bestaande windturbines op bedrijventerrein De Mars (zie ook figuur 1). Deze gecumuleerde slagschaduwcontouren zijn opgenomen in onderstaande figuur.



**Figuur 3. Gecumuleerde slagschaduwcontouren voorkeursalternatief en windpark De Mars, inclusief aantal gevoelige functies binnen 6 uur contour**

Op basis van deze visualisatie kan worden gesteld dat binnen de cumulatieve 6 uur-contour, bovenop de 55 gevoelige objecten, nog eens twee (twee van de vier afgebeelde woonfuncties ten westen van de IJssel bestaan niet meer) extra gevoelige bestemmingen gelegen zijn. De slagschaduw boven de norm op deze twee woningen wordt in hoofdzaak veroorzaakt door de bestaande turbines. De turbines van windpark IJsselwind dragen in beperkte mate bij aan de slagschaduw op deze woningen.

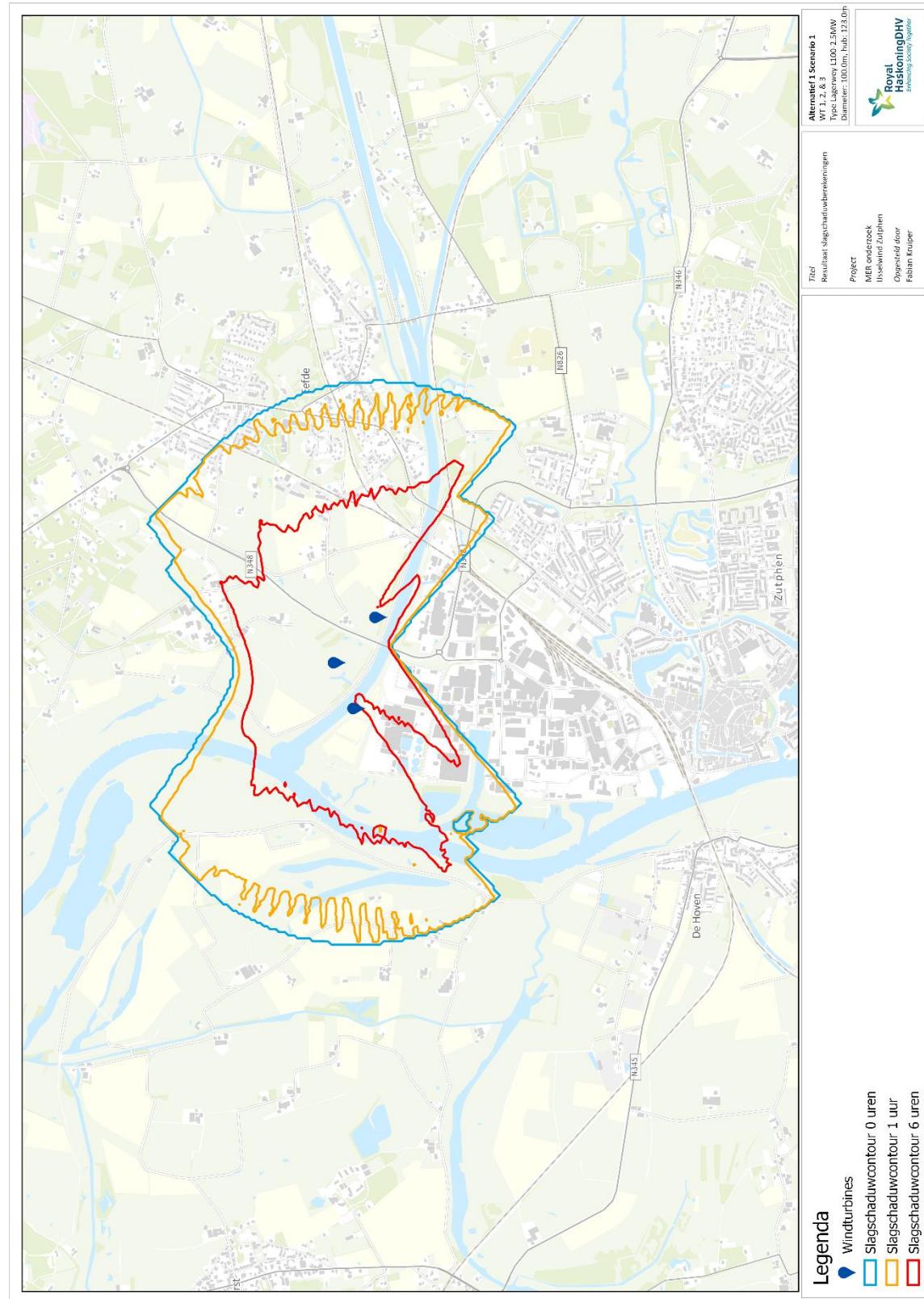
### 5.3 Aanvullende informatie

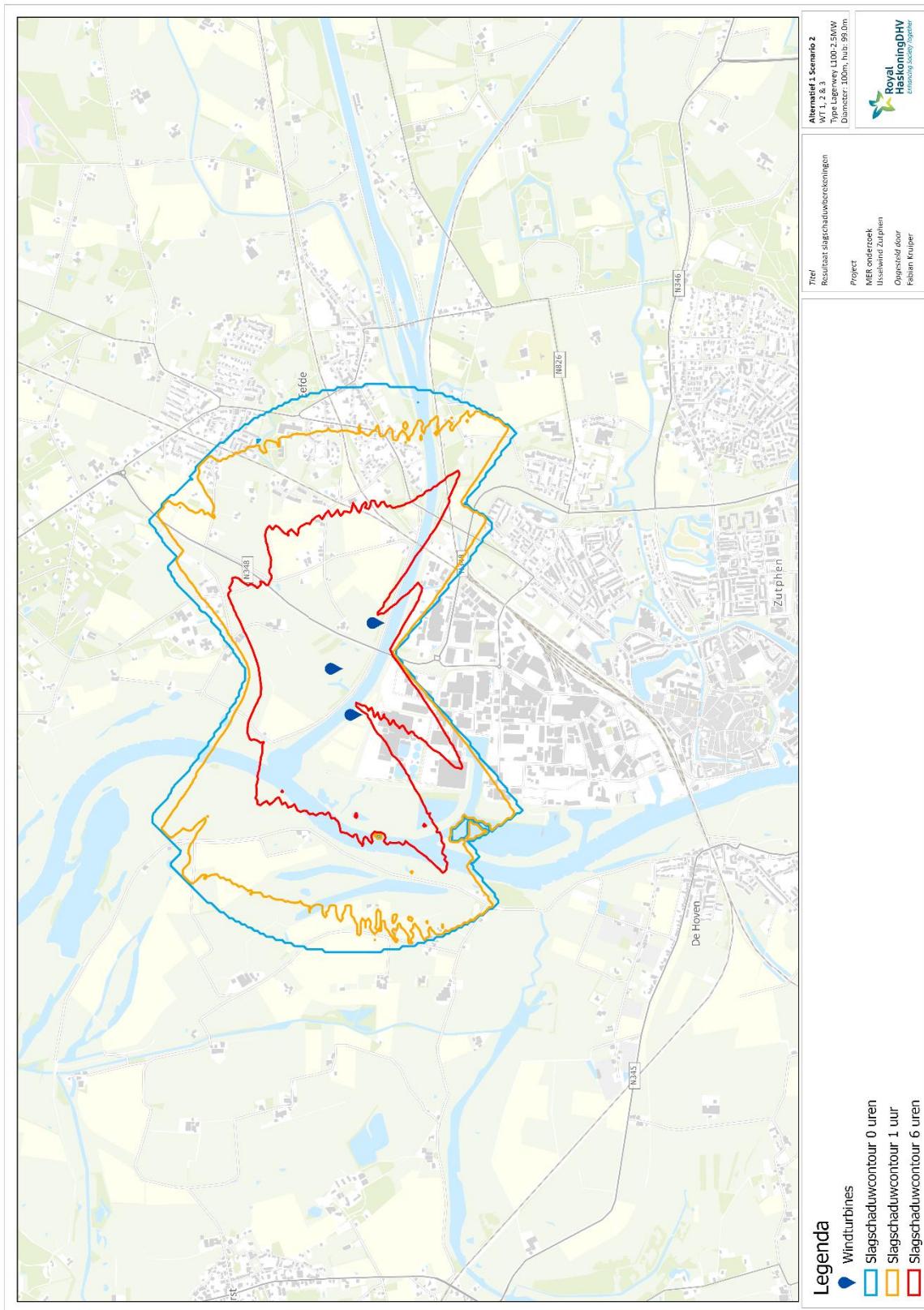
Om inzicht te geven in de mate van mogelijke slagschaduw op verschillende adressen in bijlage 2 en 3 weergegeven wanneer slagschaduw op kan treden op verschillende adressen in de omgeving van het windpark. In bijlage 2 is weergegeven per dag van het jaar welke turbine slagschaduw veroorzaakt. In bijlage 3 is grafisch weergegeven in welke perioden van het jaar door iedere turbine slagschaduw op kan treden. Bijlage 4 betreft de gehanteerde uitgangspunten en invoergegevens voor het gebruikte model.

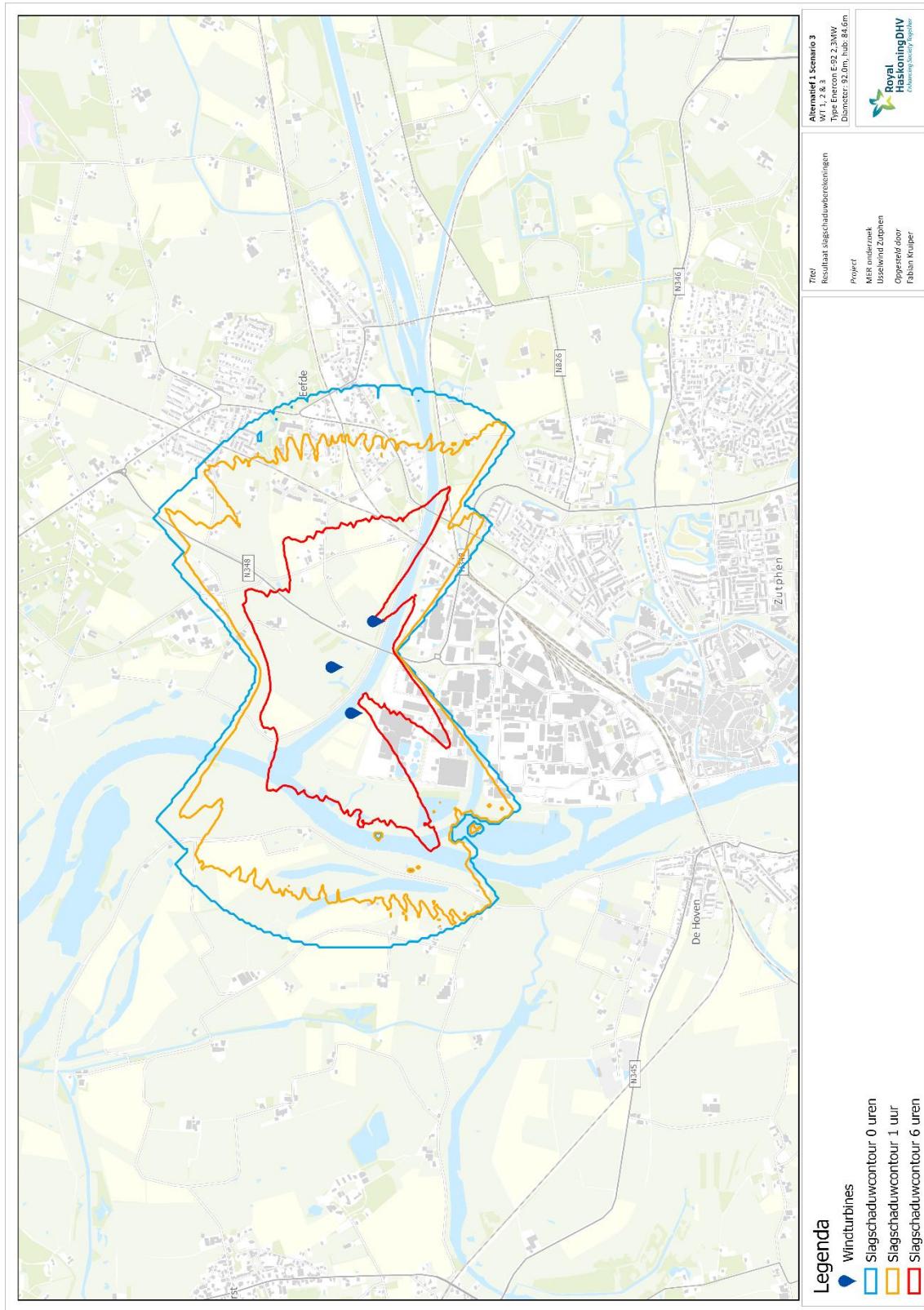
#### Slagschaduw per windturbine

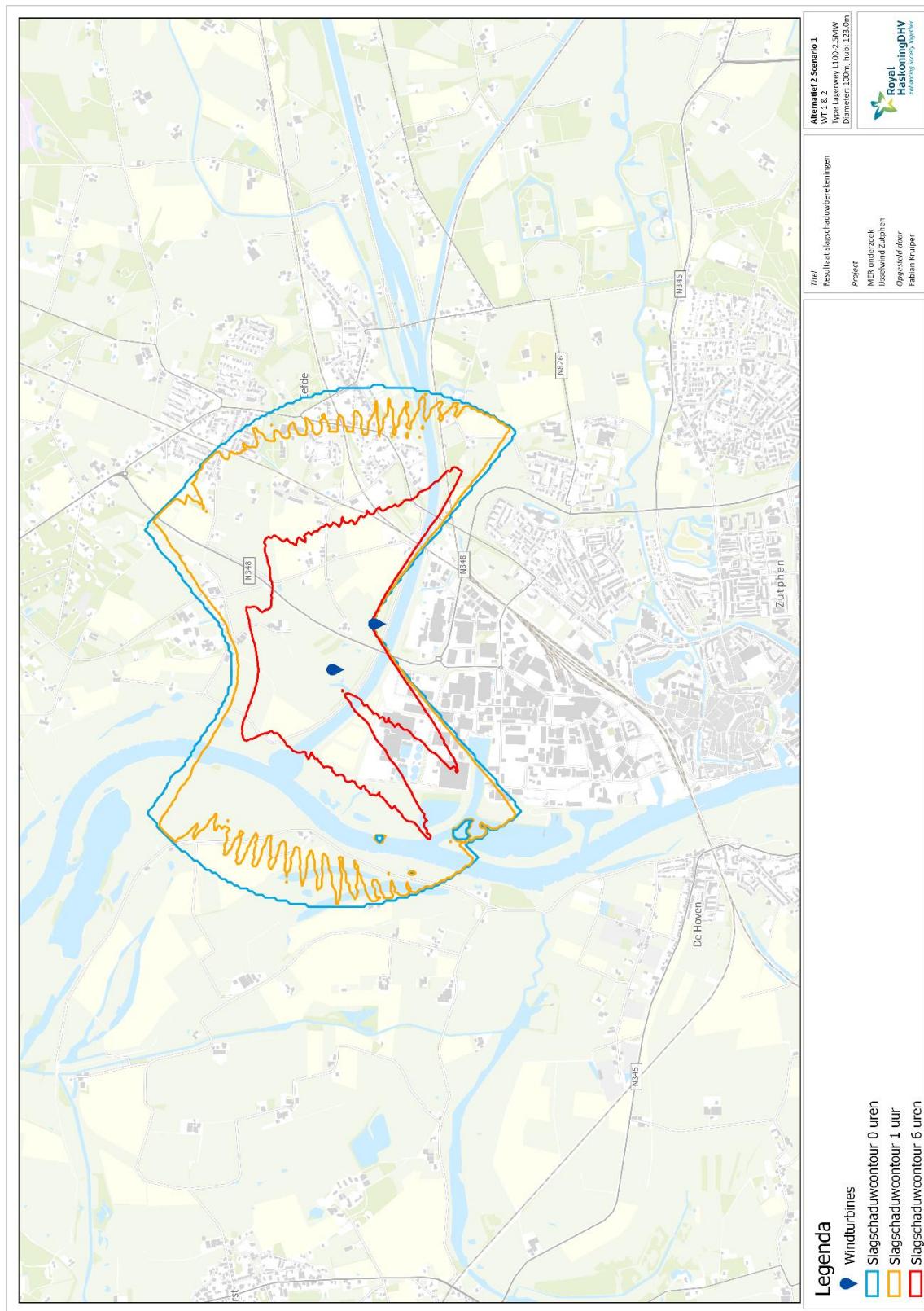
In bijlage 5 is de slagschaduw per windturbine weergegeven. Hiermee is meer afzonderlijk inzicht in de periodes dat de verschillende windturbines mogelijk slagschaduw veroorzaken.

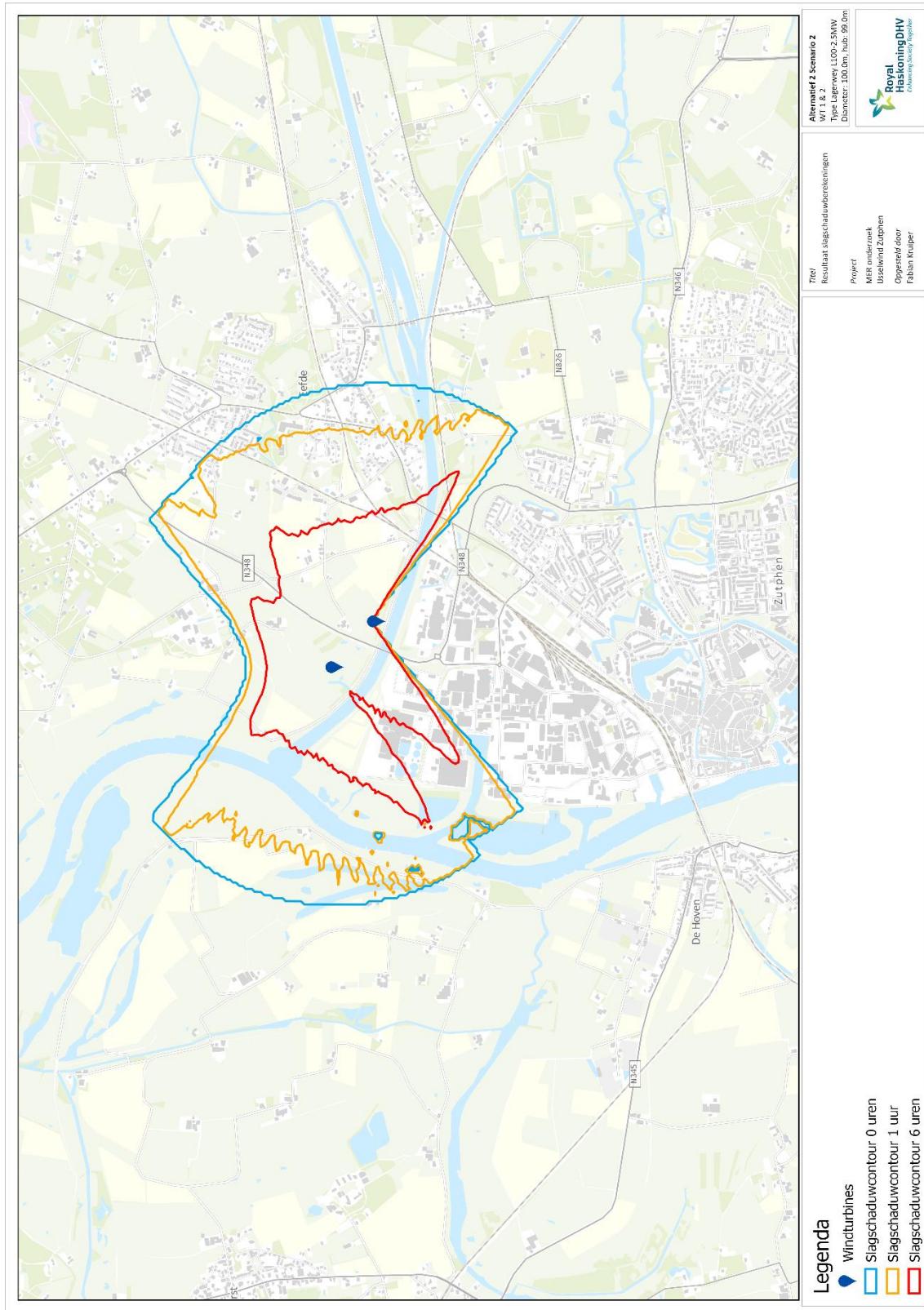
## Bijlage 1 Slagschaduwcontouren alternatieven en scenario's

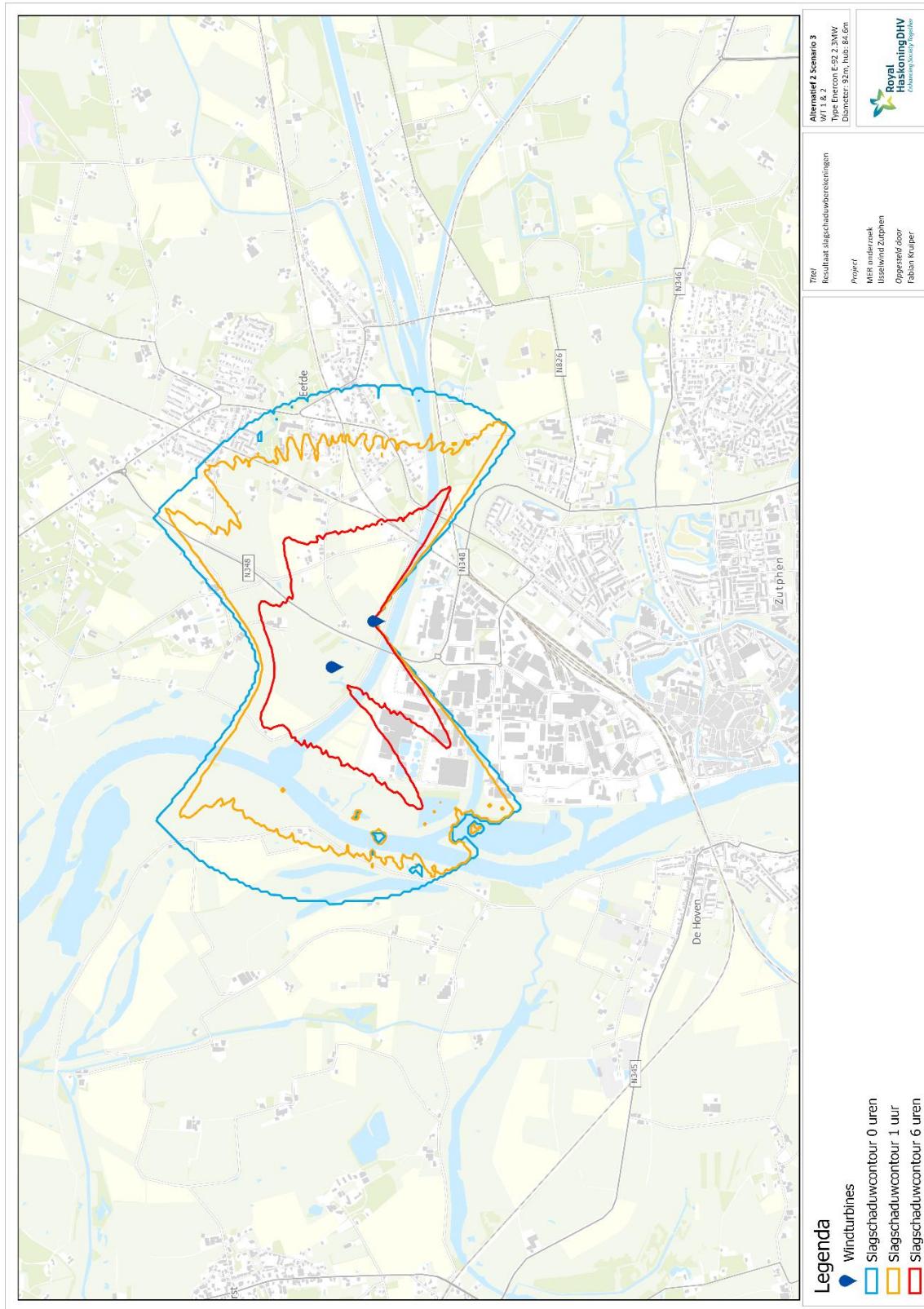












## Bijlage 2 Slagschaduw op maatgevende adressen

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: A - Meijerinkstraat 16a

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:45	08:18		07:24	16:38 (2)	07:13	18:47 (3)	06:07	05:21	05:55	06:46		
	16:33	17:21		18:14	37	17:15 (2)	20:08	24	19:11 (3)	21:00	21:46	22:00	
2	08:45	08:16		07:22	16:39 (2)	07:10	18:49 (3)	06:05	05:21	05:19	05:57	06:47	
	16:34	17:23		18:15	36	17:15 (2)	20:10	21	19:10 (3)	21:01	21:47	22:00	
3	08:45	08:14		07:19	16:39 (2)	07:08	18:51 (3)	06:03	05:20	05:20	05:58	06:49	
	16:35	17:25		18:17	35	17:14 (2)	20:12	17	19:08 (3)	21:03	21:48	21:59	
4	08:44	08:13		07:17	16:40 (2)	07:06	18:52 (3)	06:02	05:19	05:21	06:00	06:50	
	16:37	17:27		18:19	34	17:14 (2)	20:13	12	19:04 (3)	21:05	21:49	21:59	
5	08:44	08:11		07:15	16:40 (2)	07:03			06:00	05:18	05:21	06:52	
	16:38	17:29		18:21	32	17:12 (2)	20:15		21:06	21:50	21:58	21:21	
6	08:44	08:09		07:13	16:42 (2)	07:01			05:58	05:18	05:22	06:54	
	16:39	17:31		18:23	29	17:11 (2)	20:17		21:08	21:51	21:58	20:14	
7	08:43	08:08		07:10	16:43 (2)	06:59			05:56	05:17	05:23	06:55	
	16:40	17:33		18:24	27	17:10 (2)	20:18		21:10	21:52	21:57	20:11	
8	08:43	08:06		07:08	16:44 (2)	06:56			05:54	05:17	05:24	06:57	
	16:42	17:35		18:26	23	17:07 (2)	20:20		21:11	21:53	21:57	21:15	
9	08:42	08:04		07:06	16:47 (2)	06:54			05:52	05:16	05:25	06:59	
	16:43	17:36		18:28	17	17:04 (2)	20:22		21:13	21:54	21:56	20:07	
10	08:42	08:02		07:04	16:51 (2)	06:52			05:51	05:16	05:26	06:09	
	16:44	17:38		18:30	10	17:01 (2)	20:24		21:15	21:55	21:55	21:12	
11	08:41	08:00		07:01	16:50				05:49	05:15	05:27	06:11	
	16:46	17:40		18:32		17:01 (2)	20:25		21:16	21:55	21:54	21:10	
12	08:41	07:59		06:59	17:58 (1)	06:47			05:47	05:15	05:28	06:13	
	16:47	17:42		18:33	9	18:07 (1)	20:27		21:18	21:56	21:54	21:08	
13	08:40	07:57	16:56 (2)	06:57	17:56 (1)	06:45			05:46	05:15	05:29	06:14	
	16:49	17:44	5	17:01 (2)	18:35	14	18:10 (1)	20:29		21:19	21:57	21:53	21:06
14	08:39	07:55	16:51 (2)	06:54	17:53 (1)	06:43			05:44	05:14	05:30	07:07	
	16:50	17:46	15	17:06 (2)	18:37	17	18:10 (1)	20:31		21:21	21:57	21:52	21:04
15	08:38	07:53	16:48 (2)	06:52	17:52 (1)	06:41			05:43	05:14	05:32	07:09	
	16:52	17:48	21	17:09 (2)	18:39	19	18:11 (1)	20:32		21:23	21:58	21:51	21:02
16	08:38	07:51	16:46 (2)	06:50	17:52 (1)	06:39			05:41	05:14	05:33	06:19	
	16:53	17:50	25	17:11 (2)	18:40	20	18:12 (1)	20:34		21:24	21:58	21:50	21:00
17	08:37	07:49	16:44 (2)	06:47	17:50 (1)	06:36			05:39	05:14	05:34	06:21	
	16:55	17:51	27	17:11 (2)	18:42	21	18:13 (1)	20:36		21:26	21:59	21:49	20:58
18	08:36	07:47	16:43 (2)	06:45	17:50 (1)	06:34			05:38	05:14	05:35	06:23	
	16:57	17:53	30	17:13 (2)	18:44	23	18:13 (3)	20:37		21:27	21:59	21:48	20:56
19	08:35	07:45	16:42 (2)	06:43	17:50 (1)	06:32			05:37	05:14	05:37	06:24	
	16:58	17:55	32	17:14 (2)	18:46	25	18:15 (3)	20:39		21:29	22:00	21:46	20:54
20	08:34	07:43	16:41 (2)	06:41	17:50 (3)	06:30			05:35	05:14	05:38	06:26	
	17:00	17:57	34	17:15 (2)	18:47	26	18:16 (3)	20:41		21:30	22:00	21:45	20:51
21	08:32	07:41	16:40 (2)	06:38	17:49 (3)	06:28			05:34	05:14	05:39	06:27	
	17:02	17:59	36	17:16 (2)	18:49	28	18:17 (3)	20:43		21:32	22:00	21:44	20:49
22	08:31	07:39	16:40 (2)	06:36	17:49 (3)	06:26			05:32	05:14	05:41	06:29	
	17:03	18:01	36	17:16 (2)	18:51	28	18:17 (3)	20:44		21:33	22:00	21:43	20:47
23	08:30	07:37	16:39 (2)	06:34	17:47 (3)	06:23			05:31	05:15	05:42	06:31	
	17:05	18:03	38	17:17 (2)	18:53	30	18:17 (3)	20:46		21:34	22:01	21:41	20:45
24	08:29	07:35	16:38 (2)	06:31	17:47 (3)	06:21			05:30	05:15	05:43	06:32	
	17:07	18:04	38	17:16 (2)	18:54	30	18:17 (3)	20:48		21:36	22:01	21:40	20:43
25	08:28	07:32	16:38 (2)	06:29	17:47 (3)	06:19			05:29	05:15	05:45	06:34	
	17:09	18:06	38	17:16 (2)	18:56	31	18:18 (3)	20:49		21:37	22:01	21:39	20:41
26	08:26	07:30	16:38 (2)	06:27	17:46 (3)	06:17			05:28	05:16	05:46	06:36	
	17:11	18:08	39	17:17 (2)	18:58	31	18:17 (3)	20:51		21:38	22:01	21:37	20:39
27	08:25	07:28	16:38 (2)	06:24	17:46 (3)	06:15			05:26	05:16	05:48	06:37	
	17:12	18:10	39	17:17 (2)	19:00	31	18:17 (3)	20:53		21:40	22:01	21:36	20:36
28	08:24	07:26	16:39 (2)	06:22	17:46 (3)	06:13			05:25	05:17	05:49	06:39	
	17:14	18:12	37	17:16 (2)	19:01	30	18:16 (3)	20:55		21:41	22:01	21:34	20:34
29	08:22				17:20	18:46 (3)	06:11		05:24	05:17	05:51	06:41	
	17:16				20:03	29	19:15 (3)	20:56		21:42	22:00	21:33	20:32
30	08:21				07:17	18:46 (3)	06:09		05:23	05:18	05:52	06:42	
	17:18				20:05	28	19:14 (3)	20:58		21:44	22:00	21:31	20:30
31	08:19				07:15	18:47 (3)			05:22	05:18	05:54	06:44	
	17:20				20:06	27	19:14 (3)			21:45	22:00	20:27	
Potential sun hours	258	277		367		416			486	500	503	454	381
Total, worst case												568	790
Sun reduction												0.37	
Oper. time red.												0.95	
Wind dir. red.												0.61	
Total reduction												0.21	
Total, real												0.22	
												122	172
												331	265
													144

Table layout: For each day in each month the following matrix apply

Day in month	Sunrise (hh:mm)	Sunset (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: B - Mettrayweg 28

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June
1   08:45		08:18	15:47 (2)	07:24	15:53 (2)	07:13
1   16:33		17:21	37	16:24 (2)	18:14	27
2   08:45		08:16	15:46 (2)	07:22	15:56 (2)	07:10
2   16:34		17:23	39	16:25 (2)	18:15	21
3   08:45		08:14	15:46 (2)	07:19	16:00 (2)	07:08
3   16:35		17:25	41	16:27 (2)	18:17	13
4   08:44		08:13	15:45 (2)	07:17		07:06
4   16:37		17:27	43	16:28 (2)	18:19	
5   08:44		08:11	15:44 (2)	07:15		07:03
5   16:38		17:29	45	16:29 (2)	18:21	
6   08:44		08:09	15:43 (2)	07:13		07:01
6   16:39		17:31	46	16:29 (2)	18:23	
7   08:43		08:08	15:43 (2)	07:10		06:59
7   16:40		17:33	47	16:30 (2)	18:24	
8   08:43		08:06	15:42 (2)	07:08		07:18
8   16:42		17:35	48	16:30 (2)	18:26	6
9   08:42		08:04	15:42 (2)	07:06		07:15
9   16:43		17:36	49	16:31 (2)	18:28	14
10   08:42		08:02	15:42 (2)	07:04		07:14
10   16:44		17:38	50	16:32 (2)	18:30	18
11   08:41		08:01	15:42 (2)	07:01		07:13
11   16:46		17:40	50	16:32 (2)	18:32	20
12   08:41		07:59	15:42 (2)	06:59		07:12
12   16:47		17:42	51	16:33 (2)	18:33	23
13   08:40		07:57	15:42 (2)	06:57		07:11
13   16:49		17:44	51	16:33 (2)	18:35	24
14   08:39		07:55	15:42 (2)	06:54		07:10
14   16:50		17:46	51	16:33 (2)	18:37	27
15   08:38		07:53	15:42 (2)	06:52		07:09
15   16:52		17:48	51	16:33 (2)	18:39	29
16   08:38		07:51	15:42 (2)	06:50		07:08
16   16:53		17:50	51	16:33 (2)	18:40	32
17   08:37		07:49	15:41 (2)	06:47		07:07
17   16:55		17:51	51	16:32 (2)	18:42	33
18   08:36		07:47	15:41 (2)	06:45		07:06
18   16:57		17:53	51	16:32 (2)	18:44	35
19   08:35		07:45	15:42 (2)	06:43		07:05
19   16:58		17:55	50	16:32 (2)	18:46	37
20   08:34		07:43	15:42 (2)	06:41		07:04
20   17:00		17:57	49	16:31 (2)	18:47	38
21   08:32		07:41	15:43 (2)	06:38		07:03
21   17:02		17:59	48	16:31 (2)	18:49	39
22   08:31		07:39	15:44 (2)	06:36		07:02
22   17:03		18:01	46	16:30 (2)	18:51	41
23   08:30		07:37	15:45 (2)	06:34		07:01
23   17:05		18:03	45	16:30 (2)	18:53	41
24   08:29		07:35	15:45 (2)	06:31		07:00
24   17:07		18:04	43	16:28 (2)	18:54	41
25   08:28		07:32	15:46 (2)	06:29		06:59
25   17:09		18:06	41	16:27 (2)	18:56	41
26   08:26	15:58 (2)	07:30	15:48 (2)	06:27		06:58
26   17:11	14	16:12 (2)	18:08	38	16:26 (2)	18:58
27   08:25	15:55 (2)	07:28	15:49 (2)	06:24		06:57
27   17:12	20	16:15 (2)	18:10	36	16:25 (2)	19:00
28   08:24	15:53 (2)	07:26	15:51 (2)	06:22		06:56
28   17:14	25	16:18 (2)	18:12	32	16:23 (2)	19:01
29   08:22	15:51 (2)				07:20	18:22 (3)
29   17:16	28	16:19 (2)			20:03	19:01 (3)
30   08:21	15:49 (2)				07:17	18:23 (3)
30   17:18	32	16:21 (2)			20:05	19:01 (3)
31   08:19	15:49 (2)				07:15	18:24 (3)
31   17:20	34	16:23 (2)			20:06	19:00 (3)
Potential sun hours	258		277		367	
Total, worst case	153		1280		835	
Sun reduction	0,21		0,30		0,33	
Oper. time red.	0,95		0,95		0,95	
Wind dir. red.	0,70		0,70		0,62	
Total reduction	0,14		0,20		0,20	
Total, real	22		257		164	
					416	
					486	
					500	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
				Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: B - Mettrayweg 28

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	July	August	September	October		November		December				
1	05:18	05:55	06:46		07:35	18:18 (1)	07:29	15:11 (2)	08:21			
	22:00	21:28	20:25		19:15	23	18:41 (1)	17:09	50	16:01 (2)	16:28	
2	05:19	05:57	06:47		07:37	18:18 (1)	07:31	15:12 (2)	08:22			
	22:00	21:26	20:23		19:13	22	18:40 (1)	17:07	48	16:00 (2)	16:27	
3	05:20	05:58	06:49		07:38	18:20 (1)	07:33	15:12 (2)	08:24			
	21:59	21:24	20:21		19:11	18	18:38 (1)	17:05	48	16:00 (2)	16:26	
4	05:21	06:00	06:50		07:40	18:20 (1)	07:35	15:13 (2)	08:25			
	21:59	21:23	20:18		19:08	16	18:36 (1)	17:03	46	15:59 (2)	16:26	
5	05:21	06:02	06:52	18:33 (3)	07:42	18:23 (1)	07:37	15:13 (2)	08:26			
	21:58	21:21	20:16	7	18:40 (3)	19:06	10	18:33 (1)	17:01	46	15:59 (2)	16:25
6	05:22	06:03	06:54	18:28 (3)	07:44		07:38			15:14 (2)	08:28	
	21:58	21:19	20:14	17	18:45 (3)	19:04		16:59	44	15:58 (2)	16:25	
7	05:23	06:05	06:55	18:24 (3)	07:45		07:40			15:15 (2)	08:29	
	21:57	21:17	20:11	22	18:46 (3)	19:01		16:58	43	15:58 (2)	16:24	
8	05:24	06:06	06:57	18:22 (3)	07:47		07:42			15:16 (2)	08:30	
	21:57	21:15	20:09	26	18:48 (3)	18:59		16:56	41	15:57 (2)	16:24	
9	05:25	06:08	06:59	18:19 (3)	07:49		07:44			15:17 (2)	08:31	
	21:56	21:14	20:07	30	18:49 (3)	18:57		16:54	39	15:56 (2)	16:24	
10	05:26	06:10	07:00	18:18 (3)	07:50	16:40 (2)	07:46			15:18 (2)	08:33	
	21:55	21:12	20:04	32	18:50 (3)	18:55	2	16:42 (2)	16:53	37	15:55 (2)	16:24
11	05:27	06:11	07:02	18:17 (3)	07:52	16:32 (2)	07:47			15:20 (2)	08:34	
	21:54	21:10	20:02	34	18:51 (3)	18:52	18	16:50 (2)	16:51	34	15:54 (2)	16:23
12	05:28	06:13	07:04	18:15 (3)	07:54	16:29 (2)	07:49			15:21 (2)	08:35	
	21:54	21:08	20:00	36	18:51 (3)	18:50	24	16:53 (2)	16:50	32	15:53 (2)	16:23
13	05:29	06:14	07:05	18:14 (3)	07:56	16:25 (2)	07:51			15:23 (2)	08:36	
	21:53	21:06	19:57	38	18:52 (3)	18:48	29	16:54 (2)	16:48	28	15:51 (2)	16:23
14	05:30	06:16	07:07	18:13 (3)	07:57	16:23 (2)	07:53			15:25 (2)	08:37	
	21:52	21:04	19:55	39	18:52 (3)	18:46	33	16:56 (2)	16:47	24	15:49 (2)	16:23
15	05:32	06:18	07:09	18:12 (3)	07:59	16:21 (2)	07:55			15:28 (2)	08:38	
	21:51	21:02	19:53	40	18:52 (3)	18:43	36	16:57 (2)	16:45	19	15:47 (2)	16:23
16	05:33	06:19	07:10	18:12 (3)	08:01	16:19 (2)	07:56			15:31 (2)	08:38	
	21:50	21:00	19:50	40	18:52 (3)	18:41	40	16:59 (2)	16:44	14	15:45 (2)	16:23
17	05:34	06:21	07:12	18:10 (3)	08:03	16:18 (2)	07:58				08:39	
	21:49	20:58	19:48	42	18:52 (3)	18:39	42	17:00 (2)	16:42			16:24
18	05:35	06:23	07:13	18:10 (3)	08:04	16:17 (2)	08:00				08:40	
	21:48	20:56	19:46	42	18:52 (3)	18:37	43	17:00 (2)	16:41			16:24
19	05:37	06:24	07:15	18:09 (3)	08:06	16:15 (2)	08:02				08:41	
	21:46	20:54	19:43	42	18:51 (3)	18:35	45	17:00 (2)	16:40			16:24
20	05:38	06:26	07:17	18:09 (3)	08:08	16:14 (2)	08:03				08:41	
	21:45	20:52	19:41	42	18:51 (3)	18:33	47	17:01 (2)	16:38			16:24
21	05:39	06:27	07:18	18:10 (3)	08:10	16:13 (2)	08:05				08:42	
	21:44	20:49	19:39	40	18:50 (3)	18:30	48	17:01 (2)	16:37			16:25
22	05:41	06:29	07:20	18:09 (3)	08:11	16:13 (2)	08:07				08:42	
	21:43	20:47	19:36	40	18:49 (3)	18:28	49	17:02 (2)	16:36			16:25
23	05:42	06:31	07:22	18:10 (3)	08:13	16:12 (2)	08:08				08:43	
	21:41	20:45	19:34	38	18:48 (3)	18:26	50	17:02 (2)	16:35			16:26
24	05:43	06:32	07:23	18:10 (3)	08:15	16:12 (2)	08:10				08:43	
	21:40	20:43	19:32	38	18:48 (3)	18:24	50	17:02 (2)	16:34			16:26
25	05:45	06:34	07:25	18:10 (3)	07:17	15:12 (2)	08:12				08:44	
	21:39	20:41	19:29	36	18:46 (3)	17:22	50	16:02 (2)	16:33			16:27
26	05:46	06:36	07:27	18:11 (3)	07:19	15:11 (2)	08:13				08:44	
	21:37	20:39	19:27	34	18:45 (3)	17:20	52	16:03 (2)	16:32			16:28
27	05:48	06:37	07:28	18:12 (3)	07:20	15:11 (2)	08:15				08:44	
	21:36	20:36	19:25	32	18:44 (1)	17:18	52	16:03 (2)	16:31			16:28
28	05:49	06:39	07:30	18:13 (3)	07:22	15:11 (2)	08:16				08:45	
	21:34	20:34	19:22	30	18:43 (1)	17:16	52	16:03 (2)	16:30			16:29
29	05:51	06:41	07:32	18:15 (3)	07:24	15:11 (2)	08:18				08:45	
	21:33	20:32	19:20	28	18:43 (1)	17:14	51	16:02 (2)	16:29			16:30
30	05:52	06:42	07:33	18:17 (3)	07:26	15:10 (2)	08:19				08:45	
	21:31	20:30	19:18	25	18:42 (1)	17:12	51	16:01 (2)	16:28			16:31
31	05:54	06:44			07:28	15:11 (2)					08:45	
	21:29	20:27			17:10	50	16:01 (2)					16:32
	Potential sun hours	503	454	381	331		265					242
	Total, worst case			870		1003		593				
	Sun reduction			0,37		0,34		0,23				
	Oper. time red.			0,95		0,95		0,95				
	Wind dir. red.			0,62		0,69		0,70				
	Total reduction			0,22		0,23		0,15				
	Total, real			190		226		91				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: C - Mettrayweg 30

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June
1   08:45	08:18	15:22 (2)	07:24		07:13	06:07
1   16:33	17:21	49	16:11 (2)	18:14	20:08	21:00
2   08:45	08:16	15:22 (2)	07:22		07:10	06:05
2   16:34	17:23	49	16:11 (2)	18:15	20:10	21:01
3   08:45	08:14	15:23 (2)	07:19	17:39 (1)	07:08	06:03
3   16:35	17:25	49	16:12 (2)	18:17	17:45 (1)	20:12
4   08:44	08:13	15:23 (2)	07:17	17:28 (3)	07:06	06:02
4   16:37	17:27	49	16:12 (2)	18:19	17:48 (1)	20:13
5   08:44	08:11	15:22 (2)	07:15	17:22 (3)	07:03	06:00
5   16:38	17:29	50	16:12 (2)	18:21	17:50 (1)	20:15
6   08:44	08:09	15:22 (2)	07:13	17:19 (3)	07:01	05:58
6   16:39	17:31	50	16:12 (2)	18:23	17:51 (1)	20:17
7   08:43	08:08	15:22 (2)	07:10	17:17 (3)	06:59	05:56
7   16:40	17:33	50	16:12 (2)	18:24	17:52 (1)	20:18
8   08:43	08:06	15:23 (2)	07:08	17:15 (3)	06:56	05:54
8   16:42	17:35	48	16:11 (2)	18:26	17:52 (1)	20:20
9   08:42	08:04	15:23 (2)	07:06	17:14 (3)	06:54	05:52
9   16:43	17:36	48	16:11 (2)	18:28	17:53 (1)	20:22
10   08:42	08:02	15:24 (2)	07:04	17:13 (3)	06:52	05:51
10   16:44	17:38	48	16:12 (2)	18:30	17:53 (1)	20:24
11   08:41	08:01	15:25 (2)	07:01	17:11 (3)	06:50	05:49
11   16:46	17:40	47	16:12 (2)	18:32	17:52 (1)	20:25
12   08:41	07:59	15:25 (2)	06:59	17:10 (3)	06:47	05:47
12   16:47	17:42	46	16:11 (2)	18:33	17:52 (1)	20:27
13   08:40	15:36 (2)	07:57	15:26 (2)	06:57	17:10 (3)	06:45
13   16:49	11	15:47 (2)	17:44	45	16:11 (2)	18:35
14   08:39	15:34 (2)	07:55	15:27 (2)	06:54	17:52 (1)	20:29
14   16:50	16	15:50 (2)	17:46	43	16:10 (2)	18:37
15   08:38	15:32 (2)	07:53	15:28 (2)	06:52	17:51 (1)	20:31
15   16:52	20	15:52 (2)	17:48	41	16:09 (2)	18:39
16   08:38	15:31 (2)	07:51	15:29 (2)	06:50	17:50 (1)	20:32
16   16:53	23	15:54 (2)	17:50	39	16:08 (2)	18:40
17   08:37	15:29 (2)	07:49	15:29 (2)	06:47	17:53 (1)	20:34
17   16:55	26	15:55 (2)	17:51	37	16:06 (2)	18:42
18   08:36	15:28 (2)	07:47	15:31 (2)	06:45	17:48 (3)	20:37
18   16:57	29	15:57 (2)	17:53	34	16:05 (2)	18:44
19   08:35	15:27 (2)	07:45	15:32 (2)	06:43	17:07 (3)	06:32
19   16:58	32	15:59 (2)	17:55	32	16:04 (2)	18:46
20   08:34	15:27 (2)	07:43	15:35 (2)	06:41	17:48 (3)	20:39
20   17:00	33	16:00 (2)	17:57	27	16:02 (2)	18:47
21   08:32	15:27 (2)	07:41	15:37 (2)	06:38	17:07 (3)	06:28
21   17:02	35	16:02 (2)	17:59	22	15:59 (2)	18:49
22   08:31	15:25 (2)	07:39	15:41 (2)	06:36	17:08 (3)	06:26
22   17:03	37	16:02 (2)	18:01	15	15:56 (2)	08:51
23   08:30	15:25 (2)	07:37		38	17:46 (3)	20:44
23   17:05	39	16:04 (2)	18:03		17:08 (3)	06:23
24   08:29	15:25 (2)	07:35		36	17:44 (3)	20:46
24   17:07	40	16:05 (2)	18:04		17:09 (3)	06:21
25   08:28	15:24 (2)	07:32		35	17:44 (3)	20:48
25   17:09	42	16:06 (2)	18:06		17:10 (3)	06:19
26   08:26	15:24 (2)	07:30		33	17:43 (3)	20:49
26   17:11	43	16:07 (2)	18:08		17:40 (3)	20:51
27   08:25	15:23 (2)	07:28		30	17:12 (3)	06:15
27   17:12	44	16:07 (2)	18:10		17:39 (3)	20:53
28   08:24	15:24 (2)	07:26		27	17:13 (3)	20:43
28   17:14	45	16:09 (2)	18:12		17:37 (3)	20:55
29   08:22	15:23 (2)			22	18:16 (3)	06:11
29   17:16	46	16:09 (2)			18:33 (3)	20:56
30   08:21	15:22 (2)			17	18:22 (3)	06:09
30   17:18	47	16:09 (2)			18:44 (3)	20:44
31   08:19	15:23 (2)			5	18:27 (3)	20:58
31   17:20	47	16:10 (2)			18:46 (3)	21:45
Potential sun hours	258		277		367	
Total, worst case	655		918		934	
Sun reduction	0,21		0,30		0,33	
Oper. time red.	0,95		0,95		0,95	
Wind dir. red.	0,70		0,70		0,62	
Total reduction	0,14		0,20		0,20	
Total, real	92		185		184	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
				Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: C - Mettrayweg 30

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	July	August	September	October		November		December				
1	05:18	05:55	06:46		07:35	17:49 (3)	07:29	14:53 (2)	08:21			
	22:00	21:28	20:25		19:15	42	18:31 (1)	17:09	48	15:41 (2)	16:28	
2	05:19	05:57	06:47		07:37	17:49 (3)	07:31	14:52 (2)	08:22			
	22:00	21:26	20:23		19:13	42	18:31 (1)	17:07	49	15:41 (2)	16:27	
3	05:20	05:58	06:49		07:38	17:50 (3)	07:33	14:52 (2)	08:24			
	21:59	21:24	20:21		19:11	41	18:31 (1)	17:05	49	15:41 (2)	16:26	
4	05:21	06:00	06:50		07:40	17:50 (3)	07:35	14:52 (2)	08:25			
	21:59	21:23	20:18		19:08	40	18:30 (1)	17:03	49	15:41 (2)	16:26	
5	05:21	06:02	06:52		07:42	17:51 (3)	07:37	14:52 (2)	08:26			
	21:58	21:21	20:16		19:06	38	18:29 (1)	17:01	50	15:42 (2)	16:25	
6	05:22	06:03	06:54		07:44	17:53 (3)	07:38	14:52 (2)	08:28			
	21:58	21:19	20:14		19:04	36	18:29 (1)	16:59	50	15:42 (2)	16:25	
7	05:23	06:05	06:55		07:45	17:54 (3)	07:40	14:52 (2)	08:29			
	21:57	21:17	20:11		19:01	34	18:28 (1)	16:58	50	15:42 (2)	16:24	
8	05:24	06:06	06:57		07:47	17:56 (3)	07:42	14:53 (2)	08:30			
	21:57	21:15	20:09		18:59	29	18:25 (1)	16:56	49	15:42 (2)	16:24	
9	05:25	06:08	06:59		07:49	17:59 (3)	07:44	14:53 (2)	08:31			
	21:56	21:14	20:07		18:57	25	18:24 (1)	16:54	49	15:42 (2)	16:24	
10	05:26	06:10	07:00		07:50	18:10 (1)	07:46	14:53 (2)	08:33			
	21:55	21:12	20:04		18:55	11	18:21 (1)	16:53	48	15:41 (2)	16:24	
11	05:27	06:11	07:02		07:52		07:47		47	14:54 (2)	08:34	
	21:54	21:10	20:02		18:52		16:51		47	15:41 (2)	16:23	
12	05:28	06:13	07:04		07:54		07:49		47	14:54 (2)	08:35	
	21:54	21:08	20:00		18:50		16:50		47	15:41 (2)	16:23	
13	05:29	06:14	07:05		07:56		07:51		46	14:55 (2)	08:36	
	21:53	21:06	19:57		18:48		16:48		46	15:41 (2)	16:23	
14	05:30	06:16	07:07	18:07 (3)	07:57		07:53		45	14:56 (2)	08:37	
	21:52	21:04	19:55	16	18:23 (3)	18:46	16:47		45	15:41 (2)	16:23	
15	05:32	06:18	07:09	18:04 (3)	07:59		07:55		44	14:56 (2)	08:38	
	21:51	21:02	19:53	22	18:26 (3)	18:43	16:45		44	15:40 (2)	16:23	
16	05:33	06:19	07:10	18:02 (3)	08:01		07:56		43	14:57 (2)	08:38	
	21:50	21:00	19:50	26	18:28 (3)	18:41	16:44		43	15:40 (2)	16:23	
17	05:34	06:21	07:12	17:59 (3)	08:03		07:58		42	14:58 (2)	08:39	
	21:49	20:58	19:48	29	18:28 (3)	18:39	16:42		42	15:40 (2)	16:24	
18	05:35	06:23	07:13	17:58 (3)	08:04		08:00		40	14:59 (2)	08:40	
	21:48	20:56	19:46	32	18:30 (3)	18:37	16:41		40	15:39 (2)	16:24	
19	05:37	06:24	07:15	17:56 (3)	08:06	16:17 (2)	08:02		39	15:38 (2)	16:24	
	21:46	20:54	19:43	34	18:30 (3)	18:35	16:21 (2)		39	15:38 (2)	16:24	
20	05:38	06:26	07:17	17:55 (3)	08:08	16:10 (2)	08:03		37	15:37 (2)	16:24	
	21:45	20:52	19:41	36	18:31 (3)	18:33	16:27 (2)		37	15:37 (2)	16:24	
21	05:39	06:27	07:18	17:54 (3)	08:10	16:07 (2)	08:05		35	15:37 (2)	16:25	
	21:44	20:49	19:39	37	18:31 (3)	18:30	16:30 (2)		35	15:37 (2)	16:25	
22	05:41	06:29	07:20	17:52 (3)	08:11	16:04 (2)	08:07		33	15:36 (2)	08:42	
	21:43	20:47	19:36	39	18:31 (3)	18:28	16:33 (2)		33	15:36 (2)	08:42	
23	05:42	06:31	07:22	17:51 (3)	08:13	16:02 (2)	08:08		32	15:36 (2)	08:43	
	21:41	20:45	19:34	40	18:31 (3)	18:26	16:34 (2)		32	15:36 (2)	08:43	
24	05:43	06:32	07:23	17:51 (3)	08:15	16:01 (2)	08:10		30	15:36 (2)	08:43	
	21:40	20:43	19:32	41	18:32 (3)	18:24	16:36 (2)		29	15:35 (2)	08:43	
25	05:45	06:34	07:25	17:50 (3)	08:17	14:59 (2)	08:12		29	15:35 (2)	08:44	
	21:39	20:41	19:29	41	18:31 (3)	17:22	15:37 (2)		28	15:33 (2)	08:44	
26	05:46	06:36	07:27	17:50 (3)	07:19	14:58 (2)	08:13		27	15:29 (2)	08:44	
	21:37	20:39	19:27	41	18:31 (3)	17:20	15:38 (2)		27	15:29 (2)	08:44	
27	05:48	06:37	07:28	17:50 (3)	07:20	14:57 (2)	08:15		26	15:28 (2)	08:45	
	21:36	20:36	19:25	41	18:31 (3)	17:18	15:39 (2)		26	15:28 (2)	08:45	
28	05:49	06:39	07:30	17:49 (3)	07:22	14:56 (2)	08:16		25	15:27 (2)	08:45	
	21:34	20:34	19:22	41	18:30 (3)	17:16	15:40 (2)		25	15:27 (2)	08:45	
29	05:51	06:41	07:32	17:49 (3)	07:24	14:55 (2)	08:18		24	15:26 (2)	08:45	
	21:33	20:32	19:20	42	18:31 (1)	17:14	15:40 (2)		24	15:26 (2)	08:45	
30	05:52	06:42	07:33	17:49 (3)	07:26	14:54 (2)	08:19		23	15:25 (2)	08:45	
	21:31	20:30	19:18	43	18:32 (1)	17:12	15:40 (2)		23	15:25 (2)	08:45	
31	05:54	06:44			07:28	14:53 (2)			22	15:24 (2)	08:45	
	21:29	20:27			17:10	47	15:40 (2)		22	15:24 (2)	08:45	
Potential sun hours	503	454	381		331		265			242		
Total, worst case				601		780		1150				
Sun reduction				0,37		0,34		0,23				
Oper. time red.				0,95		0,95		0,95				
Wind dir. red.				0,62		0,67		0,70				
Total reduction				0,22		0,22		0,15				
Total, real				133		170		178				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: D - Mettrayweg 32

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June	
1   08:45	15:00 (2)	08:18	15:02 (2)	07:24	16:57 (3)	07:13	06:07   05:21
16:33	30	15:30 (2)	17:21	47	15:49 (2)	18:14	44   17:41 (1)   20:08   21:00   21:46
2   08:45	14:59 (2)	08:16	15:02 (2)	07:22	16:56 (3)	07:10	06:05   05:21
16:34	31	15:30 (2)	17:23	46	15:48 (2)	18:15	46   17:42 (1)   20:10   21:01   21:47
3   08:45	15:00 (2)	08:14	15:03 (2)	07:19	16:55 (3)	07:08	06:03   05:20
16:35	31	15:31 (2)	17:25	46	15:49 (2)	18:17	48   17:43 (1)   20:12   21:03   21:48
4   08:44	15:00 (2)	08:13	15:04 (2)	07:17	16:54 (3)	07:06	06:02   05:19
16:37	33	15:33 (2)	17:27	44	15:48 (2)	18:19	49   17:43 (1)   20:13   21:05   21:49
5   08:44	14:59 (2)	08:11	15:04 (2)	07:15	16:53 (3)	07:03	06:00   05:18
16:38	34	15:33 (2)	17:29	43	15:47 (2)	18:21	50   17:43 (1)   20:15   21:06   21:50
6   08:44	15:00 (2)	08:09	15:05 (2)	07:13	16:52 (3)	07:01	05:58   05:18
16:39	35	15:35 (2)	17:31	42	15:47 (2)	18:23	51   17:43 (1)   20:17   21:08   21:51
7   08:43	14:59 (2)	08:08	15:06 (2)	07:10	16:52 (3)	06:59	05:56   05:17
16:40	36	15:35 (2)	17:33	40	15:46 (2)	18:24	51   17:43 (1)   20:18   21:10   21:52
8   08:43	15:00 (2)	08:06	15:07 (2)	07:08	16:51 (3)	06:56	05:54   05:17
16:42	37	15:37 (2)	17:35	38	15:45 (2)	18:26	51   17:42 (1)   20:20   21:11   21:53
9   08:42	14:59 (2)	08:04	15:08 (2)	07:06	16:51 (3)	06:54	05:52   05:16
16:43	38	15:37 (2)	17:36	36	15:44 (2)	18:28	51   17:42 (1)   20:22   21:13   21:54
10   08:42	14:59 (2)	08:02	15:11 (2)	07:04	16:51 (3)	06:52	05:51   05:16
16:44	39	15:38 (2)	17:38	32	15:43 (2)	18:30	50   17:41 (1)   20:24   21:15   21:55
11   08:41	14:59 (2)	08:01	15:12 (2)	07:01	16:50 (3)	06:50	05:49   05:15
16:46	39	15:38 (2)	17:40	30	15:42 (2)	18:32	49   17:39 (1)   20:25   21:16   21:55
12   08:41	14:58 (2)	07:59	15:14 (2)	06:59	16:50 (3)	06:47	05:47   05:15
16:47	41	15:39 (2)	17:42	26	15:40 (2)	18:33	48   17:38 (1)   20:27   21:18   21:56
13   08:40	14:59 (2)	07:57	15:17 (2)	06:57	16:51 (3)	06:45	05:46   05:15
16:49	42	15:41 (2)	17:44	20	15:37 (2)	18:35	46   17:37 (1)   20:29   21:19   21:57
14   08:39	14:59 (2)	07:55	15:21 (2)	06:54	16:51 (3)	06:43	05:44   05:14
16:50	43	15:42 (2)	17:46	13	15:34 (2)	18:37	42   17:33 (1)   20:31   21:21   21:57
15   08:38	14:59 (2)	07:53			06:52	16:51 (3)	06:41   05:43   05:14
16:52	43	15:42 (2)	17:48		18:39	39   17:30 (3)   20:32   21:23   21:58	
16   08:38	14:59 (2)	07:51			06:50	16:52 (3)	06:39   05:41   05:14
16:53	44	15:43 (2)	17:50		18:40	37   17:29 (3)   20:34   21:24   21:58	
17   08:37	14:59 (2)	07:49			06:48	16:52 (3)	06:36   05:39   05:14
16:55	45	15:44 (2)	17:51		18:42	36   17:28 (3)   20:36   21:26   21:59	
18   08:36	14:58 (2)	07:47			06:45	16:54 (3)	06:34   05:38   05:14
16:57	46	15:44 (2)	17:53		18:44	32   17:26 (3)   20:37   21:27   21:59	
19   08:35	14:59 (2)	07:45			06:43	16:55 (3)	06:32   05:37   05:14
16:58	46	15:45 (2)	17:55		18:46	30   17:25 (3)   20:39   21:29   22:00	
20   08:34	14:59 (2)	07:43			06:41	16:56 (3)	06:30   05:35   05:14
17:00	46	15:45 (2)	17:57		18:47	27   17:23 (3)   20:41   21:30   22:00	
21   08:32	14:59 (2)	07:41			06:38	16:58 (3)	06:28   05:34   05:14
17:02	47	15:46 (2)	17:59		18:49	23   17:21 (3)   20:43   21:32   22:00	
22   08:31	14:59 (2)	07:39			06:36	17:01 (3)	06:26   05:32   05:14
17:03	47	15:46 (2)	18:01		18:51	17   17:18 (3)   20:44   21:33   22:01	
23   08:30	14:59 (2)	07:37			06:34	17:07 (3)	06:23   05:31   05:15
17:05	48	15:47 (2)	18:03		18:53	3   17:10 (3)   20:46   21:34   22:01	
24   08:29	15:00 (2)	07:35	17:12 (3)	06:31		06:21	05:30   05:15
17:07	48	15:48 (2)	18:04	3	17:15 (3)	18:54	20:48   21:36   22:01
25   08:28	14:59 (2)	07:32	17:06 (3)	06:29		06:19	05:29   05:15
17:09	49	15:48 (2)	18:06	16	17:22 (3)	18:56	20:49   21:37   22:01
26   08:26	15:00 (2)	07:30	17:03 (3)	06:27		06:17	05:28   05:16
17:11	48	15:48 (2)	18:08	27	17:34 (1)	18:58	20:51   21:38   22:01
27   08:25	15:00 (2)	07:28	17:01 (3)	06:24		06:15	05:26   05:16
17:12	48	15:48 (2)	18:10	37	17:38 (1)	19:00	20:53   21:40   22:01
28   08:24	15:00 (2)	07:26	16:59 (3)	06:22		06:13	05:25   05:17
17:14	49	15:49 (2)	18:12	41	17:40 (1)	19:01	20:55   21:41   22:01
29   08:22	15:00 (2)				07:20	06:11	05:24   05:17
17:16	49	15:49 (2)			20:03	20:56	21:42   22:00
30   08:21	15:00 (2)				07:17	06:09	05:23   05:18
17:18	48	15:48 (2)			20:05	20:58	21:44   22:00
31   08:19	15:01 (2)				07:15		05:22
17:20	48	15:49 (2)			20:06		21:45
Potential sun hours	258		277		367		416   486   500
Total, worst case		1308		627		920	
Sun reduction		0,21		0,30		0,33	
Oper. time red.		0,95		0,95		0,95	
Wind dir. red.		0,72		0,70		0,64	
Total reduction		0,14		0,20		0,20	
Total, real		188		126		187	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
				Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: D - Mettrayweg 32

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	July	August	September	October		November		December					
1	05:18	05:55	06:46		07:35	17:29 (3)	07:29	14:39 (2)	08:21	14:41 (2)			
	22:00	21:28	20:25		19:15	47	18:16 (1)	17:09	33	15:12 (2)	16:28	40	
2	05:19	05:57	06:47		07:37	17:29 (3)	07:31	14:38 (2)	08:22	14:42 (2)			
	22:00	21:26	20:23		19:13	49	18:18 (1)	17:07	36	15:14 (2)	16:27	39	
3	05:20	05:58	06:49		07:38	17:29 (3)	07:33	14:36 (2)	08:24	14:42 (2)			
	21:59	21:24	20:21		19:11	50	18:19 (1)	17:05	39	15:15 (2)	16:26	38	
4	05:21	06:00	06:50		07:40	17:28 (3)	07:35	14:35 (2)	08:25	14:44 (2)			
	21:59	21:23	20:18		19:08	50	18:18 (1)	17:03	41	15:16 (2)	16:26	37	
5	05:21	06:02	06:52		07:42	17:28 (3)	07:37	14:35 (2)	08:26	14:44 (2)			
	21:58	21:21	20:16		19:06	51	18:19 (1)	17:01	41	15:16 (2)	16:25	36	
6	05:22	06:03	06:54		07:44	17:28 (3)	07:38	14:34 (2)	08:28	14:46 (2)			
	21:58	21:19	20:14		19:04	51	18:19 (1)	16:59	43	15:17 (2)	16:25	35	
7	05:23	06:05	06:55		07:45	17:28 (3)	07:40	14:33 (2)	08:29	14:46 (2)			
	21:57	21:17	20:11		19:01	51	18:19 (1)	16:58	45	15:18 (2)	16:24	34	
8	05:24	06:06	06:57		07:47	17:28 (3)	07:42	14:33 (2)	08:30	14:47 (2)			
	21:57	21:15	20:09		18:59	50	18:18 (1)	16:56	45	15:18 (2)	16:24	33	
9	05:25	06:08	06:59		07:49	17:28 (3)	07:44	14:33 (2)	08:31	14:48 (2)			
	21:56	21:14	20:07		18:57	50	18:18 (1)	16:54	46	15:19 (2)	16:24	32	
10	05:26	06:10	07:00		07:50	17:29 (3)	07:46	14:32 (2)	08:33	14:49 (2)			
	21:55	21:12	20:04		18:55	48	18:17 (1)	16:53	47	15:19 (2)	16:24	31	
11	05:27	06:11	07:02		07:52	17:30 (3)	07:47	14:32 (2)	08:34	14:50 (2)			
	21:54	21:10	20:02		18:52	46	18:16 (1)	16:51	48	15:20 (2)	16:23	30	
12	05:28	06:13	07:04		07:54	17:30 (3)	07:49	14:32 (2)	08:35	14:51 (2)			
	21:54	21:08	20:00		18:50	45	18:15 (1)	16:50	48	15:20 (2)	16:23	29	
13	05:29	06:14	07:05		07:56	17:31 (3)	07:51	14:32 (2)	08:36	14:52 (2)			
	21:53	21:06	19:57		18:48	42	18:13 (1)	16:48	49	15:21 (2)	16:23	28	
14	05:30	06:16	07:07		07:57	17:32 (3)	07:53	14:32 (2)	08:37	14:53 (2)			
	21:52	21:04	19:55		18:46	39	18:11 (1)	16:47	49	15:21 (2)	16:23	27	
15	05:32	06:18	07:09		07:59	17:34 (3)	07:55	14:32 (2)	08:38	14:54 (2)			
	21:51	21:02	19:53		18:43	35	18:09 (1)	16:45	49	15:21 (2)	16:23	26	
16	05:33	06:19	07:10		08:01	17:36 (3)	07:56	14:33 (2)	08:38	14:55 (2)			
	21:50	21:00	19:50		18:41	20	17:56 (3)	16:44	48	15:21 (2)	16:23	25	
17	05:34	06:21	07:12		08:03	17:40 (3)	07:58	14:33 (2)	08:39	14:55 (2)			
	21:49	20:58	19:48		18:39	13	17:53 (3)	16:42	49	15:22 (2)	16:24	25	
18	05:35	06:23	07:13		08:04			08:00	14:33 (2)	08:40	14:55 (2)		
	21:48	20:56	19:46		18:37			16:41	49	15:22 (2)	16:24	25	
19	05:37	06:24	07:15		08:06			08:02	14:33 (2)	08:41	14:56 (2)		
	21:46	20:54	19:43		18:35			16:40	48	15:21 (2)	16:24	25	
20	05:38	06:26	07:17		08:08			08:03	14:34 (2)	08:41	14:56 (2)		
	21:45	20:52	19:41		18:33			16:38	47	15:21 (2)	16:24	25	
21	05:39	06:27	07:18	17:48 (3)	08:10			08:05	14:34 (2)	08:42	14:57 (2)		
	21:44	20:49	19:39	14	18:02 (3)	18:30		16:37	47	15:21 (2)	16:25	25	
22	05:41	06:29	07:20	17:44 (3)	08:11			08:07	14:35 (2)	08:42	14:57 (2)		
	21:43	20:47	19:36	20	18:04 (3)	18:28		16:36	46	15:21 (2)	16:25	24	
23	05:42	06:31	07:22	17:41 (3)	08:13			08:08	14:36 (2)	08:43	14:58 (2)		
	21:41	20:45	19:34	26	18:07 (3)	18:26		16:35	46	15:22 (2)	16:26	25	
24	05:43	06:32	07:23	17:39 (3)	08:15			08:10	14:36 (2)	08:43	14:58 (2)		
	21:40	20:43	19:32	29	18:08 (3)	18:24		16:34	46	15:22 (2)	16:26	25	
25	05:45	06:34	07:25	17:37 (3)	08:17			08:12	14:36 (2)	08:44	14:58 (2)		
	21:39	20:41	19:29	32	18:09 (3)	17:22		16:33	45	15:21 (2)	16:27	25	
26	05:46	06:36	07:27	17:35 (3)	07:19			08:13	14:37 (2)	08:44	15:00 (2)		
	21:37	20:39	19:27	35	18:10 (3)	17:20		16:32	44	15:21 (2)	16:28	25	
27	05:48	06:37	07:28	17:34 (3)	07:20			08:15	14:38 (2)	08:44	15:00 (2)		
	21:36	20:36	19:25	37	18:11 (3)	17:18		16:31	43	15:21 (2)	16:28	25	
28	05:49	06:39	07:30	17:32 (3)	07:22	14:50 (2)	08:16	14:38 (2)	08:45	15:00 (2)			
	21:34	20:34	19:22	39	18:11 (3)	17:16	14	15:04 (2)	16:30	43	15:21 (2)	16:29	26
29	05:51	06:41	07:32	17:32 (3)	07:24	14:46 (2)	08:18	14:39 (2)	08:45	15:00 (2)			
	21:33	20:32	19:20	41	18:13 (1)	17:14	22	15:08 (2)	16:29	42	15:21 (2)	16:30	27
30	05:52	06:42	07:33	17:31 (3)	07:26	14:43 (2)	08:19	14:41 (2)	08:45	15:00 (2)			
	21:31	20:30	19:18	45	18:16 (1)	17:12	26	15:09 (2)	16:28	40	15:21 (2)	16:31	28
31	05:54	06:44			07:28	14:41 (2)				08:45	15:00 (2)		
	21:29	20:27			17:10	30	15:11 (2)			16:32	29	15:29 (2)	
	Potential sun hours	503	454	381	331		265			242			
	Total, worst case			318		829		1342			904		
	Sun reduction			0,37		0,34		0,23			0,19		
	Oper. time red.			0,95		0,95		0,95			0,95		
	Wind dir. red.			0,65		0,65		0,72			0,72		
	Total reduction			0,23		0,21		0,16			0,13		
	Total, real			73		176		212			118		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: E - Meijerinkstraat 40

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May						June		
1   08:45		08:18	12:04 (2)	07:24	11:44 (2)	07:13		13:27 (2)	06:07	18:14 (3)	05:22	17:50 (3)	
16:33		17:22	81	13:25 (2)	08:14	120	13:44 (2)	20:08	56	19:11 (1)	21:00	58	
2   08:45		08:16	12:03 (2)	07:22	11:44 (2)	07:10		18:29 (1)	06:05	18:11 (3)	05:21	17:51 (3)	
16:34		17:23	83	13:26 (2)	08:15	120	13:44 (2)	20:10	43	19:12 (1)	21:01	63	
3   08:45		08:14	12:03 (2)	07:19	11:44 (2)	07:08		18:29 (1)	06:03	18:09 (3)	05:20	17:51 (3)	
16:35		17:25	85	13:28 (2)	08:17	121	13:45 (2)	20:12	43	19:12 (1)	21:03	67	
4   08:44		08:13	12:01 (2)	07:17	11:44 (2)	07:06		18:28 (1)	06:02	18:07 (3)	05:19	17:51 (3)	
16:37		17:27	88	13:29 (2)	08:19	121	13:45 (2)	20:13	43	19:11 (1)	21:05	70	
5   08:44		08:11	12:00 (2)	07:15	11:43 (2)	07:03		18:28 (1)	06:00	18:06 (3)	05:18	17:51 (3)	
16:38		17:29	90	13:30 (2)	08:21	121	13:44 (2)	20:15	43	19:11 (1)	21:06	73	
6   08:44		08:09	11:59 (2)	07:13	11:43 (2)	07:01		18:28 (1)	05:58	18:04 (3)	05:18	17:51 (3)	
16:39		17:31	92	13:31 (2)	08:23	121	13:44 (2)	20:17	42	19:10 (1)	21:08	76	
7   08:43		08:08	11:58 (2)	07:10	11:43 (2)	06:59		18:28 (1)	05:56	18:03 (3)	05:17	17:52 (3)	
16:40		17:33	94	13:32 (2)	08:24	121	13:44 (2)	20:19	42	19:10 (1)	21:10	78	
8   08:43		08:06	11:57 (2)	07:08	11:43 (2)	06:57		18:28 (1)	05:54	18:02 (3)	05:17	17:51 (3)	
16:42		17:35	96	13:33 (2)	08:26	120	13:43 (2)	20:20	41	19:09 (1)	21:11	81	
9   08:43		08:04	11:57 (2)	07:06	11:43 (2)	06:54		18:28 (1)	05:52	18:01 (3)	05:16	17:52 (3)	
16:43		17:37	98	13:35 (2)	08:28	120	13:43 (2)	20:22	40	19:08 (1)	21:13	83	
10   08:42		08:02	11:56 (2)	07:04	11:43 (2)	06:52		18:29 (1)	05:51	19:24 (3)	05:14	17:52 (3)	
16:44		17:38	100	13:36 (2)	08:30	119	13:42 (2)	20:24	38	19:07 (1)	21:15	85	
11   08:41		08:01	11:55 (2)	07:01	11:42 (2)	06:50		18:30 (1)	05:49	19:59 (3)	05:15	17:52 (3)	
16:46		17:40	102	13:37 (2)	08:32	119	13:41 (2)	20:25	37	19:07 (1)	21:16	87	
12   08:41		07:59	11:54 (2)	06:59	11:43 (2)	06:47		18:30 (1)	05:47	17:57 (3)	05:15	17:52 (3)	
16:47		17:42	104	13:38 (2)	08:33	118	13:41 (2)	20:27	35	19:05 (1)	21:18	89	
13   08:40		07:57	11:54 (2)	06:57	11:43 (2)	06:45		18:29 (1)	05:51	17:59 (3)	05:16	17:52 (3)	
16:49		17:44	105	13:39 (2)	08:35	118	13:41 (2)	20:29	32	19:03 (1)	21:19	91	
14   08:39		07:55	11:53 (2)	06:54	11:43 (2)	06:43		18:33 (1)	05:44	17:56 (3)	05:14	17:53 (3)	
16:50		17:46	106	13:39 (2)	08:37	116	13:39 (2)	20:31	29	19:02 (1)	21:21	92	
15   08:38		07:53	11:52 (2)	06:52	11:43 (2)	06:41		18:34 (1)	05:43	17:55 (3)	05:14	17:53 (3)	
16:52		17:48	108	13:40 (2)	08:39	116	13:39 (2)	20:32	26	19:00 (1)	21:23	94	
16   08:38		07:51	11:52 (2)	06:50	11:44 (2)	06:39		18:36 (1)	05:41	17:54 (3)	05:14	17:53 (3)	
16:54		17:50	109	13:41 (2)	08:40	114	13:38 (2)	20:34	22	18:58 (1)	21:24	95	
17   08:37	12:34 (2)	07:49	11:50 (2)	06:48	11:44 (2)	06:36		18:39 (1)	05:39	17:54 (3)	05:14	17:54 (3)	
16:55	15	12:49 (2)	17:52	110	13:40 (2)	08:42	112	13:36 (2)	20:36	16	18:55 (1)	21:26	96
18   08:36		12:28 (2)	07:47	11:49 (2)	06:45		11:45 (2)	06:34		18:44 (1)	05:38		
16:57	25	12:53 (2)	17:53	112	13:41 (2)	08:44	111	13:36 (2)	20:37	6	18:50 (1)	21:27	97
19   08:35		12:25 (2)	07:45	11:49 (2)	06:43		11:46 (2)	06:32			05:37		
16:58	32	12:57 (2)	17:55	113	13:42 (2)	08:46	109	13:35 (2)	20:39		21:29	98	
20   08:34		12:23 (2)	07:43	11:48 (2)	06:41		11:46 (2)	06:30			05:35		
17:00	38	13:01 (2)	17:57	114	13:42 (2)	08:47	107	13:33 (2)	20:41		21:30	100	
21   08:33		12:21 (2)	07:41	11:48 (2)	06:38		11:47 (2)	06:28			05:34		
17:02	43	13:04 (2)	17:59	115	13:43 (2)	08:49	105	13:32 (2)	20:43		21:32	101	
22   08:31		12:18 (2)	07:39	11:48 (2)	06:36		11:48 (2)	06:26			05:32		
17:04	48	13:06 (2)	18:01	115	13:43 (2)	08:51	118	18:02 (1)	20:44		21:33	102	
23   08:30		12:17 (2)	07:37	11:47 (2)	06:34		11:49 (2)	06:24			05:31		
17:05	52	13:09 (2)	18:03	117	13:44 (2)	08:53	121	18:04 (1)	20:46		21:34	102	
24   08:29		12:15 (2)	07:35	11:46 (2)	06:31		11:50 (2)	06:21			05:30		
17:07	56	13:11 (2)	18:04	117	13:43 (2)	08:54	122	18:06 (1)	20:48		21:36	103	
25   08:28		12:13 (2)	07:32	11:46 (2)	06:29		11:52 (2)	06:19			05:29		
17:09	60	13:13 (2)	18:06	118	13:44 (2)	08:56	122	18:08 (1)	20:49		21:37	103	
26   08:26		12:12 (2)	07:30	11:45 (2)	06:27		11:54 (2)	06:17			05:28		
17:11	63	13:15 (2)	18:08	119	13:44 (2)	08:58	121	18:09 (1)	20:51	25	18:56 (3)	21:39	104
27   08:25		12:10 (2)	07:28	11:45 (2)	06:24		11:56 (2)	06:15			18:26 (3)	05:26	
17:12	67	13:17 (2)	18:10	120	13:45 (2)	09:00	118	18:10 (1)	20:53	35	19:01 (3)	21:40	105
28   08:24		12:10 (2)	07:26	11:45 (2)	06:22		11:59 (2)	06:13			18:22 (3)	05:25	
17:14	69	13:19 (2)	18:12	120	13:45 (2)	09:01	114	18:11 (1)	20:55	42	19:04 (3)	21:41	106
29   08:22		12:08 (2)			07:20		13:02 (2)	06:11			18:19 (3)	05:24	
17:16	72	13:20 (2)			20:03	107	19:11 (1)	20:56	49		19:08 (3)	21:42	106
30   08:21		12:06 (2)			07:17		13:07 (2)	06:09			18:16 (3)	05:23	
17:18	76	13:22 (2)			20:05	98	19:11 (1)	20:58	54		19:10 (3)	21:44	106
31   08:19		12:06 (2)			07:15		13:14 (2)				21:45	106	19:37 (3)
17:20	78	13:24 (2)			20:06	86	19:12 (1)				19:37 (3)		
Potential sun hours	258		277		367		416		486		500		
Total, worst case	794		2931		3576		839			2817		3277	
Sun reduction	0,21		0,30		0,33		0,42			0,42		0,37	
Oper. time red.	0,95		0,95		0,95		0,95			0,95		0,95	
Wind dir. red.	0,69		0,69		0,69		0,60			0,55		0,55	
Total reduction	0,14		0,20		0,22		0,24			0,22		0,20	
Total, real	111		587		779		202			629		645	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: E - Meijerinkstraat 40

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

	N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
	337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	July	August	September	October	November	December
1   05:18	17:56 (3)   05:55	18:08 (3)   06:46	18:29 (1)   07:35	12:22 (2)   07:29	11:25 (2)   08:21	
2   22:00	109 19:45 (3)   21:28	88 19:36 (3)   20:25	37 19:06 (1)   19:15	118 14:20 (2)   17:09	100 13:05 (2)   16:28	
2   05:19	17:56 (3)   05:57	18:09 (3)   06:47	18:27 (1)   07:37	12:21 (2)   07:31	11:26 (2)   08:22	
2   22:00	110 19:46 (3)   21:26	87 19:36 (3)   20:23	38 19:05 (1)   19:13	119 14:20 (2)   17:07	98 13:04 (2)   16:27	
3   05:20	17:57 (3)   05:58	18:10 (3)   06:49	18:26 (1)   07:38	12:21 (2)   07:33	11:27 (2)   08:24	
3   21:59	109 19:46 (3)   21:24	84 19:34 (3)   20:21	40 19:06 (1)   19:11	119 14:20 (2)   17:05	96 13:03 (2)   16:26	
4   05:21	17:57 (3)   06:00	18:11 (3)   06:51	18:26 (1)   07:40	12:20 (2)   07:35	11:28 (2)   08:25	
4   21:59	109 19:46 (3)   21:23	83 19:34 (3)   20:18	41 19:07 (1)   19:08	119 14:19 (2)   17:03	94 13:02 (2)   16:26	
5   05:21	17:57 (3)   06:02	18:12 (3)   06:52	18:24 (1)   07:42	12:20 (2)   07:37	11:29 (2)   08:26	
5   21:58	109 19:46 (3)   21:21	80 19:32 (3)   20:16	42 19:06 (1)   19:06	120 14:20 (2)   17:01	92 13:01 (2)   16:25	
6   05:22	17:57 (3)   06:03	18:14 (3)   06:54	18:24 (1)   07:44	12:19 (2)   07:38	11:30 (2)   08:28	
6   21:58	109 19:46 (3)   21:19	77 19:31 (3)   20:14	43 19:07 (1)   19:04	121 14:20 (2)   17:00	90 13:00 (2)   16:25	
7   05:23	17:58 (3)   06:05	18:14 (3)   06:55	18:23 (1)   07:45	12:19 (2)   07:40	11:31 (2)   08:29	
7   21:57	108 19:46 (3)   21:17	75 19:29 (3)   20:11	43 19:06 (1)   19:01	121 14:20 (2)   16:58	88 12:59 (2)   16:24	
8   05:24	17:58 (3)   06:06	18:16 (3)   06:57	18:23 (1)   07:47	12:18 (2)   07:42	11:33 (2)   08:30	
8   21:57	108 19:46 (3)   21:15	72 19:28 (3)   20:09	43 19:06 (1)   18:59	121 14:19 (2)   16:56	85 12:58 (2)   16:24	
9   05:25	17:58 (3)   06:08	18:17 (3)   06:59	18:22 (1)   07:49	12:18 (2)   07:44	11:34 (2)   08:31	
9   21:56	108 19:46 (3)   21:14	69 19:26 (3)   20:07	43 19:05 (1)   18:57	121 14:19 (2)   16:54	83 12:57 (2)   16:24	
10   05:26	17:59 (3)   06:10	18:19 (3)   07:00	18:22 (1)   07:50	12:18 (2)   07:46	11:35 (2)   08:33	
10   21:55	107 19:46 (3)   21:12	66 19:25 (3)   20:04	43 19:05 (1)   18:55	121 14:19 (2)   16:53	81 12:56 (2)   16:24	
11   05:27	17:59 (3)   06:11	18:20 (3)   07:02	18:22 (1)   07:52	12:18 (2)   07:47	11:37 (2)   08:34	
11   21:54	107 19:46 (3)   21:10	62 19:22 (3)   20:02	43 19:05 (1)   18:52	121 14:19 (2)   16:51	77 12:54 (2)   16:23	
12   05:28	17:59 (3)   06:13	18:23 (3)   07:04	13:06 (2)   07:54	12:18 (2)   07:49	11:38 (2)   08:35	
12   21:54	107 19:46 (3)   21:08	57 19:20 (3)   20:00	83 19:03 (1)   18:50	120 14:18 (2)   16:50	75 12:53 (2)   16:23	
13   05:29	17:59 (3)   06:14	18:25 (3)   07:05	12:59 (2)   07:56	12:17 (2)   07:51	11:40 (2)   08:36	
13   21:53	107 19:46 (3)   21:06	52 19:17 (3)   19:57	97 19:03 (1)   18:48	120 14:17 (2)   16:48	72 12:52 (2)   16:23	
14   05:30	18:00 (3)   06:16	18:28 (3)   07:07	12:53 (2)   07:57	12:17 (2)   07:53	11:42 (2)   08:37	
14   21:52	106 19:46 (3)   21:04	47 19:15 (3)   19:55	106 19:01 (1)   18:46	120 14:17 (2)   16:47	69 12:51 (2)   16:23	
15   05:32	18:00 (3)   06:18	18:30 (3)   07:09	12:49 (2)   07:59	12:18 (2)   07:55	11:43 (2)   08:38	
15   21:51	105 19:45 (3)   21:02	41 19:11 (3)   19:53	113 19:01 (1)   18:43	119 14:17 (2)   16:45	67 12:50 (2)   16:23	
16   05:33	18:00 (3)   06:19	18:34 (3)   07:10	12:46 (2)   08:01	12:18 (2)   07:56	11:45 (2)   08:38	
16   21:50	105 19:45 (3)   21:00	33 19:07 (3)   19:50	117 19:00 (1)   18:41	118 14:16 (2)   16:44	63 12:48 (2)   16:23	
17   05:34	18:00 (3)   06:21	18:39 (3)   07:12	12:42 (2)   08:03	12:18 (2)   07:58	11:47 (2)   08:39	
17   21:49	105 19:45 (3)   20:58	22 19:01 (3)   19:48	120 18:57 (1)   18:39	118 14:16 (2)   16:42	60 12:47 (2)   16:24	
18   05:35	18:01 (3)   06:23	19:46	12:40 (2)   08:04	12:18 (2)   08:00	11:49 (2)   08:40	
18   21:48	104 19:45 (3)   20:56	19:46	122 18:56 (1)   18:37	118 14:16 (2)   16:41	56 12:45 (2)   16:24	
19   05:37	18:01 (3)   06:24	07:15	12:37 (2)   08:06	12:18 (2)   08:02	11:51 (2)   08:41	
19   21:46	104 19:45 (3)   20:54	19:43	122 18:53 (1)   18:35	116 14:14 (2)   16:40	52 12:43 (2)   16:24	
20   05:38	18:01 (3)   06:26	07:17	12:36 (2)   08:08	12:18 (2)   08:03	11:53 (2)   08:41	
20   21:45	103 19:44 (3)   20:52	19:41	121 18:51 (1)   18:33	116 14:14 (2)   16:38	48 12:41 (2)   16:24	
21   05:39	18:02 (3)   06:27	07:18	12:34 (2)   08:10	12:19 (2)   08:05	11:56 (2)   08:42	
21   21:44	101 19:43 (3)   20:49	19:39	120 18:49 (1)   18:31	114 14:13 (2)   16:37	43 12:39 (2)   16:25	
22   05:41	18:03 (3)   06:29	07:20	12:32 (2)   08:11	12:19 (2)   08:07	11:59 (2)   08:43	
22   21:43	101 19:44 (3)   20:47	19:36	113 18:43 (1)   18:28	114 14:13 (2)   16:36	38 12:37 (2)   16:25	
23   05:42	18:03 (3)   06:31	07:22	12:31 (2)   08:13	12:20 (2)   08:08	12:02 (2)   08:43	
23   21:41	100 19:43 (3)   20:45	19:34	106 14:17 (2)   18:26	112 14:12 (2)   16:35	33 12:35 (2)   16:26	
24   05:43	18:03 (3)   06:32	07:23	12:30 (2)   08:15	12:20 (2)   08:10	12:06 (2)   08:43	
24   21:40	99 19:42 (3)   20:43	19:32	108 14:18 (2)   18:24	111 14:11 (2)   16:34	26 12:32 (2)   16:26	
25   05:45	18:03 (3)   06:34	18:46 (1)   07:25	12:28 (2)   07:17	11:21 (2)   08:12	12:11 (2)   08:44	
25   21:39	98 19:41 (3)   20:41	8 18:54 (1)   19:29	110 14:18 (2)   17:22	110 13:11 (2)   16:33	15 12:26 (2)   16:27	
26   05:46	18:04 (3)   06:36	18:40 (1)   07:27	12:27 (2)   07:19	11:21 (2)   08:13	10844	
26   21:37	97 19:41 (3)   20:39	17 18:57 (1)   19:27	112 14:19 (2)   17:20	109 13:10 (2)   16:32	16:28	
27   05:48	18:05 (3)   06:37	18:38 (1)   07:28	12:26 (2)   07:20	11:22 (2)   08:15	10844	
27   21:36	95 19:40 (3)   20:36	22 19:00 (1)   19:25	114 14:20 (2)   17:18	107 13:09 (2)   16:31	16:28	
28   05:49	18:06 (3)   06:39	18:36 (1)   07:30	12:24 (2)   07:22	11:23 (2)   08:16	10845	
28   21:34	94 19:40 (3)   20:34	26 19:02 (1)   19:22	115 14:19 (2)   17:16	106 13:09 (2)   16:30	16:29	
29   05:51	18:06 (3)   06:41	18:33 (1)   07:32	12:24 (2)   07:24	11:23 (2)   08:18	10845	
29   21:33	93 19:39 (3)   20:32	30 19:03 (1)   19:20	116 14:20 (2)   17:14	105 13:08 (2)   16:29	16:30	
30   05:52	18:06 (3)   06:42	18:32 (1)   07:33	12:23 (2)   07:26	11:23 (2)   08:19	10845	
30   21:31	92 19:38 (3)   20:30	32 19:04 (1)   19:18	117 14:20 (2)   17:12	103 13:06 (2)   16:28	16:31	
31   05:54	18:08 (3)   06:44	18:30 (1)		07:28	11:24 (2)	10845
31   21:29	90 19:38 (3)   20:27	35 19:05 (1)		17:10	101 13:05 (2)	16:32
Potential sun hours	503	454	381	331	265	242
Total, worst case	3199	1265	2588	3578	1701	
Sun reduction	0,40	0,41	0,37	0,34	0,23	
Oper. time red.	0,95	0,95	0,95	0,95	0,95	
Wind dir. red.	0,55	0,56	0,67	0,69	0,69	
Total reduction	0,21	0,22	0,24	0,23	0,15	
Total, real	680	279	615	812	261	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: F - Meijerinkstraat 9

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June
1   08:45	08:18	15:11 (2)	07:24	15:12 (2)	07:13	18:17 (3)
1   16:33	17:22	52	16:03 (2)	18:14	52	06:07
2   08:45	08:16	15:10 (2)	07:22	15:14 (2)	07:10	19:08 (3)
2   16:34	17:23	54	16:04 (2)	18:15	48	21:00
3   08:45	08:14	15:11 (2)	07:19	15:16 (2)	07:08	18:17 (3)
3   16:35	17:25	55	16:06 (2)	18:17	45	06:05
4   08:44	08:13	15:10 (2)	07:17	15:18 (2)	07:06	18:16 (3)
4   16:37	17:27	56	16:06 (2)	18:19	42	06:02
5   08:44	08:11	15:09 (2)	07:15	15:19 (2)	07:03	18:16 (3)
5   16:38	17:29	58	16:07 (2)	18:21	38	06:00
6   08:44	08:09	15:08 (2)	07:13	15:57 (2)	20:15	19:07 (3)
6   16:39	17:31	59	16:07 (2)	18:23	33	21:06
7   08:43	08:08	15:08 (2)	07:10	15:22 (2)	07:01	18:16 (3)
7   16:40	17:33	60	16:08 (2)	18:24	26	05:58
8   08:43	08:06	15:07 (2)	07:08	15:52 (2)	20:18	19:06 (3)
8   16:42	17:35	61	16:08 (2)	18:26	18	21:10
9   08:42	08:04	15:07 (2)	07:06	15:29 (2)	06:57	18:16 (3)
9   16:43	17:36	62	16:09 (2)	18:28	18	05:54
10   08:42	08:02	15:07 (2)	07:04	15:47 (2)	20:20	19:05 (3)
10   16:44	17:38	63	16:10 (2)	18:30	49	21:53
11   08:41	08:01	15:07 (2)	07:01	17:48 (1)	06:50	18:18 (3)
11   16:46	17:40	64	16:11 (2)	18:32	7	05:49
12   08:41	07:59	15:07 (2)	06:59	17:55 (1)	20:25	19:03 (3)
12   16:47	17:42	64	16:11 (2)	18:33	45	21:16
13   08:40	07:57	15:07 (2)	06:57	17:44 (1)	06:47	18:17 (3)
13   16:49	17:44	64	16:11 (2)	18:35	15	05:51
14   08:39	07:55	15:06 (2)	06:54	17:59 (1)	20:27	19:04 (3)
14   16:50	17:46	65	16:11 (2)	18:37	43	21:15
15   08:38	07:53	15:06 (2)	06:52	17:42 (1)	06:45	19:04 (3)
15   16:52	17:48	66	16:12 (2)	18:39	19	21:55
16   08:38	07:51	15:06 (2)	06:50	18:01 (1)	20:29	19:00 (3)
16   16:53	17:50	66	16:12 (2)	18:40	41	21:57
17   08:37	07:49	15:06 (2)	06:48	18:02 (1)	20:31	19:00 (3)
17   16:55	17:51	65	16:11 (2)	18:42	39	21:57
18   08:36	07:47	15:06 (2)	06:45	17:39 (1)	06:41	18:59 (3)
18   16:57	17:53	65	16:11 (2)	18:44	24	21:56
19   08:35	07:45	15:06 (2)	06:43	18:03 (1)	20:32	18:21 (3)
19   16:58	17:55	65	16:11 (2)	18:46	37	05:43
20   08:34	07:43	15:06 (2)	06:41	17:38 (1)	06:39	18:58 (3)
20   17:00	17:57	64	16:10 (2)	18:47	26	21:23
21   08:32	15:28 (2)	07:41	15:07 (2)	06:38	33	05:44
21   17:02	14	15:42 (2)	17:59	16:10 (2)	18:49	18:20 (3)
22   08:31	15:24 (2)	07:39	15:07 (2)	06:36	33	05:44
22   17:03	21	15:45 (2)	18:01	16:10 (2)	18:51	19:03 (3)
23   08:30	15:22 (2)	07:37	15:08 (2)	06:34	35	22:00
23   17:05	26	15:48 (2)	18:03	16:10 (2)	18:53	19:04 (3)
24   08:29	15:21 (2)	07:35	15:08 (2)	06:31	37	22:01
24   17:07	30	15:51 (2)	18:04	16:08 (2)	18:54	19:05 (3)
25   08:28	15:19 (2)	07:32	15:09 (2)	06:29	40	22:01
25   17:09	34	15:53 (2)	18:06	16:08 (2)	18:56	18:27 (3)
26   08:26	15:18 (2)	07:30	15:10 (2)	06:27	42	05:38
26   17:11	37	15:55 (2)	18:08	16:07 (2)	18:58	18:27 (3)
27   08:25	15:16 (2)	07:28	15:11 (2)	06:24	44	05:43
27   17:12	40	15:56 (2)	18:10	16:06 (2)	19:00	18:30 (3)
28   08:24	15:16 (2)	07:26	15:12 (2)	06:22	46	05:46
28   17:14	42	15:58 (2)	18:12	16:06 (2)	19:01	18:33 (3)
29   08:22	15:14 (2)			17:20	18:08 (3)	05:35
29   17:16	45	15:59 (2)		19:03 (2)	20:56	22:00
30   08:21	15:13 (2)			18:19 (3)	06:09	05:23
30   17:18	47	16:00 (2)		19:08 (3)	20:58	05:18
31   08:19	15:13 (2)			18:18 (3)		22:00
31   17:20	49	16:02 (2)		19:09 (3)		21:45
Potential sun hours	258		277	367	416	486
Total, worst case		385	1701	1004	820	500
Sun reduction		0,21	0,30	0,33	0,42	
Oper. time red.		0,95	0,95	0,95	0,95	
Wind dir. red.		0,70	0,70	0,64	0,61	
Total reduction		0,14	0,20	0,20	0,25	
Total, real		54	343	203	202	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
				Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: F - Meijerinkstraat 9

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

Operational time												
N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	July	August	September	October	November	December			
1	05:18	05:55	06:46	18:17 (3)	07:35	18:22 (1)	07:29	14:36 (2)   08:21	
	22:00	21:28	20:25	45	19:02 (3)   19:15	17	18:39 (1)   17:09	63   15:39 (2)   16:28	
2	05:19	05:57	06:47	18:15 (3)   07:37		18:25 (1)   07:31		14:36 (2)   08:22	
	22:00	21:26	20:23	47	19:02 (3)   19:13	11	18:36 (1)   17:07	62   15:38 (2)   16:27	
3	05:20	05:58	06:49	18:15 (3)   07:38			07:33	14:37 (2)   08:24	
	21:59	21:24	20:21	47	19:02 (3)   19:11		17:05	61   15:38 (2)   16:26	
4	05:21	06:00	06:50	18:14 (3)   07:40			07:35	14:37 (2)   08:25	
	21:59	21:23	20:18	49	19:03 (3)   19:08		17:03	61   15:38 (2)   16:26	
5	05:21	06:02	06:52	18:13 (3)   07:42		16:10 (2)   07:37		14:38 (2)   08:26	
	21:58	21:21	20:16	49	19:02 (3)   19:06	11	16:21 (2)   17:01	59   15:37 (2)   16:25	
6	05:22	06:03	06:54	18:12 (3)   07:44		16:04 (2)   07:38		14:39 (2)   08:28	
	21:58	21:19	20:14	51	19:03 (3)   19:04	22	16:26 (2)   16:59	58   15:37 (2)   16:25	
7	05:23	06:05	06:55	18:11 (3)   07:45		16:00 (2)   07:40		14:40 (2)   08:29	
	21:57	21:17	20:11	51	19:02 (3)   19:01	29	16:29 (2)   16:58	56   15:36 (2)   16:24	
8	05:24	06:06	06:57	18:11 (3)   07:47		15:56 (2)   07:42		14:40 (2)   08:30	
	21:57	21:15	20:09	51	19:02 (3)   18:59	35	16:31 (2)   16:56	55   15:35 (2)   16:24	
9	05:25	06:08	06:59	18:10 (3)   07:49		15:53 (2)   07:44		14:41 (2)   08:31	
	21:56	21:14	20:07	51	19:01 (3)   18:57	40	16:33 (2)   16:54	54   15:35 (2)   16:24	
10	05:26	06:10	07:00	18:10 (3)   07:50		15:51 (2)   07:46		14:42 (2)   08:33	
	21:55	21:12	20:04	51	19:01 (3)   18:55	44	16:35 (2)   16:53	52   15:34 (2)   16:24	
11	05:27	06:11	07:02	18:10 (3)   07:52		15:49 (2)   07:47		14:44 (2)   08:34	
	21:54	21:10	20:02	51	19:01 (3)   18:52	47	16:36 (2)   16:51	49   15:33 (2)   16:23	
12	05:28	06:13	07:04	18:10 (3)   07:54		15:47 (2)   07:49		14:45 (2)   08:35	
	21:54	21:08	20:00	50	19:00 (3)   18:50	50	16:37 (2)   16:50	47   15:32 (2)   16:23	
13	05:29	06:14	07:05	18:10 (3)   07:56		15:45 (2)   07:51		14:46 (2)   08:36	
	21:53	21:06	19:57	50	19:00 (3)   18:48	52	16:37 (2)   16:48	45   15:31 (2)   16:23	
14	05:30	06:16	07:07	18:09 (3)   07:57		15:44 (2)   07:53		14:48 (2)   08:37	
	21:52	21:04	19:55	49	18:58 (3)   18:46	54	16:38 (2)   16:47	42   15:30 (2)   16:23	
15	05:32	06:18	07:09	18:10 (3)   07:59		15:43 (2)   07:55		14:49 (2)   08:38	
	21:51	21:02	19:53	48	18:58 (3)   18:43	56	16:39 (2)   16:45	40   15:29 (2)   16:23	
16	05:33	06:19	07:10	18:11 (3)   08:01		15:42 (2)   07:56		14:51 (2)   08:38	
	21:50	21:00	19:50	46	18:57 (3)   18:41	58	16:40 (2)   16:44	37   15:28 (2)   16:23	
17	05:34	06:21	07:12	18:10 (3)   08:03		15:41 (2)   07:58		14:53 (2)   08:39	
	21:49	20:58	19:48	45	18:55 (3)   18:39	59	16:40 (2)   16:42	33   15:26 (2)   16:24	
18	05:35	06:23	07:13	18:11 (3)   08:04		15:40 (2)   08:00		14:55 (2)   08:40	
	21:48	20:56	19:46	43	18:54 (3)   18:37	61	16:41 (2)   16:41	30   15:25 (2)   16:24	
19	05:37	06:24	07:15	18:11 (3)   08:06		15:38 (2)   08:02		14:56 (2)   08:41	
	21:46	20:54	19:43	41	18:52 (3)   18:35	62	16:40 (2)   16:40	26   15:22 (2)   16:24	
20	05:38	06:26	07:17	18:13 (3)   08:08		15:38 (2)   08:03		14:59 (2)   08:41	
	21:45	20:52	19:41	38	18:51 (3)   18:33	62	16:40 (2)   16:38	21   15:20 (2)   16:24	
21	05:39	06:27	07:18	18:14 (3)   08:10		15:37 (2)   08:05		15:03 (2)   08:42	
	21:44	20:49	19:39	35	18:49 (3)   18:30	64	16:41 (2)   16:37	14   15:17 (2)   16:25	
22	05:41	06:29	07:20	18:15 (3)   08:11		15:37 (2)   08:07		08:42	
	21:43	20:47	19:36	34	18:49 (1)   18:28	64	16:41 (2)   16:36	16:25	
23	05:42	06:31	18:37 (3)   07:22	18:17 (3)   08:13		15:36 (2)   08:08		08:43	
	21:41	20:45	13	18:50 (3)   19:34	32	18:49 (1)   18:26	65	16:41 (2)   16:35	16:26
24	05:43	06:32	18:32 (3)   07:23	18:19 (1)   08:15		15:36 (2)   08:10		08:43	
	21:40	20:43	21	18:53 (3)   19:32	30	18:49 (1)   18:24	65	16:41 (2)   16:34	16:26
25	05:45	06:34	18:29 (3)   07:25	18:18 (1)   07:17		14:36 (2)   08:12		08:44	
	21:39	20:41	26	18:55 (3)   19:29	29	18:47 (1)   17:22	65	15:41 (2)   16:33	16:27
26	05:46	06:36	18:26 (3)   07:27	18:19 (1)   07:19		14:36 (2)   08:13		08:44	
	21:37	20:39	30	18:56 (3)   19:27	28	18:47 (1)   17:20	65	15:41 (2)   16:32	16:28
27	05:48	06:37	18:25 (3)   07:28	18:19 (1)   07:20		14:36 (2)   08:15		08:44	
	21:36	20:36	33	18:58 (3)   19:25	27	18:46 (1)   17:18	65	15:41 (2)   16:31	16:28
28	05:49	06:39	18:23 (3)   07:30	18:19 (1)   07:22		14:36 (2)   08:16		08:45	
	21:34	20:34	37	19:00 (3)   19:22	25	18:44 (1)   17:16	65	15:41 (2)   16:30	16:29
29	05:51	06:41	18:21 (3)   07:32	18:20 (1)   07:24		14:36 (2)   08:18		08:45	
	21:33	20:32	39	19:00 (3)   19:20	23	18:43 (1)   17:14	65	15:41 (2)   16:29	16:30
30	05:52	06:42	18:20 (3)   07:33	18:21 (1)   07:26		14:35 (2)   08:19		08:45	
	21:31	20:30	41	19:01 (3)   19:18	21	18:42 (1)   17:12	64	15:39 (2)   16:28	16:31
31	05:54	06:44	18:18 (3)   07:27	19:01 (3)   19:10		17:10	63   15:39 (2)   16:32	08:45	
	21:29	20:27	43					149	
Potential sun hours	503	454		381	331	265		242	
Total, worst case			283	1237	1480	965			
Sun reduction			0,41	0,37	0,34	0,23			
Oper. time red.			0,95	0,95	0,95	0,95			
Wind dir. red.			0,61	0,61	0,70	0,70			
Total reduction			0,24	0,22	0,23	0,15			
Total, real			68	269	338	149			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: G - Meijerinkstraat 10

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Assumptions for shadow calculations

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:45	08:18		07:24	17:00 (2)	07:13	18:57 (3)	06:07	05:21	05:18	05:55	06:46
	16:33	17:21		18:14	32	17:32 (2)	20:08	20	19:17 (3)	21:00	21:46	22:00
2	08:45	08:16		07:22	17:00 (2)	07:10	18:58 (3)	06:05	05:21	05:19	05:57	06:47
	16:34	17:23		18:15	33	17:33 (2)	20:10	18	19:16 (3)	21:01	21:47	22:00
3	08:45	08:14		07:19	17:00 (2)	07:08	19:00 (3)	06:03	05:20	05:20	05:58	06:49
	16:35	17:25		18:17	33	17:33 (2)	20:12	13	19:13 (3)	21:03	21:48	21:59
4	08:44	08:13		07:17	17:00 (2)	07:06	19:04 (3)	06:02	05:19	05:21	06:00	06:50
	16:37	17:27		18:19	33	17:33 (2)	20:13	4	19:08 (3)	21:05	21:49	21:23
5	08:44	08:11		07:15	16:59 (2)	07:03			06:00	05:18	05:21	06:52
	16:38	17:29		18:21	33	17:32 (2)	20:15		21:06	21:50	21:58	21:21
6	08:44	08:09		07:13	17:00 (2)	07:01			05:58	05:18	05:22	06:03
	16:39	17:31		18:23	31	17:31 (2)	20:17		21:08	21:51	21:58	20:14
7	08:43	08:08		07:10	17:01 (2)	06:59			05:56	05:17	05:23	06:55
	16:40	17:33		18:24	30	17:31 (2)	20:18		21:10	21:52	21:57	20:11
8	08:43	08:06		07:08	17:00 (2)	06:56			05:54	05:17	05:24	06:57
	16:42	17:35		18:26	29	17:29 (2)	20:20		21:11	21:53	21:57	21:15
9	08:42	08:04		07:06	17:02 (2)	06:54			05:52	05:16	05:25	06:59
	16:43	17:36		18:28	26	17:28 (2)	20:22		21:13	21:54	21:56	21:14
10	08:42	08:02		07:04	17:03 (2)	06:52			05:51	05:16	05:26	06:09
	16:44	17:38		18:30	24	17:27 (2)	20:24		21:15	21:55	21:55	21:12
11	08:41	08:00		07:01	17:04 (2)	06:50			05:49	05:15	05:27	06:11
	16:46	17:40		18:32	20	17:24 (2)	20:25		21:16	21:55	21:54	21:10
12	08:41	07:59		06:59	17:06 (2)	06:47			05:47	05:15	05:28	06:13
	16:47	17:42		18:33	16	17:22 (2)	20:27		21:18	21:56	21:54	21:08
13	08:40	07:57		06:57	17:11 (2)	06:45			05:46	05:15	05:29	06:14
	16:49	17:44		18:35	7	17:18 (2)	20:29		21:19	21:57	21:53	21:06
14	08:39	07:55		06:54	18:02 (1)	06:43			05:44	05:14	05:30	06:16
	16:50	17:46		18:37	9	18:11 (1)	20:31		21:21	21:57	21:52	21:04
15	08:38	07:53		06:52	18:00 (1)	06:41			05:42	05:14	05:32	06:18
	16:52	17:48		18:39	13	18:13 (1)	20:32		21:23	21:58	21:51	21:02
16	08:38	07:51		06:50	17:59 (1)	06:39			05:41	05:14	05:33	06:19
	16:53	17:50		18:40	16	18:15 (1)	20:34		21:24	21:58	21:50	21:00
17	08:37	07:49		06:47	17:57 (1)	06:36			05:39	05:14	05:34	06:21
	16:55	17:51		18:42	19	18:16 (1)	20:36		21:26	21:59	21:49	20:58
18	08:36	07:47		06:45	17:57 (1)	06:34			05:38	05:14	05:35	06:23
	16:57	17:53		18:44	19	18:16 (1)	20:37		21:27	21:59	21:48	20:56
19	08:35	07:45		06:43	17:57 (1)	06:32			05:37	05:14	05:37	06:24
	16:58	17:55		18:46	22	18:19 (3)	20:39		21:29	22:00	21:46	20:54
20	08:34	07:43	17:14 (2)	06:41	17:56 (1)	06:30			05:35	05:14	05:38	06:26
	17:00	17:57	6	17:20 (2)	24	18:20 (3)	20:41		21:30	22:00	21:45	20:51
21	08:32	07:41		17:10 (2)	06:38	17:56 (1)	06:28		05:34	05:14	05:39	06:27
	17:02	17:59	15	17:25 (2)	25	18:21 (3)	20:43		21:32	22:00	21:44	20:49
22	08:31	07:39		17:08 (2)	06:36	17:57 (1)	06:26		05:32	05:14	05:41	06:29
	17:03	18:01	19	17:27 (2)	25	18:22 (3)	20:44		21:33	22:00	21:43	20:47
23	08:30	07:37		17:06 (2)	06:34	17:57 (3)	06:23		05:31	05:15	05:42	06:31
	17:05	18:03	23	17:29 (2)	25	18:22 (3)	20:46		21:34	22:01	21:41	20:45
24	08:29	07:35		17:04 (2)	06:31	17:56 (3)	06:21		05:30	05:15	05:43	06:32
	17:07	18:04	26	17:30 (2)	27	18:23 (3)	20:48		21:36	22:01	21:40	20:43
25	08:28	07:32		17:03 (2)	06:29	17:56 (3)	06:19		05:29	05:15	05:45	06:34
	17:09	18:06	28	17:31 (2)	27	18:23 (3)	20:49		21:37	22:01	21:39	20:41
26	08:26	07:30		17:02 (2)	06:27	17:55 (3)	06:17		05:28	05:16	05:46	06:36
	17:11	18:08	30	17:32 (2)	27	18:22 (3)	20:51		21:38	22:01	21:37	20:39
27	08:25	07:28		17:01 (2)	06:24	17:55 (3)	06:15		05:26	05:16	05:48	06:37
	17:12	18:10	31	17:32 (2)	27	18:22 (3)	20:53		21:40	22:01	21:36	20:36
28	08:24	07:26		17:01 (2)	06:22	17:55 (3)	06:13		05:25	05:17	05:49	06:39
	17:14	18:12	32	17:33 (2)	27	18:22 (3)	20:54		21:41	22:01	21:34	20:34
29	08:22				07:20	18:55 (3)	06:11		05:24	05:17	05:51	06:41
	17:16				20:03	26	19:21 (3)	20:56		21:42	22:00	21:33
30	08:21				07:17	18:55 (3)	06:09		05:23	05:18	05:52	06:42
	17:18				20:05	25	19:20 (3)	20:58		21:44	22:00	21:31
31	08:19				07:15	18:56 (3)			05:22	05:14	05:44	
	17:20				20:06	23	19:19 (3)			21:45	22:00	20:27
Potential sun hours	258	277		367		416			486	500	503	454
Total, worst case											462	560
Sun reduction											0.37	0.34
Oper. time red.											0.95	0.95
Wind dir. red.											0.60	0.65
Total reduction											0.21	0.21
Total, real											99	118
											331	265
												242

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
				Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: H - Hungerinkpad 5

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,34	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June	July	August	September	October	November	December																																																																								
1   08:45	08:18	07:24		07:13	19:14 (3)	06:07	05:21	05:18	05:55	06:46	19:14 (3)	07:35																																																																								
16:33   17:21	18:14		20:08	24	19:38 (3)	21:00	21:46	22:00	21:28	20:25	18	18:34 (2)																																																																								
2   08:45	08:16	07:22		07:10	19:13 (3)	06:05	05:21	05:19	05:57	06:47	19:11 (3)	07:37																																																																								
16:34   17:23	18:15		20:10	26	19:39 (3)	21:01	21:47	22:00	21:26	20:23	21	19:32 (3)																																																																								
3   08:45	08:14	07:19		07:08	19:13 (3)	06:03	05:20	05:20	05:58	06:49	19:10 (3)	07:38																																																																								
16:35   17:25	18:17		20:12	26	19:39 (3)	21:03	21:48	21:59	21:24	20:21	23	19:33 (3)																																																																								
4   08:44	08:13	07:17		07:06	19:13 (3)	06:02	05:19	05:21	06:00	06:50	19:09 (3)	07:40																																																																								
16:37   17:27	18:19		20:13	26	19:38 (3)	21:05	21:49	21:59	21:23	20:18	24	19:33 (3)																																																																								
5   08:44	08:11	07:15	17:34 (2)	07:03	19:12 (3)	06:00	05:18	05:21	06:01	06:52	19:08 (3)	07:42																																																																								
16:38   17:29	18:21	13	17:47 (2)	20:15	19:38 (3)	21:06	21:50	21:58	21:21	20:16	26	19:34 (3)																																																																								
6   08:44	08:09	07:13		17:32 (2)	07:01	19:12 (3)	05:58	05:18	05:22	06:54	19:08 (3)	07:43																																																																								
16:39   17:31	18:23	18	17:50 (2)	20:17	26	19:38 (3)	21:08	21:51	21:58	20:14	26	19:34 (3)																																																																								
7   08:43	08:08	07:10		17:30 (2)	06:59	19:12 (3)	05:56	05:17	05:23	06:55	19:07 (3)	07:45																																																																								
16:40   17:33	18:24	22	17:52 (2)	20:18	26	19:38 (3)	21:10	21:52	21:27	20:11	26	19:33 (3)																																																																								
8   08:43	08:06	07:08		17:27 (2)	06:56	19:12 (3)	05:54	05:17	05:24	06:57	19:07 (3)	07:47																																																																								
16:42   17:35	18:26	25	17:52 (2)	20:20	24	19:36 (3)	21:11	21:53	21:27	20:09	26	19:33 (3)																																																																								
9   08:42	08:04	07:06		17:26 (2)	06:54	19:12 (3)	05:52	05:16	05:25	06:59	19:06 (3)	07:49																																																																								
16:43   17:36	18:28	28	17:54 (2)	20:22	23	19:35 (3)	21:13	21:54	21:26	20:07	26	19:32 (3)																																																																								
10   08:42	08:02	07:04		17:25 (2)	06:52	19:13 (3)	05:51	05:16	05:26	07:00	19:07 (3)	07:50																																																																								
16:44   17:38	18:30	30	17:55 (2)	20:24	21	19:34 (3)	21:15	21:55	21:22	20:04	25	19:32 (3)																																																																								
11   08:41	08:00	07:01		17:24 (2)	06:50	19:15 (3)	05:49	05:15	05:27	07:02	19:07 (3)	07:52																																																																								
16:46   17:40	18:32	30	17:54 (2)	20:25	18	19:33 (3)	21:16	21:55	21:54	20:02	24	19:31 (3)																																																																								
12   08:41	07:59	06:59		17:23 (2)	06:47	19:16 (3)	05:47	05:15	05:28	07:04	19:07 (3)	07:54																																																																								
16:47   17:42	18:33	32	17:55 (2)	20:27	14	19:30 (3)	21:18	21:56	21:54	20:00	22	19:29 (3)																																																																								
13   08:40	07:57	06:57		17:23 (2)	06:45	19:19 (3)	05:46	05:15	05:29	07:05	19:08 (3)	07:56																																																																								
16:49   17:44	18:35	32	17:55 (2)	20:29	7	19:26 (3)	21:19	21:57	21:53	21:06	19:57	20	19:28 (3)																																																																							
14   08:39	07:55	06:54		17:22 (2)	06:43	19:22 (3)	05:44	05:14	05:30	07:06	19:09 (3)	07:57																																																																								
16:50   17:46	18:37	33	17:55 (2)	20:31		21:21	21:57	21:52	21:04	19:55	17	19:26 (3)																																																																								
15   08:38	07:53	06:52		17:22 (2)	06:41	19:23 (3)	05:41	05:14	05:32	07:08	19:11 (3)	07:59																																																																								
16:52   17:48	18:39	33	17:55 (2)	20:32		21:22	21:58	21:51	21:02	19:53	13	19:24 (3)																																																																								
16:53   08:37	07:51	06:50		17:22 (2)	06:39	19:24 (3)	05:41	05:14	05:33	06:19	19:10	07:51																																																																								
16:55   17:50	18:40	33	17:55 (2)	20:34		21:24	21:58	21:50	21:00	19:50	4	19:19 (3)																																																																								
17   08:37	07:49	06:47		17:22 (2)	06:36	19:25 (3)	05:39	05:14	05:34	06:21	19:12 (2)	07:58																																																																								
16:55   17:51	18:42	31	17:53 (2)	20:36		21:26	21:59	21:49	20:58	19:48		19:39																																																																								
18   08:36	07:47	06:45		17:22 (2)	06:34	19:26 (3)	05:38	05:14	05:35	06:23		19:40																																																																								
16:57   17:53	18:44	31	17:53 (2)	20:37		21:27	21:59	21:47	20:56	19:46		19:37																																																																								
19   08:35	07:45	06:43		17:23 (2)	06:32	19:27 (3)	05:37	05:14	05:37	06:24		19:17 (2)																																																																								
16:58   17:55	18:46	29	17:52 (2)	20:39		21:29	22:00	21:46	20:54	19:43	11	18:28 (2)																																																																								
20   08:34	07:43	06:41		17:23 (2)	06:30	19:28 (3)	05:35	05:14	05:38	06:26		18:35																																																																								
17:00   17:57	18:47	28	17:51 (2)	20:41		21:30	22:00	21:45	20:51	19:41	17	18:14 (2)																																																																								
21   08:32	07:41	06:38		17:24 (2)	06:28	19:29 (3)	05:34	05:14	05:39	06:27		18:31 (2)																																																																								
17:02   17:59	18:49	25	17:49 (2)	20:43		21:32	22:00	21:44	20:49	19:39	21	18:33 (2)																																																																								
22   08:31	07:39	06:36		17:26 (2)	06:26	19:30 (3)	05:32	05:14	05:41	07:20	18:09 (2)	08:11																																																																								
17:03   18:01	22	17:48 (2)	20:44		21:33	22:00	21:43	20:47	19:36	25	18:34 (2)	08:17																																																																								
23   08:30	07:37	06:34		17:27 (2)	06:23	19:31 (3)	05:31	05:15	05:42	06:31		18:08 (2)																																																																								
17:05   18:03	18:53	18	17:45 (2)	20:46		21:34	22:01	21:41	20:45	19:34	27	18:35 (2)																																																																								
24   08:29	07:34	06:31		17:29 (2)	06:21	19:32 (3)	05:30	05:15	05:43	06:32		18:07 (2)																																																																								
17:07   18:04	18:54	14	17:43 (2)	20:48		21:36	22:01	21:40	20:43	19:32	29	18:36 (2)																																																																								
25   08:28	07:32	06:29			06:19	19:33 (3)	05:29	05:15	05:45	06:34		18:05 (2)																																																																								
17:09   18:06	18:56			20:49		21:37	22:01	21:39	20:41	19:29	30	18:35 (2)																																																																								
26   08:26	07:30	06:27			06:17	19:34 (3)	05:28	05:16	05:46	06:36		18:04 (2)																																																																								
17:11   18:08	18:58			20:51		21:38	22:01	21:37	20:39	19:27	32	18:36 (2)																																																																								
27   08:25	07:28	06:24			06:15	19:35 (3)	05:26	05:16	05:48	06:37		18:04 (2)																																																																								
17:12   18:10	18:59			20:53		21:40	22:01	21:36	20:36	19:24	32	18:36 (2)																																																																								
28   08:24	07:26	06:22		18:22 (3)	06:13	19:36 (3)	05:25	05:17	05:49	06:39		18:03 (2)																																																																								
17:14   18:12	19:01	12	18:34 (3)	20:54		21:41	22:01	21:34	20:34	19:22	32	18:35 (2)																																																																								
29   08:22				07:20	19:19 (3)	06:11	05:24	05:17	05:51	06:41	07:32	18:03 (2)																																																																								
17:16   20:03	16	19:35 (3)	20:56			21:42	22:00	21:33	20:32	19:20	32	18:35 (2)																																																																								
30   08:21				07:17	19:17 (3)	06:09	05:23	05:18	05:52	06:42	19:20 (3)	07:33																																																																								
17:18   20:05	20	19:37 (3)	20:58			21:44	22:00	21:31	20:30	8	18:28 (3)	07:17																																																																								
31   08:19				07:15	19:16 (3)	06:11	05:22	05:19	05:54	06:44	19:16 (3)																																																																									
17:20   20:06	22	19:38 (3)				21:45	22:00	21:29	20:27	14	19:30 (3)	07:28																																																																								
Potential sun hours   258   277   367   416   486   500   503   454   5   22   661   213	Total, worst case	Sun reduction	Oper. time red.	Wind dir. red.	Total reduction	Total, real		597		287						661		213			0.33		0.42						0.37		0.34			0.95		0.95						0.95		0.95			0.62		0.58						0.58		0.60			0.19		0.23						0.23		0.21			116		67						5		43	
Total, worst case	Sun reduction	Oper. time red.	Wind dir. red.	Total reduction	Total, real		597		287						661		213			0.33		0.42						0.37		0.34			0.95		0.95						0.95		0.95			0.62		0.58						0.58		0.60			0.19		0.23						0.23		0.21			116		67						5		43		
Sun reduction	Oper. time red.	Wind dir. red.	Total reduction	Total, real		597		287						661		213			0.33		0.42						0.37		0.34			0.95		0.95						0.95		0.95			0.62		0.58						0.58		0.60			0.19		0.23						0.23		0.21			116		67						5		43			
Oper. time red.	Wind dir. red.	Total reduction	Total, real		597		287						661		213			0.33		0.42						0.37		0.34			0.95		0.95						0.95		0.95			0.62		0.58						0.58		0.60			0.19		0.23						0.23		0.21			116		67						5		43				
Wind dir. red.	Total reduction	Total, real		597		287						661		213			0.33		0.42						0.37		0.34			0.95		0.95						0.95		0.95			0.62		0.58						0.58		0.60			0.19		0.23						0.23		0.21			116		67						5		43					
Total reduction	Total, real		597		287						661		213			0.33		0.42						0.37		0.34			0.95		0.95						0.95		0.95			0.62		0.58						0.58		0.60			0.19		0.23						0.23		0.21			116		67						5		43						
Total, real																																																																																				
	597		287						661		213																																																																									
	0.33		0.42						0.37		0.34																																																																									
	0.95		0.95						0.95		0.95																																																																									
	0.62		0.58						0.58		0.60																																																																									
	0.19		0.23						0.23		0.21																																																																									
	116		67						5		43																																																																									

Table layout: For each day in each month the following matrix apply

Day in month	Sunrise (hh:mm)	Sunset (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: I - Rustoordlaan 47

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:45	08:18	07:24	07:13	06:07	19:54 (2)	05:21	05:18	05:55	20:04 (2)	06:46	07:35
	16:33	17:21	18:14	20:08	21:00	20:23 (2)	21:46	22:00	21:28	49	20:56 (3)	20:25
2	08:45	08:16	07:22	07:10	06:05	19:53 (2)	05:21	05:19	05:57	20:04 (2)	06:47	07:37
	16:34	17:23	18:15	20:10	21:01	30	20:23 (2)	21:47	22:00	21:26	49	20:56 (3)
3	08:45	08:14	07:19	07:08	06:03	19:52 (2)	05:20	05:20	05:58	20:03 (2)	06:49	07:38
	16:35	17:25	18:17	20:12	21:03	31	20:23 (2)	21:48	21:59	21:24	48	20:54 (3)
4	08:44	08:13	07:17	07:06	06:02	19:52 (2)	05:19	05:21	06:00	20:03 (2)	06:50	07:40
	16:37	17:27	18:19	20:13	21:05	31	20:23 (2)	21:49	21:59	21:23	46	20:53 (3)
5	08:44	08:11	07:15	07:03	06:00	19:52 (2)	05:18	05:21	06:02	20:02 (2)	06:52	07:42
	16:38	17:29	18:21	20:15	21:06	31	20:23 (2)	21:50	21:58	21:21	44	20:51 (3)
6	08:44	08:09	07:13	07:01	05:58	19:52 (2)	05:18	05:22	06:03	20:02 (2)	06:54	07:43
	16:39	17:31	18:23	20:17	21:08	39	20:39 (3)	21:51	21:58	21:19	42	20:50 (3)
7	08:43	08:08	07:10	06:59	05:56	19:52 (2)	05:17	05:23	06:05	20:02 (2)	06:55	07:45
	16:40	17:33	18:24	20:18	21:10	42	20:40 (3)	21:52	21:57	21:17	37	20:48 (3)
8	08:43	08:06	07:08	06:56	05:54	19:53 (2)	05:17	05:24	06:06	20:02 (2)	06:57	07:47
	16:42	17:35	18:26	20:20	21:11	45	20:42 (3)	21:53	21:57	21:15	31	20:33 (2)
9	08:42	08:04	07:06	06:54	05:52	19:53 (2)	05:16	05:25	06:08	20:01 (2)	06:59	07:49
	16:43	17:36	18:28	20:22	21:13	46	20:43 (3)	21:54	21:56	21:14	31	20:32 (2)
10	08:42	08:02	07:04	06:52	05:51	19:53 (2)	05:16	05:26	06:10	20:02 (2)	07:00	07:50
	16:44	17:38	18:30	20:24	21:15	47	20:44 (3)	21:55	21:55	21:12	30	20:32 (2)
11	08:41	08:00	07:01	06:50	05:49	19:54 (2)	05:15	05:27	06:11	20:01 (2)	07:02	07:52
	16:46	17:40	18:32	20:25	21:16	48	20:46 (3)	21:55	21:54	21:10	30	20:31 (2)
12	08:41	07:59	06:59	06:47	05:47	19:54 (2)	05:15	05:28	06:13	20:02 (2)	07:04	07:54
	16:47	17:42	18:33	20:27	21:18	48	20:46 (3)	21:56	21:53	21:08	29	20:31 (2)
13	08:40	07:57	06:57	06:45	05:46	19:55 (2)	05:15	05:29	20:43 (3)	06:14	20:02 (2)	07:05
	16:49	17:44	18:35	20:29	21:19	48	20:47 (3)	21:57	21:53	21:26	4	20:47 (3)
14	08:39	07:55	06:54	06:43	05:44	19:55 (2)	05:14	05:30	20:41 (3)	06:16	20:03 (2)	07:07
	16:50	17:46	18:37	20:30	21:21	48	20:47 (3)	21:57	21:52	8	20:49 (3)	21:04
15	08:38	07:53	06:52	06:41	05:43	19:57 (2)	05:14	05:32	20:39 (3)	06:18	20:03 (2)	07:08
	16:52	17:48	18:39	20:32	21:22	45	20:47 (3)	21:58	21:51	12	20:51 (3)	21:02
16	08:37	07:51	06:50	06:39	05:41	19:57 (2)	05:14	05:33	20:38 (3)	06:19	20:04 (2)	07:10
	16:53	17:50	18:40	20:34	21:24	43	20:47 (3)	21:58	21:50	14	20:52 (3)	21:00
17	08:37	07:49	06:47	06:36	05:39	19:59 (2)	05:14	05:34	20:37 (3)	06:21	20:05 (2)	07:12
	16:55	17:51	18:42	20:36	21:26	41	20:47 (3)	21:59	21:49	15	20:52 (3)	20:58
18	08:36	07:47	06:45	06:34	05:38	20:01 (2)	05:14	05:35	20:37 (3)	06:23	20:07 (2)	07:13
	16:57	17:53	18:44	20:37	21:27	36	20:47 (3)	21:59	21:47	17	20:54 (3)	20:56
19	08:35	07:45	06:43	06:32	05:37	20:03 (2)	05:14	05:37	20:36 (3)	06:24	20:09 (2)	07:15
	16:58	17:55	18:46	20:39	21:29	31	20:46 (3)	22:00	21:46	19	20:55 (3)	20:54
20	08:34	07:43	06:40	06:30	05:35	20:24 (3)	05:14	05:38	20:36 (3)	06:26	07:17	08:08
	17:00	17:57	18:47	20:41	21:30	22	20:46 (3)	22:00	21:45	19	20:55 (3)	20:51
21	08:32	07:41	06:38	06:28	05:34	20:24 (3)	05:14	05:39	20:35 (3)	06:27	07:18	08:10
	17:02	17:59	18:49	20:43	21:31	22	20:46 (3)	22:00	21:44	20	20:55 (3)	20:49
22	08:31	07:39	06:36	06:26	05:32	20:25 (3)	05:14	05:41	20:34 (3)	06:29	07:20	08:11
	17:03	18:01	18:51	20:44	21:33	21	20:46 (3)	22:00	21:43	22	20:56 (3)	20:47
23	08:30	07:37	06:34	06:23	05:31	20:26 (3)	05:15	05:42	20:35 (3)	06:31	07:22	08:13
	17:05	18:03	18:53	20:46	21:34	20	20:46 (3)	22:01	21:41	22	20:57 (3)	20:45
24	08:29	07:34	06:31	06:21	20:03 (2)	05:30	20:27 (3)	05:15	05:43	20:15 (2)	06:32	07:23
	17:07	18:04	18:54	20:48	21:26	12	20:15 (2)	21:36	21:45	20:57 (3)	20:43	19:32
25	08:28	07:32	06:29	06:19	20:00 (2)	05:29	20:27 (3)	05:15	05:45	20:12 (2)	06:34	07:25
	17:09	18:06	18:56	20:49	17	20:17 (2)	21:37	21:18	20:45 (3)	20:21	19:29	17:22
26	08:26	07:30	06:27	06:17	19:58 (2)	05:28	20:28 (3)	05:16	05:46	20:10 (2)	06:36	07:27
	17:11	18:08	18:58	20:51	21	20:19 (2)	21:38	16	20:44 (3)	22:01	21:37	20:58 (3)
27	08:25	07:28	06:24	06:15	19:57 (2)	05:26	20:29 (3)	05:16	05:48	20:09 (2)	06:37	07:28
	17:12	18:10	18:59	20:53	23	20:20 (2)	21:40	15	20:44 (3)	22:01	21:36	41
28	08:24	07:26	06:22	06:13	19:55 (2)	05:25	20:30 (3)	05:17	05:49	20:08 (2)	06:39	07:30
	17:14	18:12	19:01	20:54	26	20:21 (2)	21:41	13	20:43 (3)	22:01	21:34	44
29	08:22	07:20	06:11	19:54 (2)	05:24	20:32 (3)	05:17	05:51	20:07 (2)	06:41	07:32	07:24
	17:16	20:03	20:56	27	20:21 (2)	21:42	9	20:41 (3)	22:00	21:33	45	20:57 (3)
30	08:21	07:17	06:09	19:54 (2)	05:23	20:33 (3)	05:18	05:52	20:05 (2)	06:42	07:33	07:26
	17:18	20:05	20:58	29	20:23 (2)	21:44	7	20:40 (3)	22:00	21:31	47	20:57 (3)
31	08:19	07:15					05:22		05:54	20:05 (2)	06:44	
	17:20	20:06					21:45		21:29	49	20:57 (3)	20:27
										454		
											381	331
												265
												242
Potential sun hours	258	277	367	416		486		500	503			
Total, worst case					155	940		499		617		
Sun reduction					0,42	0,42		0,40		0,41		
Oper. time red.					0,95	0,95		0,95		0,95		
Wind dir. red.					0,54	0,54		0,55		0,54		
Total reduction					0,21	0,22		0,21		0,21		
Total, real					33	204		104		130		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: J - Rustoordlaan 53

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
0,21	0,30	0,33	0,42	0,42	0,35	0,52	0,49	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June	July	August	September	October	November	December	
1   08:45	08:18	07:24	07:13	06:07	20:02 (2)	05:21	20:33 (3)	05:18	05:55	20:08 (2)	06:46	07:35	
16:33   17:21	18:14	20:08	21:00	24	20:26 (2)	21:46	16   20:49 (3)	05:22	21:28	46   20:57 (3)	05:25	19:15	
2   08:45	08:16	07:22	07:10	06:05	20:01 (2)	05:21	20:35 (3)	05:19	05:57	20:08 (2)	06:47	07:37	
16:34   17:23	18:15	20:10	21:01	26	20:27 (2)	21:47	15   20:50 (3)	02:20	21:26	45   20:56 (3)	03:23	19:13	
3   08:45	08:14	07:19	07:08	06:03	20:00 (2)	05:20	20:35 (3)	05:20	05:58	20:07 (2)	06:49	07:38	
16:35   17:25	18:17	20:12	21:03	28	20:28 (2)	21:48	14   20:49 (3)	01:59	21:24	42   20:54 (3)	02:21	19:11	
4   08:44	08:13	07:17	07:06	06:02	19:59 (2)	05:19	20:36 (3)	05:21	06:00	20:08 (2)	06:50	07:40	
16:37   17:27	18:19	20:13	21:05	29	20:28 (2)	21:49	12   20:48 (3)	01:59	21:23	38   20:53 (3)	02:18	19:08	
5   08:44	08:11	07:15	07:03	06:00	19:59 (2)	05:18	20:38 (3)	05:21	06:02	20:07 (2)	06:52	07:42	
16:38   17:29	18:21	20:15	21:06	30	20:29 (2)	21:50	9   20:47 (3)	01:58	21:21	32   20:39 (2)	02:16	19:06	
6   08:44	08:09	07:13	07:01	05:58	19:58 (2)	05:18	20:39 (3)	05:22	20:46 (3)	06:03	20:08 (2)	06:54	
16:39   17:31	18:23	20:17	21:08	31	20:29 (2)	21:51	7   20:46 (3)	01:58	6   20:52 (3)	21:19	31   20:39 (2)	02:14	
7   08:43	08:08	07:10	06:59	05:56	19:58 (2)	05:17	20:41 (3)	05:23	20:45 (3)	06:05	20:08 (2)	06:55	
16:40   17:33	18:24	20:18	21:10	31	20:29 (2)	21:52	4   20:45 (3)	01:57	8   20:53 (3)	21:17	30   20:38 (2)	02:11	
8   08:43	08:06	07:08	06:56	05:54	19:58 (2)	05:17	20:44 (3)	06:06	20:08 (2)	06:57	07:47	07:42	
16:42   17:35	18:26	20:20	21:11	31	20:29 (2)	21:53	21:57	11   20:55 (3)	21:15	30   20:38 (2)	02:09	18:59	
9   08:42	08:04	07:06	06:54	05:52	19:57 (2)	05:16	20:43 (3)	06:08	20:08 (2)	06:59	07:49	07:44	
16:43   17:36	18:28	20:22	21:13	39	20:43 (3)	21:54	21:56	13   20:56 (3)	21:14	29   20:37 (2)	02:07	18:57	
10   08:42	08:02	07:04	06:52	05:51	19:57 (2)	05:16	20:44 (3)	06:10	20:09 (2)	07:00	07:50	07:46	
16:44   17:38	18:30	20:24	21:15	43	20:44 (3)	21:55	21:55	15   20:57 (3)	21:12	28   20:37 (2)	02:04	18:55	
11   08:41	08:00	07:01	06:50	05:49	19:58 (2)	05:15	20:42 (3)	06:11	20:09 (2)	07:02	07:52	07:43	
16:46   17:40	18:32	20:25	21:16	45	20:46 (3)	21:55	21:54	16   20:58 (3)	21:10	26   20:35 (2)	02:02	18:52	
12   08:41	07:59	06:59	06:47	05:47	19:57 (2)	05:15	20:41 (3)	06:13	20:11 (2)	07:04	07:54	07:40	
16:47   17:42	18:33	20:27	21:18	47	20:47 (3)	21:56	21:53	17   20:58 (3)	21:08	24   20:35 (2)	02:00	18:50	
13   08:40	07:57	06:57	06:45	05:46	19:58 (2)	05:15	20:41 (3)	06:14	20:11 (2)	07:05	07:55	07:51	
16:49   17:44	18:35	20:29	21:19	49	20:49 (3)	21:57	21:53	18   20:59 (3)	21:06	22   20:33 (2)	02:19	18:48	
14   08:39	07:55	06:54	06:43	05:44	19:58 (2)	05:14	20:40 (3)	06:16	20:13 (2)	07:07	07:57	07:53	
16:50   17:46	18:37	20:31	21:21	51	20:50 (3)	21:57	21:52	20   21:00 (3)	21:04	19   20:32 (2)	02:19	18:46	
15   08:38	07:53	06:52	06:41	05:43	19:59 (2)	05:14	20:40 (3)	06:18	20:14 (2)	07:09	07:59	07:55	
16:52   17:48	18:39	20:32	21:22	51	20:51 (3)	21:58	21:51	20   21:00 (3)	21:02	15   20:29 (2)	02:19	18:43	
16:53   08:37	07:51	06:50	06:39	05:41	19:59 (2)	05:14	20:43 (3)	06:19	20:18 (2)	07:10	08:01	07:56	
16:55   17:50	18:40	20:34	21:24	51	20:51 (3)	21:58	21:50	21   20:00 (3)	21:00	8   20:26 (2)	02:16	18:41	
17   08:37	07:49	06:47	06:36	05:39	19:59 (2)	05:14	20:43 (3)	06:21	20:39 (3)	06:21	07:12	08:02	
16:55   17:51	18:42	20:36	21:26	52	20:52 (3)	21:59	21:49	22   20:01 (3)	20:58	19:48	18:39	16:42	
18   08:36	07:47	06:45	06:34	05:38	20:00 (2)	05:14	20:42 (3)	06:23	20:20 (2)	06:23	07:13	08:04	
16:57   17:53	18:44	20:37	21:27	50	20:52 (3)	21:59	21:47	30   21:02 (3)	20:56	19:46	18:37	16:41	
19   08:35	07:45	06:43	06:32	05:37	20:00 (2)	05:14	20:43 (3)	06:24	20:17 (2)	06:24	07:15	08:06	
16:58   17:55	18:46	20:39	21:29	49	20:52 (3)	22:00	21:46	36   21:02 (3)	20:54	19:43	18:35	16:40	
20   08:34	07:43	06:41	06:30	05:35	20:02 (2)	05:14	20:45	38   21:02 (3)	20:51	19:41	18:33	16:38	
17:00   17:57	18:47	20:41	21:30	47	20:52 (3)	22:00	21:45	38   21:02 (3)	20:51	19:41	18:33	16:24	
21   08:32	07:41	06:38	06:28	05:34	20:03 (2)	05:14	20:43 (3)	06:27	20:14 (2)	06:27	07:18	08:10	
17:02   17:59	18:49	20:43	21:31	45	20:52 (3)	22:00	21:44	43   21:02 (3)	20:49	19:39	18:30	16:37	
22   08:31	07:39	06:36	06:26	05:32	20:04 (2)	05:14	20:41 (3)	06:29	20:13 (2)	06:29	07:20	08:11	
17:03   18:01	18:51	20:44	21:33	43	20:53 (3)	22:00	21:43	44   21:02 (3)	20:47	19:36	18:28	16:25	
23   08:30	07:37	06:34	06:23	05:31	20:05 (2)	05:15	20:42 (3)	06:31	20:13 (2)	06:31	07:22	08:13	
17:05   18:03	18:53	20:46	21:34	42	20:53 (3)	22:01	21:41	46   21:03 (3)	20:45	19:34	18:26	16:26	
24   08:29	07:34	06:31	06:21	05:30	20:07 (2)	05:15	20:43 (3)	06:32	20:12 (2)	06:32	07:23	08:15	
17:07   18:04	18:54	20:48	21:36	38	20:53 (3)	22:01	21:40	49   21:03 (3)	20:43	19:32	18:24	16:34	
25   08:28	07:32	06:29	06:19	05:29	20:09 (2)	05:15	20:45 (3)	06:34	20:11 (2)	06:34	07:25	07:17	
17:09   18:06	18:56	20:49	21:37	34	20:53 (3)	22:01	21:38	49   21:02 (3)	20:41	19:29	17:22	16:33	
26   08:26	07:30	06:27	06:17	05:28	20:12 (2)	05:16	20:46 (3)	06:36	20:11 (2)	06:36	07:27	07:18	
17:11   18:08	18:58	20:51	21:38	27	20:52 (3)	22:01	21:37	50   21:03 (3)	20:39	19:27	17:20	16:32	
27   08:25	07:28	06:24	06:15	20:09 (2)	05:26	20:31 (3)	05:16	05:48	20:10 (2)	06:37	07:28	07:20	
17:12   18:10	18:59	20:53	10   20:19 (2)	21:40	20:52 (3)	22:01	21:36	50   21:02 (3)	20:36	19:24	17:18	16:31	
28   08:24	07:26	06:22	06:13	20:06 (2)	05:25	20:31 (3)	05:17	05:49	20:10 (2)	06:39	07:30	07:22	
17:14   18:12	19:01	20:54	16   20:22 (2)	21:41	20:52 (3)	22:01	21:34	51   21:03 (3)	20:34	19:22	17:16	16:30	
29   08:22	07:20	06:11	20:04 (2)	05:24	20:32 (3)	05:17	20:51 (3)	06:41	05:51	20:09 (2)	06:41	07:32	
17:16   18:03	20:03	20:56	19   20:23 (2)	21:42	20:51 (3)	22:00	21:33	51   21:02 (3)	20:32	19:20	17:14	16:29	
30   08:21	07:17	06:09	20:03 (2)	05:23	20:32 (3)	05:18	20:52	49   20:08 (2)	06:42	05:52	07:33	07:26	
17:18   20:05	20:05	20:58	23   20:26 (2)	21:44	20:51 (3)	22:00	21:31	50   21:00 (3)	20:30	19:17	17:12	16:28	
31   08:19	07:15	06:07	20:06	24	20:52	05:22	20:33 (3)	05:19	05:54	20:08 (2)	06:44	07:28	
17:20   20:06	20:06	21:45	17   20:50 (3)	20:53	20:50 (3)	22:07	21:29	49   20:59 (3)	20:27	17:10		08:45	
Potential sun hours	258	277	367	416	486	500	503	454	465	381	331	265	242
Total, worst case					68	1130	77	823	465				
Sun reduction					0.42	0.42	0.37	0.40	0.41				
Oper. time red.					0.95	0.95	0.95	0.95	0.95				
Wind dir. red.					0.54	0.55	0.55	0.55	0.54				
Total reduction					0.22	0.22	0.19	0.21	0.21				
Total, real					15	246	15	171	98				

Table layout: For each day in each month the following matrix apply

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: K - Mettrayweg 4

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:45	08:18	07:24	07:13	06:07	20:06 (1)	05:22	05:18	20:10 (2)	05:55	20:20 (1)	06:46	
	16:33	17:22	18:14	20:08	21:00	21	20:27 (1)	21:46	65	21:09 (3)	22:00	67	
2	08:45	08:16	07:22	07:10	06:05	20:05 (1)	05:21	05:20	20:10 (2)	05:57	20:19 (1)	06:47	
	16:34	17:23	18:15	20:10	21:01	22	20:27 (1)	21:47	65	21:10 (3)	22:00	68	
3	08:45	08:14	07:19	07:08	06:03	20:05 (1)	05:20	05:20	20:11 (2)	05:58	20:17 (1)	06:49	
	16:35	17:25	18:17	20:12	21:03	22	20:27 (1)	21:48	65	21:10 (3)	21:59	67	
4	08:44	08:13	07:17	07:06	06:02	20:04 (1)	05:19	05:20	20:04 (2)	05:21	20:11 (2)	06:00	
	16:37	17:27	18:19	20:13	21:05	22	20:26 (1)	21:49	66	21:10 (3)	21:59	67	
5	08:44	08:11	07:15	07:03	06:00	20:05 (1)	05:18	05:05	20:05 (2)	05:21	20:11 (2)	06:02	
	16:38	17:29	18:21	20:15	21:06	22	20:27 (1)	21:50	66	21:11 (3)	21:58	66	
6	08:44	08:09	07:13	07:01	05:58	20:05 (1)	05:18	05:20	20:05 (2)	05:22	20:11 (2)	06:03	
	16:39	17:31	18:23	20:17	21:08	21	20:26 (1)	21:51	66	21:11 (3)	21:58	67	
7	08:43	08:08	07:10	06:59	05:56	20:05 (1)	05:17	05:20	20:05 (2)	05:23	20:11 (2)	06:05	
	16:40	17:33	18:24	20:18	21:10	20	20:25 (1)	21:52	67	21:12 (3)	21:57	67	
8	08:43	08:06	07:08	06:56	05:54	20:06 (1)	05:17	05:20	20:05 (2)	05:24	20:12 (2)	06:06	
	16:42	17:35	18:26	20:20	21:11	19	20:25 (1)	21:53	67	21:12 (3)	21:57	66	
9	08:42	08:04	07:06	06:54	05:52	20:07 (1)	05:16	05:20	20:06 (2)	05:25	20:12 (2)	06:06	
	16:43	17:36	18:28	20:22	21:13	17	20:24 (1)	21:54	67	21:13 (3)	21:56	66	
10	08:42	08:02	07:04	06:52	05:51	20:07 (1)	05:16	05:20	20:06 (2)	05:26	20:12 (2)	06:10	
	16:44	17:38	18:30	20:24	21:15	16	20:23 (1)	21:55	67	21:13 (3)	21:55	65	
11	08:41	08:00	07:01	06:50	05:49	20:09 (1)	05:15	05:20	20:06 (2)	05:27	20:13 (2)	06:11	
	16:46	17:40	18:32	20:25	21:16	13	20:22 (1)	21:55	67	21:13 (3)	21:54	64	
12	08:41	07:59	06:59	06:47	05:47	20:10 (1)	05:15	05:20	20:06 (2)	05:28	20:13 (2)	06:13	
	16:47	17:42	18:33	20:27	21:18	20	20:30 (2)	21:56	68	21:14 (3)	21:54	64	
13	08:40	07:57	06:57	06:45	05:46	20:16 (2)	05:15	05:20	20:06 (2)	05:29	20:13 (2)	06:14	
	16:49	17:44	18:35	20:29	21:19	18	20:34 (2)	21:57	68	21:14 (3)	21:53	63	
14	08:39	07:55	06:54	06:43	05:44	20:14 (2)	05:14	05:20	20:07 (2)	05:30	20:13 (2)	06:16	
	16:50	17:46	18:37	20:31	21:21	21	20:35 (2)	21:57	67	21:14 (3)	21:52	63	
15	08:38	07:53	06:52	06:41	05:43	20:13 (2)	05:14	05:20	20:07 (2)	05:32	20:13 (2)	06:18	
	16:52	17:48	18:39	20:32	21:22	24	20:37 (2)	21:58	68	21:15 (3)	21:51	62	
16	08:37	07:51	06:50	06:39	05:41	20:11 (2)	05:14	05:20	20:07 (2)	05:33	20:14 (2)	06:19	
	16:53	17:50	18:40	20:34	21:24	27	20:38 (2)	21:58	68	21:15 (3)	21:50	58	
17	08:37	07:49	06:47	06:36	05:39	20:10 (2)	05:14	05:20	20:08 (2)	05:34	20:14 (2)	06:21	
	16:55	17:51	18:42	20:36	21:26	30	20:40 (2)	21:59	67	21:15 (3)	21:49	56	
18	08:36	07:47	06:45	06:34	05:38	20:09 (2)	05:14	05:20	20:08 (2)	05:35	20:15 (2)	06:23	
	16:57	17:53	18:44	20:37	21:27	32	20:41 (2)	21:59	68	21:16 (3)	21:47	52	
19	08:35	07:45	06:43	06:32	05:37	20:08 (2)	05:14	05:20	20:08 (2)	05:37	20:15 (2)	06:24	
	16:58	17:55	18:46	20:39	21:29	33	20:41 (2)	22:00	68	21:16 (3)	21:46	46	
20	08:34	07:43	06:41	06:30	05:35	20:07 (2)	05:14	05:20	20:08 (2)	05:38	20:16 (2)	06:26	
	17:00	17:57	18:47	20:41	21:30	35	20:42 (2)	22:00	68	21:16 (3)	21:45	39	
21	08:32	07:41	06:38	06:28	05:34	20:07 (2)	05:14	05:20	20:08 (2)	05:39	20:16 (2)	06:27	
	17:02	17:59	18:49	20:43	21:32	36	20:43 (2)	22:00	68	21:16 (3)	21:44	38	
22	08:31	07:39	06:36	06:26	05:32	20:07 (2)	05:14	05:20	20:08 (2)	05:41	20:17 (2)	06:29	
	17:03	18:01	18:51	20:44	21:33	37	20:44 (2)	22:00	68	21:16 (3)	21:43	37	
23	08:30	07:37	06:34	06:23	05:31	20:06 (2)	05:15	05:20	20:09 (2)	05:42	20:18 (2)	06:31	
	17:05	18:03	18:53	20:46	21:34	39	20:45 (2)	22:01	68	21:17 (3)	21:41	35	
24	08:29	07:35	06:31	06:21	05:30	20:06 (2)	05:15	05:20	20:09 (2)	05:43	20:18 (2)	06:32	
	17:07	18:04	18:54	20:48	21:36	39	20:45 (2)	22:01	68	21:17 (3)	21:40	34	
25	08:28	07:32	06:29	06:19	05:29	20:06 (2)	05:15	05:20	20:09 (2)	05:45	20:18 (2)	06:34	
	17:09	18:06	18:56	20:49	21:37	49	20:41 (3)	22:01	67	21:16 (3)	21:39	33	
26	08:26	07:30	06:27	06:17	05:28	20:05 (2)	05:16	05:20	20:10 (2)	05:46	20:20 (2)	06:36	
	17:11	18:08	18:58	20:51	21:38	53	20:43 (3)	22:01	67	21:17 (3)	21:37	31	
27	08:25	07:28	06:24	06:15	05:26	20:05 (2)	05:16	05:20	20:09 (2)	05:48	20:21 (2)	06:37	
	17:12	18:10	19:00	20:53	21:40	58	20:45 (3)	22:01	68	21:17 (3)	21:36	29	
28	08:24	07:26	06:22	06:13	05:25	20:07 (2)	05:17	05:20	20:10 (2)	05:49	20:23 (2)	06:39	
	17:14	18:12	19:01	20:54	21:41	60	20:46 (3)	22:01	68	21:18 (3)	21:34	26	
29	08:22	07:20	06:11	05:20	05:24	20:05 (2)	05:17	05:20	20:10 (2)	05:51	20:24 (2)	06:41	
	17:16	18:09	19:03	20:56	21:42	62	20:47 (3)	22:00	67	21:17 (3)	21:33	23	
30	08:21	07:17	06:09	20:06 (1)	05:23	20:05 (2)	05:18	05:20	20:10 (2)	05:52	20:25 (2)	06:42	
	17:18	20:05	20:58	21	20:27 (1)	21:44	62	21:07 (3)	22:00	68	21:18 (3)	21:31	
31	08:19	07:15	06:07	20:06	21:45	64	21:08 (3)	22:00	503	21:29	20:43 (2)	20:27	
	17:20	20:06	21:45	22	22	391	327	454	327	67	381	331	265
Potential sun hours	258	277	367	416	486	500	503	503	391	327	381	331	242
Total, worst case					90	1014	2015	1559	320				
Sun reduction					0.42	0.42	0.37	0.40	0.41				
Oper. time red.					0.95	0.95	0.95	0.95	0.95				
Wind dir. red.					0.54	0.55	0.55	0.55	0.54				
Total reduction					0.22	0.22	0.19	0.21	0.21				
Total, real					19	222	391	327	67				

Table layout: For each day in each month the following matrix apply

Day in month	Sunrise (hh:mm)	Sunset (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: L - Mettrayweg 3

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,34	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June	July	August	September	October	November	December
1   08:45   08:18   07:24   07:13   06:07   20:00 (1)   05:22   19:54 (2)   05:18   20:14 (1)   06:46   07:35   08:21	16:33   17:22   18:14   20:08   21:00   24   20:24 (1)   21:46   21:17 (3)   21:28   20:29 (1)   20:25   19:15   17:09											
2   08:45   08:16   07:22   07:10   06:05   20:00 (1)   05:21   19:54 (2)   05:19   20:13 (1)   06:47   07:37   07:31   08:22	16:34   17:23   18:15   20:10   21:01   24   20:24 (1)   21:47   21:17 (3)   21:26   20:30 (1)   20:23   19:13   17:07											
3   08:45   08:14   07:19   07:08   06:03   19:59 (1)   05:20   19:54 (2)   05:20   19:59 (2)   05:58   20:11 (1)   06:49   07:38   07:33   08:24	16:35   17:25   18:17   20:12   21:03   25   20:24 (1)   21:48   21:17 (3)   21:24   20:31 (1)   20:21   19:11   17:05											
4   08:44   08:13   07:17   07:06   06:02   19:59 (1)   05:19   19:53 (2)   05:21   20:00 (2)   06:00   20:11 (1)   06:50   07:40   07:35   08:25	16:37   17:27   18:19   20:13   21:05   24   20:23 (1)   21:49   21:08 (3)   21:59   20:32 (1)   20:18   19:08   17:03											
5   08:44   08:11   07:15   07:03   06:00   20:00 (1)   05:18   19:54 (2)   05:21   19:59 (2)   06:02   20:10 (1)   06:52   07:42   07:37   08:26	16:38   17:29   18:21   20:15   21:06   24   20:24 (1)   21:50   21:09 (3)   21:58   21:16 (3)   21:21   20:32 (1)   20:16											
6   08:44   08:09   07:13   07:01   05:58   20:00 (1)   05:18   19:54 (2)   05:22   20:00 (2)   06:03   20:10 (1)   06:54   07:44   07:38   08:28	16:39   17:31   18:23   20:17   21:08   23   20:23 (1)   21:51   21:10 (3)   21:58   21:16 (3)   21:19   20:33 (1)   20:14											
7   08:43   08:08   07:10   06:59   05:56   20:00 (1)   05:17   19:54 (2)   05:23   20:00 (2)   06:05   20:09 (1)   06:55   07:45   07:40   08:29	16:40   17:33   18:24   20:18   21:10   22   20:22 (1)   21:52   21:11 (3)   21:57   21:16 (3)   21:17   20:33 (1)   20:11											
8   08:43   08:06   07:08   06:56   05:54   20:01 (1)   05:17   19:54 (2)   05:24   20:01 (2)   06:06   20:09 (1)   06:57   07:47   07:42   08:30	16:42   17:35   18:26   20:20   21:11   21   20:22 (1)   21:53   21:11 (3)   21:57   21:16 (3)   21:15   20:33 (1)   20:09											
9   08:42   08:04   07:06   06:54   05:52   20:01 (1)   05:16   19:54 (2)   05:25   20:01 (2)   06:08   20:08 (1)   06:59   07:49   07:44   08:31	16:43   17:36   18:28   20:22   21:13   20   20:21 (1)   21:54   21:12 (3)   21:56   21:15 (3)   21:14   20:33 (1)   20:07											
10   08:42   08:02   07:04   06:52   05:51   20:01 (1)   05:16   19:54 (2)   05:26   20:02 (2)   06:10   20:09 (1)   07:00   07:50   07:46   08:32	16:44   17:38   18:30   20:24   21:15   19   20:20 (1)   21:55   21:13 (3)   21:55   21:15 (3)   21:12   20:33 (1)   20:00											
11   08:41   08:00   07:01   06:50   05:49   20:03 (1)   05:15   19:54 (2)   05:27   20:02 (2)   06:11   20:08 (1)   07:02   07:52   07:47   08:34	16:46   17:40   18:32   20:25   21:16   16   20:19 (1)   21:55   21:12 (3)   21:54   21:14 (3)   21:10   20:32 (1)   20:02											
12   08:41   07:59   06:59   06:47   05:47   20:04 (1)   05:15   19:54 (2)   05:28   20:02 (2)   06:13   20:09 (1)   07:04   07:54   07:49   08:35	16:47   17:42   18:33   20:27   21:18   14   20:18 (1)   21:56   21:13 (3)   21:54   21:13 (3)   21:08   20:32 (1)   20:00											
13   08:40   07:57   06:57   06:45   05:46   20:06 (1)   05:15   19:54 (2)   05:29   20:03 (2)   06:14   20:08 (1)   07:05   07:56   07:51   08:36	16:49   17:44   18:35   20:29   21:19   10   20:16 (1)   21:57   21:14 (3)   21:53   21:11 (3)   21:06   20:31 (1)   19:57											
14   08:39   07:55   06:54   06:43   05:44   20:09 (1)   05:14   19:55 (2)   05:30   20:03 (2)   06:16   20:09 (1)   07:07   07:57   07:53   08:37	16:50   17:46   18:37   20:31   21:21   13   20:20 (2)   21:57   21:14 (3)   21:52   21:03 (2)   21:04   20:31 (1)   19:55											
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17   08:37   07:49   06:47   06:36   05:39   20:04 (2)   05:14   19:55 (2)   05:34   20:05 (2)   06:21   20:11 (1)   07:12   08:02   07:58   08:39	16:55   17:51   18:42   20:36   21:26   26   20:30 (2)   21:59   21:15 (3)   21:49   20:49 (2)   20:58   20:26 (1)   19:48											
18   08:36   07:47   06:45   06:34   05:38   20:03 (2)   05:14   19:56 (2)   05:35   20:03 (2)   06:23   20:06 (2)   06:23   20:14 (1)   07:13   08:04   08:00   08:40	16:57   17:53   18:44   20:37   21:27   29   20:32 (2)   21:59   21:16 (3)   21:47   20:50 (2)   20:56   20:25 (1)   19:46											
19   08:35   07:45   06:43   06:32   05:37   20:01 (2)   05:14   19:56 (2)   05:37   20:01 (2)   06:24   20:07 (2)   06:24   20:17 (2)   06:31   20:22   08:13   08:08   08:43	16:58   17:55   18:46   20:39   21:29   32   20:33 (2)   22:00   21:16 (3)   21:46   20:49 (2)   20:54   19:43   18:35   16:40   16:24											
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22   08:31   07:39   06:36   06:26   05:32   20:01 (2)   05:14   19:56 (2)   05:41   20:01 (2)   06:18   20:09 (2)   06:29   20:17 (2)   06:31   20:27   07:20   08:11   08:42	17:03   18:01   18:51   20:44   21:33   39   20:37 (2)   22:00   21:16 (3)   21:43   20:47 (2)   20:47   20:04 (2)   20:37   16:41   16:24											
23   08:30   07:37   06:34   06:23   05:31   19:58 (2)   05:15   19:57 (2)   05:42   20:01 (2)   06:19   20:04 (2)   06:26   20:11 (1)   07:10   08:01   07:56   08:38	17:05   18:03   18:53   20:46   21:34   40   20:38 (2)   22:01   21:17 (3)   21:41   20:46 (2)   20:45   19:34   18:26   16:35   16:26											
24   08:29   07:35   06:31   06:21   05:30   19:57 (2)   05:15   19:57 (2)   05:43   20:01 (2)   06:21   20:11 (1)   07:10   08:01   07:56   08:38	17:07   18:04   18:54   20:48   5   20:15 (1)   21:36   20:39 (2)   22:01   21:17 (3)   21:40   30:44 (2)   20:43   19:32   18:24   16:34   16:26											
25   08:28   07:32   06:29   06:19   05:29   19:57 (2)   05:15   19:57 (2)   05:45   20:02 (1)   06:25   19:55 (2)   05:49   20:18 (2)   06:39   20:30   07:30   07:22   08:16   08:45	17:09   18:06   18:56   20:49   11   20:18 (1)   21:37   20:40 (2)   22:01   21:17 (3)   21:39   30:43 (2)   20:41   19:29   17:22   16:33   16:27											
26   08:26   07:30   06:27   06:17   05:28   19:56 (2)   05:16   19:57 (2)   05:46   20:04 (1)   06:28   19:56 (2)   05:51   20:21 (2)   06:41   20:14 (2)   06:36   07:27   07:18   08:13   08:44	17:11   18:08   18:58   20:51   16   20:20 (1)   21:38   20:40 (2)   22:01   21:17 (3)   21:37   28   20:42 (2)   20:39   19:27   17:20   16:32   16:28											
27   08:25   07:28   06:24   06:15   05:26   19:56 (2)   05:16   19:56 (2)   05:48   20:03 (2)   06:26   19:57 (2)   05:52   20:15 (2)   06:37   07:28   07:20   08:15   08:44	17:12   18:10   19:00   20:53   18   20:21 (1)   21:40   20:41 (2)   22:01   21:17 (3)   21:36   25   20:40 (2)   20:36   19:25   17:18   16:31   16:28											
28   08:24   07:26   06:22   06:13   05:25   19:55 (2)   05:17   19:55 (2)   05:49   20:02 (1)   06:25   19:58 (2)   05:49   20:18 (2)   06:39   20:38 (2)   06:27   19:22   17:16   16:30   16:29	17:14   18:12   19:01   20:55   20   20:22 (1)   21:41   20:42 (2)   22:01   21:17 (3)   21:34   20   20:38 (2)   20:34   19:22   17:16   16:30   16:29											
29   08:22   07:20   06:11   05:20   05:22   19:55 (2)   05:17   19:55 (2)   05:51   20:02 (1)   06:24   19:58 (2)   05:51   20:21 (2)   06:41   20:21 (2)   06:41   07:32   07:24   08:18   08:45	17:16   20:03   20:56   21   20:23 (1)   21:42   20:56 (3)   22:00   21:17 (3)   21:33   14   20:35 (2)   20:32   19:20   17:14   16:29   16:30											
30   08:21   07:17   06:09   20:01 (1)   05:23   19:55 (2)   05:18   19:58 (2)   05:52   20:01 (1)   06:23   19:58 (2)   05:52   20:17 (1)   06:42   07:33   07:26   08:19   08:45	17:18   20:05   20:58   23   20:24 (1)   21:44   57   21:02 (3)   22:00   21:17 (3)   21:31   8   20:25 (1)   20:30   19:18   17:12   16:28   16:31	</										

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor; M - Mettrayweg 9

## Assumptions for shadow calculations

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

## Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June	July	August	September	October	November	December				
1	08:45 16:33	08:18 17:22	07:24 18:14	07:13 20:08	06:07 21:00	19:53 (1) 20:15 (1)	05:22 21:46	19:34 (2) 21:08 (3)	05:18 21:28	19:41 (2) 21:08 (3)	05:55 21:26	19:46 (2) 20:32 (2)	06:46 20:25	07:35 19:15	07:29 17:09	08:21 16:28
2	08:45 16:34	08:16 17:23	07:22 18:15	07:10 20:10	06:05 21:01	19:50 (2) 20:14 (1)	05:21 21:47	19:35 (2) 21:02 (3)	05:19 22:00	19:41 (2) 21:08 (3)	05:57 21:26	19:47 (2) 20:32 (2)	06:47 20:23	07:37 19:13	07:31 17:07	08:22 16:27
3	08:45 16:35	08:14 17:25	07:19 18:17	07:08 20:12	06:03 21:03	19:47 (2) 20:13 (1)	05:20 21:48	19:35 (2) 21:02 (3)	05:20 21:59	19:42 (2) 21:09 (3)	05:58 21:24	19:48 (2) 20:30 (2)	06:49 20:21	07:38 19:11	07:33 17:05	08:24 16:26
4	08:44 16:37	08:13 17:27	07:17 18:19	07:06 20:13	06:02 21:05	19:44 (2) 20:13 (2)	05:19 21:49	19:35 (2) 21:02 (3)	05:21 21:59	19:42 (2) 21:09 (3)	06:00 21:23	19:49 (2) 20:30 (2)	06:50 20:18	07:40 19:08	07:35 17:03	08:25 16:26
5	08:44 16:38	08:11 17:29	07:15 18:21	07:03 20:15	06:00 21:06	19:43 (2) 20:16 (2)	05:18 21:50	19:35 (2) 21:03 (3)	05:21 21:58	19:41 (2) 21:09 (3)	06:02 21:21	19:49 (2) 20:28 (2)	06:52 20:16	07:42 19:06	07:37 17:01	08:26 16:25
6	08:44 16:39	08:09 17:31	07:13 18:23	07:01 20:17	05:58 21:08	19:42 (2) 20:17 (2)	05:18 21:51	19:35 (2) 21:03 (3)	05:22 21:58	19:42 (2) 21:09 (3)	06:03 21:19	19:51 (2) 20:28 (2)	06:54 20:14	07:44 19:04	07:38 16:59	08:28 16:25
7	08:43 16:40	08:08 17:33	07:10 18:24	06:59 20:18	05:56 21:10	19:40 (2) 20:18 (2)	05:17 21:52	19:36 (2) 21:03 (3)	05:23 21:57	19:42 (2) 21:09 (3)	06:05 21:21	19:52 (2) 20:26 (2)	06:55 20:11	07:45 19:01	07:40 16:58	08:29 16:24
8	08:43 16:42	08:06 17:35	07:08 18:26	06:56 20:20	05:54 21:11	19:39 (2) 20:19 (2)	05:17 21:53	19:36 (2) 21:03 (3)	05:24 21:57	19:42 (2) 21:09 (3)	06:06 21:15	19:53 (2) 20:25 (2)	06:57 20:09	07:47 18:59	07:42 16:56	08:30 16:24
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10	08:42 16:44	08:02 17:38	07:04 18:30	06:52 20:24	05:51 21:15	19:37 (2) 20:20 (2)	05:16 21:55	19:37 (2) 21:04 (3)	05:23 21:55	19:42 (2) 21:09 (3)	06:05 21:24	19:57 (2) 20:23 (1)	07:02 20:04	07:50 18:55	07:46 16:53	08:32 16:24
11	08:41 16:46	08:00 17:40	07:01 18:32	06:50 20:25	05:49 21:16	19:37 (2) 20:22 (2)	05:15 21:55	19:37 (2) 21:04 (3)	05:27 21:54	19:42 (2) 21:09 (3)	06:11 21:20	19:59 (2) 20:23 (1)	07:02 20:02	07:52 18:52	07:47 16:51	08:34 16:23
12	08:41 16:47	07:59 17:42	06:59 18:33	06:47 20:27	05:47 21:18	19:35 (2) 20:22 (2)	05:15 21:56	19:37 (2) 21:04 (3)	05:28 21:54	19:42 (2) 21:09 (3)	06:13 21:28	19:50 (2) 20:24 (1)	06:57 20:00	07:47 18:50	07:42 16:50	08:35 16:23
13	08:40 16:49	07:57 17:44	06:57 18:35	06:45 20:29	05:46 21:19	19:35 (2) 20:23 (2)	05:15 21:57	19:38 (2) 21:05 (3)	05:29 21:53	19:42 (2) 21:09 (3)	06:14 21:26	19:52 (2) 20:23 (1)	06:59 20:11	07:56 19:57	07:51 18:48	08:36 16:23
14	08:39 16:50	07:55 17:46	06:54 18:37	06:43 20:31	05:44 21:21	19:34 (2) 20:23 (2)	05:14 21:57	19:38 (2) 21:05 (3)	05:30 21:52	19:42 (2) 21:09 (3)	06:16 21:24	19:53 (2) 20:24 (1)	06:59 20:07	07:57 19:55	07:53 18:46	08:37 16:23
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16	08:37 16:53	07:51 17:50	06:50 18:40	06:39 20:34	05:41 21:24	19:33 (2) 20:24 (2)	05:14 21:58	19:39 (2) 21:06 (3)	05:33 21:28	19:42 (2) 21:08 (3)	06:19 21:20	19:53 (2) 20:23 (1)	07:04 20:21	07:54 18:50	07:49 16:50	08:35 16:23
17	08:37 16:55	07:49 17:51	06:47 18:42	06:36 20:36	05:39 21:26	19:33 (2) 20:24 (2)	05:14 21:59	19:39 (2) 21:06 (3)	05:34 21:26	19:42 (2) 21:07 (3)	06:21 20:28	19:54 (2) 20:22 (1)	07:12 19:48	08:02 18:39	07:58 16:42	08:39 16:24
18	08:36 16:57	07:47 17:53	06:45 18:44	06:34 20:37	05:38 21:27	19:33 (2) 20:23 (2)	05:14 21:59	19:39 (2) 21:05 (3)	05:35 21:24	19:42 (2) 21:09 (3)	06:23 21:24	19:55 (2) 20:24 (1)	07:13 19:55	08:04 18:46	08:00 16:47	08:40 16:23
19	08:35 16:58	07:45 17:55	06:43 18:46	06:32 20:39	05:37 21:29	19:33 (2) 20:49 (3)	05:14 22:00	19:40 (2) 21:06 (3)	05:37 21:54	19:43 (2) 21:09 (3)	06:24 21:20	19:59 (1) 20:23 (1)	07:15 19:53	08:06 18:43	08:02 16:45	08:41 16:23
20	08:34 17:00	07:43 17:57	06:41 18:47	06:30 20:41	20:00 (1) 11	05:35 20:11 (1)	05:14 21:30	05:35 22:00	05:38 21:46	05:38 21:07 (3)	06:24 20:54	05:37 20:24 (1)	07:16 19:43 (1)	08:08 18:35	08:02 16:40	08:41 16:24
21	08:32 17:02	07:41 17:59	06:38 18:49	06:28 20:43	05:38 16	05:37 (1) 20:13 (1)	05:14 21:32	05:38 (1) 22:00	05:39 21:45	05:38 (1) 21:06 (3)	06:24 20:51	05:39 20:25 (1)	07:17 19:41 (1)	08:08 18:33	08:03 16:38	08:41 16:24
22	08:31 17:03	07:39 18:01	06:36 18:51	06:26 20:44	05:36 18	05:37 (1) 20:14 (1)	05:14 21:33	05:35 (1) 22:00	05:41 21:43	05:41 (1) 21:44	06:24 20:53 (1)	05:41 20:29 (1)	07:18 19:39 (1)	08:09 18:30	08:05 16:37	08:42 16:25
23	08:30 17:05	07:37 18:03	06:34 18:53	06:23 20:46	05:35 20	05:35 (1) 20:15 (1)	05:14 21:34	05:33 (1) 22:01	05:42 21:41	05:41 (1) 21:41	06:25 20:53 (1)	05:42 20:29 (1)	07:22 19:36 (1)	08:08 18:28	08:03 16:36	08:43 16:25
24	08:29 17:07	07:35 18:04	06:31 18:54	06:21 20:48	05:34 21	05:34 (1) 20:15 (1)	05:10 21:36	05:33 (2) 22:01	05:43 21:40	05:41 (1) 21:40	06:26 20:52 (1)	05:43 20:25 (1)	07:23 19:32 (1)	08:10 18:24	08:08 16:34	08:43 16:26
25	08:28 17:09	07:32 18:06	06:29 18:56	06:19 20:49	05:33 20	05:33 (1) 20:16 (1)	05:10 21:37	05:32 (2) 22:01	05:45 21:44	05:43 (1) 21:44	06:27 20:53 (2)	05:43 20:29 (2)	07:25 19:31 (2)	08:12 18:30	08:05 16:37	08:44 16:27
26	08:26 17:11	07:30 18:08	06:27 18:58	06:17 20:51	05:32 24	05:32 (1) 20:16 (1)	05:10 21:38	05:31 (2) 22:01	05:46 21:41	05:41 (2) 21:41	06:30 20:55 (2)	05:46 20:27 (2)	07:27 19:29 (2)	08:13 18:28	08:04 16:35	08:44 16:26
27	08:25 17:12	07:28 18:10	06:24 19:00	06:15 20:53	05:31 24	05:32 (1) 20:16 (1)	05:06 21:40	05:30 (2) 22:01	05:48 21:47	05:41 (2) 21:47	06:36 20:59 (2)	05:48 20:28 (2)	07:28 19:25 (2)	08:15 18:24	08:05 16:31	08:44 16:28
28	08:24 17:14	07:26 18:12	06:22 19:01	06:13 20:55	05:30 24	05:32 (1) 20:16 (1)	05:05 21:41	05:25 (2) 22:01	05:49 21:49	05:41 (2) 21:49	06:39 20:55 (2)	05:49 20:28 (2)	07:30 19:22 (2)	08:16 18:22	08:05 16:30	08:45 16:29
29	08:22 17:16	07:22 18:03	06:20 19:03	06:11 20:55	05:30 24	05:32 (1) 20:16 (1)	05:04 21:41	05:24 (2) 22:01	05:51 21:49	05:41 (2) 21:49	06:41 20:55 (2)	05:51 20:28 (2)	07:32 19:22 (2)	08:18 18:22	08:05 16:30	08:45 16:30
30	08:21 17:18	07:17 20:05	06:09 20:58	05:23 24	05:23 (1) 20:16 (1)	05:18 22:00	05:18 22:00	05:22 (2) 22:00	05:58 21:08 (3)	05:54 21:29	06:44 20:53 (2)	06:44 20:28 (2)	07:33 19:18	08:19 18:22	08:05 16:31	08:45 16:32
31	08:19 17:20	07:15 20:06	05:22 21:45	05:24 24	05:22 (1) 21:45	05:18 22:01 (3)	05:18 22:01	05:24 (2) 22:01	05:58 21:29	05:54 21:29	06:44 20:53 (2)	06:44 20:28 (2)	07:28 19:10	08:18 18:22	08:05 16:31	08:45 16:32
Potential sun hours	258	277	367	416	486	500	500	503	454	381	331	265	242			
Total, worst case					229	1750	2557	2331	639							
Sun reduction					0.42	0.42	0.37	0.40	0.41							
Oper. time red.					0.95	0.95	0.95	0.95	0.95							
Wind dir. red.					0.53	0.54	0.55	0.55	0.54							
Total reduction					0.21	0.22	0.19	0.21	0.21							
Total, real					49	379	491	483	134							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: N - Valkeweg 5

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June	July	August	September	October	November	December		
1	08:45	09:21 (2)	08:18	09:24 (3)	07:24	07:13	06:07	05:22	05:18	05:46	07:29	08:21	09:00 (2)	
	16:33	59	12:29 (1)	17:22	42	10:06 (3)	18:14	20:08	21:00	21:46	22:00	21:28	20:25	19:15
2	08:45	09:20 (2)	08:16	09:24 (3)	07:22	07:10	06:05	05:21	05:19	05:47	07:31	08:57 (3)	08:22	09:02 (2)
	16:34	61	12:29 (1)	17:23	42	10:06 (3)	18:15	20:10	21:01	21:47	22:00	21:26	20:23	19:13
3	08:45	09:20 (2)	08:15	09:25 (3)	07:19	07:08	06:03	05:20	05:20	05:48	07:33	08:57 (3)	08:24	09:02 (2)
	16:36	61	12:29 (1)	17:25	42	10:07 (3)	18:17	20:12	21:03	21:48	21:24	20:21	19:11	17:05
4	08:44	09:20 (2)	08:13	09:25 (3)	07:17	07:06	06:02	05:19	05:21	06:00	07:35	08:56 (3)	08:25	09:03 (2)
	16:37	63	12:30 (1)	17:27	41	10:06 (3)	18:19	20:13	21:05	21:49	21:23	20:18	19:08	17:03
5	08:44	09:19 (2)	08:11	09:26 (3)	07:15	07:03	06:00	05:18	05:21	06:02	07:37	08:56 (3)	08:26	09:04 (2)
	16:38	63	12:30 (1)	17:29	40	10:06 (3)	18:21	20:15	21:06	21:50	21:21	20:16	19:06	17:01
6	08:44	09:20 (2)	08:10	09:26 (3)	07:13	07:01	05:58	05:18	05:22	06:03	07:39	08:55 (3)	08:28	09:06 (2)
	16:39	63	12:30 (1)	17:31	40	10:06 (3)	18:23	20:17	21:08	21:51	21:19	20:14	19:04	17:00
7	08:43	09:19 (2)	08:08	09:26 (3)	07:10	06:59	05:56	05:17	05:23	06:05	07:40	08:55 (3)	08:29	09:06 (2)
	16:40	64	12:30 (1)	17:33	39	10:05 (3)	18:25	20:19	21:10	21:52	21:17	20:11	19:01	16:58
8	08:43	09:19 (2)	08:06	09:27 (3)	07:08	06:57	05:54	05:17	05:24	06:06	07:42	08:55 (3)	08:30	09:07 (2)
	16:42	66	12:31 (1)	17:35	37	10:04 (3)	18:26	20:20	21:11	21:53	21:15	20:09	18:59	16:56
9	08:43	09:19 (2)	08:04	09:29 (3)	07:06	06:54	05:53	05:16	05:25	06:08	07:44	08:55 (3)	08:31	09:09 (2)
	16:43	67	12:30 (1)	17:37	35	10:04 (3)	18:28	20:22	21:13	21:54	21:14	20:07	18:57	16:54
10	08:42	09:19 (2)	08:02	09:30 (3)	07:04	06:52	05:51	05:16	05:26	06:10	07:46	08:55 (3)	08:33	09:10 (2)
	16:44	69	12:30 (1)	17:38	33	10:03 (3)	18:30	20:24	21:15	21:55	21:12	20:05	18:55	16:53
11	08:41	09:18 (2)	08:01	09:31 (3)	07:01	06:50	05:49	05:15	05:27	06:11	07:42	08:55 (3)	08:34	09:11 (2)
	16:46	71	12:30 (1)	17:40	31	10:02 (3)	18:32	20:25	21:16	21:55	21:14	20:02	18:52	16:51
12	08:41	09:19 (2)	07:59	09:32 (3)	06:59	06:48	05:47	05:15	05:28	06:13	07:49	08:55 (3)	08:35	09:12 (2)
	16:47	70	12:30 (1)	17:42	29	10:01 (3)	18:33	20:27	21:18	21:56	21:24	20:00	18:50	16:50
13	08:40	09:19 (2)	07:57	09:33 (3)	06:57	06:45	05:46	05:15	05:29	06:14	07:51	08:56 (3)	08:36	09:13 (2)
	16:49	71	12:30 (1)	17:44	26	09:59 (3)	18:35	20:29	21:19	21:57	21:26	20:06	18:48	16:48
14	08:39	09:19 (2)	07:55	09:35 (3)	06:55	06:43	05:44	05:14	05:30	06:16	07:53	08:56 (3)	08:37	09:14 (2)
	16:50	70	12:29 (1)	17:46	22	09:57 (3)	18:37	20:31	21:21	21:57	21:24	20:04	18:46	16:47
15	08:38	09:19 (2)	07:53	09:38 (3)	06:52	06:41	05:43	05:14	05:32	06:18	07:55	08:56 (2)	08:38	09:16 (2)
	16:52	71	12:29 (1)	17:48	16	09:54 (3)	18:39	20:32	21:23	21:58	21:21	20:02	18:43	16:45
16	08:38	09:19 (2)	07:51	09:44 (3)	06:50	06:39	05:41	05:14	05:33	06:19	07:10	07:56	08:56 (2)	08:38
	16:54	70	12:28 (1)	17:50	5	09:49 (3)	18:40	20:34	21:24	21:59	21:20	20:00	18:41	16:44
17	08:37	09:19 (2)	07:49			06:48	06:36	05:40	05:14	05:34	06:21	07:12	07:58	08:55 (2)
	16:55	69	12:28 (1)	17:52		18:42	20:36	21:26	21:59	21:49	20:58	19:48	18:39	16:42
18	08:36	09:19 (2)	07:47			06:45	06:34	05:38	05:14	05:35	06:23	07:14	08:00	08:55 (2)
	16:57	67	12:26 (1)	17:53		18:44	20:37	21:27	21:59	21:48	20:56	19:46	18:37	16:41
19	08:35	09:19 (2)	07:45			06:43	06:32	05:37	05:14	05:37	06:24	07:15	08:02	08:56 (2)
	16:58	66	12:25 (1)	17:55		18:46	20:39	21:29	22:00	21:46	20:54	19:43	18:35	16:40
20	08:34	09:20 (2)	07:43			06:41	06:30	05:35	05:14	05:38	06:26	07:17	08:03	08:55 (2)
	17:00	62	12:24 (1)	17:57		18:47	20:41	21:30	22:00	21:45	20:52	19:41	18:33	16:39
21	08:33	09:20 (2)	07:41			06:38	06:28	05:34	05:14	05:39	06:28	07:18	08:10	08:05
	17:02	58	12:22 (1)	17:59		18:49	20:43	21:32	22:00	21:44	20:49	19:39	18:31	16:37
22	08:31	09:20 (2)	07:39			06:36	06:26	05:32	05:14	05:41	06:29	07:20	08:07	08:56 (2)
	17:04	50	12:17 (1)	18:01		18:51	20:44	21:33	22:01	21:43	20:47	19:36	18:28	16:36
23	08:30	09:21 (2)	07:37			06:34	06:24	05:31	05:15	05:42	06:31	07:22	08:13	08:08
	17:05	41	10:02 (3)	18:03		18:53	20:46	21:34	22:01	21:41	20:45	19:34	18:26	16:35
24	08:29	09:21 (2)	07:35			06:31	06:21	05:30	05:15	05:43	06:32	07:23	08:15	08:10
	17:07	42	10:03 (3)	18:05		18:54	20:48	21:36	22:01	21:40	20:43	19:32	18:24	16:34
25	08:28	09:21 (2)	07:32			06:29	06:19	05:29	05:15	05:45	06:34	07:25	07:17	08:12
	17:09	43	10:04 (3)	18:06		18:56	20:49	21:37	22:01	21:39	20:41	19:29	17:22	16:33
26	08:26	09:23 (2)	07:30			06:27	06:17	05:28	05:16	05:46	06:36	07:27	07:19	08:13
	17:11	42	10:05 (3)	18:08		18:58	20:51	21:39	22:01	21:37	20:39	19:27	17:20	16:32
27	08:25	09:23 (2)	07:28			06:24	06:15	05:26	05:16	05:48	06:37	07:28	07:20	08:15
	17:12	42	10:05 (3)	18:10		19:00	20:53	21:40	22:01	21:36	20:36	19:25	17:18	16:31
28	08:24	09:24 (3)	07:26			06:22	06:13	05:25	05:17	05:49	06:39	07:30	07:22	08:16
	17:14	42	10:06 (3)	18:12		19:01	20:55	21:41	22:01	21:34	20:34	19:22	17:16	16:30
29	08:22	09:24 (3)	07:24			07:20	06:11	05:24	05:17	05:51	06:41	07:32	07:24	08:18
	17:16	42	10:06 (3)			20:03	20:56	21:42	22:01	21:33	20:32	19:20	17:14	16:29
30	08:21	09:24 (3)	07:23			07:17	06:09	05:23	05:18	05:52	06:42	07:33	07:26	08:19
	17:18	42	10:06 (3)			20:05	20:58	21:44	22:00	21:31	20:30	19:18	17:12	16:31
31	08:19	09:24 (3)	07:21			07:15		05:22		05:54	06:44		07:28	08:59 (3)
	17:20	42	10:06 (3)			20:06		21:45		21:29	20:28		17:10	16:32
Potential sun hours	258		277			367	416	486	500	503	454	381	331	265
Total, worst case	1809		520										137	1494
Sun reduction	0.21		0.30										0.34	0.19
Oper. time red.	0.95		0.95										0.95	0.95
Wind dir. red.	0.61		0.56										0.56	0.66
Total reduction	0.12		0.16										0.18	0.12
Total, real	221		84										25	1735

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: O - Valkeweg 3

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

	N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
	337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June	July	August	September	October	November	December	
1   08:45	13:14 (3)	08:18	07:24	07:13	06:07	05:22	05:18	05:55	06:46	07:35	07:29	08:21 13:10 (3)	
16:33	15:27 (1)	17:22	18:14	20:08	21:00	21:46	22:00	21:28	20:25	19:15	17:09	16:28 15:12 (1)	
2   08:45	13:14 (3)	08:16	07:22	07:10	06:05	05:21	05:19	05:57	06:47	07:37	07:31	08:22 13:09 (3)	
16:34	15:27 (1)	17:23	18:15	20:10	21:01	21:47	22:00	21:26	20:23	19:13	17:07	16:27 47 15:13 (1)	
3   08:45	13:15 (3)	08:14	07:19	07:08	06:03	05:20	05:18	05:58	06:49	07:38	07:33	08:24 13:07 (3)	
16:35	15:27 (1)	17:25	18:17	20:12	21:03	21:48	21:59	21:24	20:21	19:11	17:05	16:26 50 15:13 (1)	
4   08:44	13:17 (3)	08:13	07:17	07:06	06:02	05:19	05:21	06:00	06:51	07:40	07:35	08:25 13:06 (3)	
16:37	60	15:28 (1)	17:27	18:19	20:13	21:05	21:49	21:59	21:23	20:18	19:08	16:26 53 15:14 (1)	
5   08:44	13:17 (3)	08:11	07:15	07:03	06:00	05:18	05:21	06:02	06:52	07:42	07:37	08:26 13:05 (3)	
16:38	59	15:28 (1)	17:29	18:21	20:15	21:06	21:50	21:58	21:21	20:16	19:06	16:25 55 15:14 (1)	
6   08:44	13:19 (3)	08:09	07:13	07:01	05:58	05:18	05:22	06:03	06:54	07:44	07:38	08:28 13:05 (3)	
16:39	58	15:29 (1)	17:31	18:23	20:17	21:08	21:51	21:58	21:19	20:14	19:04	16:25 57 15:15 (1)	
7   08:43	13:20 (3)	08:08	07:10	06:59	05:56	05:17	05:23	06:05	06:55	07:45	07:40	08:29 13:04 (3)	
16:40	56	15:29 (1)	17:33	18:24	20:19	21:10	21:52	21:57	21:17	20:11	19:01	16:24 59 15:15 (1)	
8   08:43	13:22 (3)	08:06	07:08	06:57	05:54	05:17	05:24	06:06	06:57	07:47	07:42	08:30 13:04 (3)	
16:42	53	15:30 (1)	17:35	18:26	20:20	21:11	21:53	21:57	21:15	20:09	18:59	16:24 60 15:15 (1)	
9   08:43	13:23 (3)	08:04	07:06	06:54	05:52	05:20	05:16	05:25	06:08	06:59	07:44	08:31 13:03 (3)	
16:43	51	15:30 (1)	17:36	18:28	20:22	21:13	21:54	21:56	21:14	20:07	18:57	16:24 62 15:15 (1)	
10   08:42	13:25 (3)	08:02	07:04	06:52	05:51	05:16	05:26	06:10	07:00	07:50	07:46	08:33 13:04 (3)	
16:44	48	15:30 (1)	17:38	18:30	20:24	21:15	21:55	21:55	21:21	20:04	18:55	16:24 64 15:17 (1)	
11   08:41	13:28 (3)	08:01	07:01	06:50	05:49	05:15	05:27	06:11	07:02	07:52	07:48	08:34 13:04 (3)	
16:46	43	15:30 (1)	17:40	18:32	20:25	21:16	21:55	21:54	21:10	20:02	18:52	16:23 63 15:17 (1)	
12   08:41	15:00 (1)	07:59	06:59	06:47	05:47	05:15	05:28	06:13	07:04	07:54	07:49	08:35 13:04 (3)	
16:47	31	15:31 (1)	17:42	18:33	20:27	21:18	21:56	21:54	21:08	20:00	18:50	16:23 64 15:17 (1)	
13   08:40	15:00 (1)	07:57	06:57	06:45	05:46	05:15	05:29	06:14	07:05	07:56	07:51	08:36 13:04 (3)	
16:49	31	15:31 (1)	17:44	18:35	20:29	21:19	21:57	21:53	21:06	19:57	18:48	16:23 66 15:18 (1)	
14   08:39	15:01 (1)	07:55	06:54	06:43	05:44	05:14	05:30	06:16	07:07	07:57	07:53	08:37 13:04 (3)	
16:50	30	15:31 (1)	17:46	18:37	20:31	21:21	21:57	21:52	21:04	19:55	18:46	16:23 66 15:18 (1)	
15   08:38	15:01 (1)	07:53	06:52	06:41	05:43	05:14	05:32	06:18	07:09	07:59	07:55	08:38 13:05 (3)	
16:52	30	15:31 (1)	17:48	18:39	20:32	21:23	21:58	21:51	21:02	19:53	18:43	16:23 66 15:19 (1)	
16:58	26	15:30 (1)	17:55	18:46	20:39	21:29	22:00	21:46	20:54	19:43	18:35	16:40 17 15:01 (1) 16:24 67 15:20 (1)	
20   08:34	15:06 (1)	07:43	06:41	06:30	05:35	05:14	05:38	06:26	07:17	08:08	08:03	14:43 (1) 08:41 13:06 (3)	
17:00	24	15:30 (1)	17:57	18:47	20:41	21:30	22:00	21:45	20:52	19:41	18:33	16:38 20 15:03 (1) 16:24 67 15:20 (1)	
21   08:33	15:07 (1)	07:41	06:38	06:28	05:34	05:14	05:39	06:27	07:18	08:10	08:05	14:42 (1) 08:42 13:06 (3)	
17:02	23	15:30 (1)	17:59	18:49	20:43	21:32	22:00	21:44	20:49	19:39	18:31	16:37 23 15:05 (1) 16:25 68 15:21 (1)	
22   08:31	15:08 (1)	07:39	06:36	06:26	05:32	05:14	05:41	06:29	07:20	08:11	08:07	14:42 (1) 08:43 13:06 (3)	
17:03	20	15:28 (1)	18:01	18:51	20:44	21:33	22:01	21:43	20:47	19:36	18:28	16:36 24 15:06 (1) 16:25 68 15:21 (1)	
23   08:30	15:10 (1)	07:37	06:34	06:24	05:31	05:15	05:42	06:31	07:22	08:13	08:08	14:41 (1) 08:43 13:07 (3)	
17:05	17	15:27 (1)	18:03	18:53	20:46	21:34	22:01	21:41	20:45	19:34	18:26	16:35 26 15:07 (1) 16:26 68 15:22 (1)	
24   08:29	15:13 (1)	07:35	06:31	06:21	05:30	05:15	05:43	06:32	07:23	08:15	08:10	14:41 (1) 08:43 13:08 (3)	
17:07	13	15:26 (1)	18:04	18:54	20:48	21:36	22:01	21:40	20:43	19:32	18:24	16:34 27 15:05 (1) 16:26 67 15:22 (1)	
25   08:28	15:16 (1)	07:32	06:29	06:19	05:29	05:15	05:45	06:34	07:25	07:17	08:12	14:40 (1) 08:44 13:08 (3)	
17:09	7	15:23 (1)	18:06	18:56	20:49	21:37	22:01	21:39	20:41	19:29	17:22	16:33 28 15:08 (1) 16:27 66 15:22 (1)	
26   08:26		07:30	06:27	06:17	05:28	05:16	05:46	06:36	07:27	07:19	08:13	14:40 (1) 08:44 13:09 (3)	
17:11		18:08	18:58	20:51	21:39	22:01	21:37	20:39	19:27	17:20	16:32	29 15:09 (1) 16:28 67 15:24 (1)	
27   08:25	07:28	06:24	06:15	05:26	05:16	05:48	06:37	07:28	07:20	08:15	14:41 (1) 08:44 13:10 (3)		
17:12		18:10	19:00	20:53	21:40	22:01	21:36	20:36	19:25	17:18	16:31	29 15:10 (1) 16:28 66 15:24 (1)	
28   08:24	07:26	06:22	06:13	05:25	05:17	05:49	06:39	07:30	07:22	08:16	14:41 (1) 08:45 13:10 (3)		
17:14		18:12	19:01	20:55	21:41	22:01	21:34	20:34	19:22	17:16	16:30	30 15:11 (1) 16:29 66 15:24 (1)	
29   08:22		07:20	06:11	05:24	05:17	05:51	06:41	07:32	07:24	08:18	14:40 (1) 08:45 13:11 (3)		
17:16			20:03	20:56	21:42	22:01	21:33	20:32	19:20	17:14	16:29	31 15:11 (1) 16:30 65 15:25 (1)	
30   08:21			07:17	06:09	05:23	05:18	05:52	06:42	07:33	07:26	08:19	14:41 (1) 08:45 13:12 (3)	
17:18				20:05	20:58	21:44	22:00	21:31	20:30	19:18	17:12	31 15:12 (1) 16:31 65 15:25 (1)	
31   08:19				07:15		05:22		05:54	06:44		07:28		08:45 13:13 (3)
17:20				20:06		21:45		21:29	20:27		17:10		16:32 64 15:26 (1)
Potential sun hours	258		277	367	417	486	500	503	455	381	331	265	242
Total, worst case	954										335		1937
Sun reduction	0,21										0,23		0,19
Oper. ilme red.	0,95										0,95		0,95
Wind dir. red.	0,71										0,72		0,71
Total reduction	0,14										0,16		0,13
Total, real	136										53		248

Table layout: For each day in each month the following matrix apply

Day in month	Sunrise (hh:mm)	Sunset (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: P - Valkeweg 1

Assumptions for shadow calculations

Sunshine probability S7S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June	
1	08:45	12:31 (2)	08:18	14:21 (3)	07:24	06:07	05:22
	16:33	68	15:02 (3)	17:22	85	16:30 (1)	18:14
2	08:45	12:31 (2)	08:16	14:22 (3)	07:22	07:10	06:05
	16:34	67	15:02 (3)	17:23	84	16:30 (1)	18:15
3	08:45	12:33 (2)	08:14	14:23 (3)	07:19	07:08	06:03
	16:35	65	15:03 (3)	17:25	84	16:31 (1)	18:17
4	08:44	12:36 (2)	08:13	14:24 (3)	07:17	07:06	06:02
	16:37	61	15:04 (3)	17:27	82	16:31 (1)	18:19
5	08:44	12:38 (2)	08:11	14:25 (3)	07:15	07:03	06:00
	16:38	57	15:04 (3)	17:29	81	16:31 (1)	18:21
6	08:44	14:14 (3)	08:09	14:26 (3)	07:13	07:01	05:58
	16:39	52	15:06 (3)	17:31	81	16:32 (1)	18:23
7	08:43	14:14 (3)	08:08	14:27 (3)	07:10	06:59	05:56
	16:40	52	15:06 (3)	17:33	78	16:31 (1)	18:24
8	08:43	14:15 (3)	08:06	14:28 (3)	07:08	06:57	05:54
	16:42	52	15:07 (3)	17:35	75	16:31 (1)	18:26
9	08:43	14:15 (3)	08:04	14:31 (3)	07:06	06:54	05:52
	16:43	53	15:08 (3)	17:36	71	16:32 (1)	18:28
10	08:42	14:14 (3)	08:02	14:33 (3)	07:04	06:52	05:51
	16:44	54	15:08 (3)	17:38	68	16:32 (1)	18:30
11	08:41	14:14 (3)	08:01	14:35 (3)	07:01	06:50	05:49
	16:46	54	15:08 (3)	17:40	62	16:31 (1)	18:32
12	08:41	14:15 (3)	07:59	14:38 (3)	06:59	06:47	05:47
	16:47	55	15:10 (3)	17:42	56	16:31 (1)	18:33
13	08:40	14:15 (3)	07:57	14:41 (3)	06:57	06:45	05:46
	16:49	55	15:10 (3)	17:44	48	16:30 (1)	18:35
14	08:39	14:16 (3)	07:55	14:49 (3)	06:54	06:43	05:44
	16:50	55	15:11 (3)	17:46	31	16:29 (1)	18:37
15	08:38	14:16 (3)	07:53	16:03 (1)	06:52	06:41	05:43
	16:52	55	15:11 (3)	17:48	25	16:28 (1)	18:39
16	08:38	14:16 (3)	07:51	16:05 (1)	06:50	06:39	05:41
	16:53	56	15:12 (3)	17:50	22	16:27 (1)	18:40
17	08:37	14:16 (3)	07:49	16:06 (1)	06:48	06:36	05:39
	16:55	57	15:13 (3)	17:52	18	16:24 (1)	18:42
18	08:36	14:15 (3)	07:47	16:09 (1)	06:45	06:34	05:38
	16:57	57	15:12 (3)	17:53	12	16:21 (1)	18:44
19	08:35	14:16 (3)	07:45			06:43	05:37
	16:58	57	15:13 (3)	17:55		18:46	20:39
20	08:34	14:16 (3)	07:43			18:46	20:39
	17:00	57	15:13 (3)	17:57		18:47	20:41
21	08:33	14:17 (3)	07:41			06:38	05:34
	17:02	57	15:14 (3)	17:59		18:49	20:43
22	08:31	14:16 (3)	07:39			06:36	05:32
	17:03	58	15:14 (3)	18:01		18:51	20:44
23	08:30	14:17 (3)	07:37			06:34	05:31
	17:05	64	16:15 (1)	18:03		18:53	20:46
24	08:29	14:18 (3)	07:35			06:31	05:30
	17:07	70	16:19 (1)	18:04		18:54	20:48
25	08:28	14:18 (3)	07:32			06:29	05:29
	17:09	75	16:21 (1)	18:06		18:56	20:49
26	08:26	14:19 (3)	07:30			06:27	05:28
	17:11	76	16:23 (1)	18:08		18:58	20:51
27	08:25	14:18 (3)	07:28			06:24	05:26
	17:12	80	16:24 (1)	18:10		19:00	20:53
28	08:24	14:19 (3)	07:26			06:22	05:25
	17:14	81	16:26 (1)	18:12		19:01	20:55
29	08:22	14:20 (3)				07:20	05:24
	17:16	82	16:27 (1)			20:03	20:56
30	08:21	14:20 (3)				07:17	05:23
	17:18	84	16:28 (1)			20:05	20:58
31	08:19	14:21 (3)				07:15	05:22
	17:20	84	16:29 (1)			20:06	21:45
Potential sun hours	258		277		367	416	486
Total, worst case		1950		1063			
Sun reduction		0,21		0,30			
Oper. time red.		0,95		0,95			
Wind dir. red.		0,72		0,71			
Total reduction		0,14		0,20			
Total, real		281		216			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
				Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: P - Valkeweg 1

Assumptions for shadow calculations

Sunshine probability S7S0 (Sun hours/Possible sun hours) []

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

	N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
	337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	July	August	September	October	November	December							
1	05:18	05:55	06:46	07:35	07:29	14:01 (3)	08:21						
	22:00	21:28	20:25	19:15	17:09	67	16:00 (1)	16:28	54	14:50 (3)			
2	05:19	05:57	06:47	07:37	07:31	13:59 (3)	08:22						
	22:00	21:26	20:23	19:13	17:07	73	16:01 (1)	16:27	54	14:51 (3)			
3	05:20	05:58	06:49	07:38	07:33	13:58 (3)	08:24						
	21:59	21:24	20:21	19:11	17:05	75	16:01 (1)	16:26	53	14:51 (3)			
4	05:21	06:00	06:50	07:40	07:35	13:57 (3)	08:25						
	21:59	21:23	20:18	19:08	17:03	78	16:01 (1)	16:26	52	14:51 (3)			
5	05:21	06:02	06:52	07:42	07:37	13:56 (3)	08:26						
	21:58	21:21	20:16	19:06	17:01	80	16:01 (1)	16:25	52	14:51 (3)			
6	05:22	06:03	06:54	07:44	07:38	13:55 (3)	08:28						
	21:58	21:19	20:14	19:04	16:59	81	16:01 (1)	16:25	52	14:52 (3)			
7	05:23	06:05	06:55	07:45	07:40	13:54 (3)	08:29						
	21:57	21:17	20:11	19:01	16:58	82	16:01 (1)	16:24	58	14:52 (3)			
8	05:24	06:06	06:57	07:47	07:42	13:53 (3)	08:30						
	21:57	21:15	20:09	18:59	16:56	84	16:01 (1)	16:24	61	14:51 (3)			
9	05:25	06:08	06:59	07:49	07:44	13:53 (3)	08:31						
	21:56	21:14	20:07	18:57	16:54	85	16:01 (1)	16:24	65	14:51 (3)			
10	05:26	06:10	07:00	07:50	07:46	13:52 (3)	08:33						
	21:55	21:12	20:04	18:55	16:53	84	16:00 (1)	16:24	66	14:52 (3)			
11	05:27	06:11	07:02	07:52	07:48	13:52 (3)	08:34						
	21:54	21:10	20:02	18:52	16:51	84	16:00 (1)	16:23	68	14:52 (3)			
12	05:28	06:13	07:04	07:54	07:49	13:52 (3)	08:35						
	21:54	21:08	20:00	18:50	16:50	82	15:59 (1)	16:23	70	14:53 (3)			
13	05:29	06:14	07:05	07:56	07:51	13:51 (3)	08:36						
	21:53	21:06	19:57	18:48	16:48	83	15:59 (1)	16:23	70	14:53 (3)			
14	05:30	06:16	07:07	07:57	07:53	13:51 (3)	08:37						
	21:52	21:04	19:55	18:46	16:47	81	15:58 (1)	16:23	71	14:53 (3)			
15	05:32	06:18	07:09	07:59	07:55	13:51 (3)	08:38						
	21:51	21:02	19:53	18:43	16:45	80	15:57 (1)	16:23	72	14:54 (3)			
16	05:33	06:19	07:10	08:01	07:56	13:51 (3)	08:38						
	21:50	21:00	19:50	18:41	16:44	77	15:56 (1)	16:23	72	14:54 (3)			
17	05:34	06:21	07:12	08:03	07:58	13:52 (3)	08:39						
	21:49	20:58	19:48	18:39	16:42	75	15:55 (1)	16:24	73	14:54 (3)			
18	05:35	06:23	07:13	08:04	08:00	13:52 (3)	08:40						
	21:48	20:56	19:46	18:37	16:41	70	15:53 (1)	16:24	73	14:54 (3)			
19	05:37	06:24	07:15	08:06	08:02	13:51 (3)	08:41						
	21:46	20:54	19:43	18:35	16:40	64	15:49 (1)	16:24	73	14:55 (3)			
20	05:38	06:26	07:17	08:08	08:03	13:51 (3)	08:41						
	21:45	20:52	19:41	18:33	16:38	58	14:49 (3)	16:24	73	14:55 (3)			
21	05:39	06:27	07:18	08:10	08:05	13:52 (3)	08:42						
	21:44	20:49	19:39	18:31	16:37	57	14:49 (3)	16:25	73	14:56 (3)			
22	05:41	06:29	07:20	08:11	08:07	13:52 (3)	08:43						
	21:43	20:47	19:36	18:28	16:36	57	14:49 (3)	16:25	73	14:56 (3)			
23	05:42	06:31	07:22	08:13	16:45 (1)	08:08	13:53 (3)	08:43					
	21:41	20:45	19:34	18:26	16:46 (1)	16:35	57	14:50 (3)	16:26	73	14:57 (3)		
24	05:43	06:32	07:23	08:15	16:39 (1)	08:10	13:54 (3)	08:43					
	21:40	20:43	19:32	18:24	16:52 (1)	16:34	56	14:50 (3)	16:26	73	14:57 (3)		
25	05:45	06:34	07:25	07:17	15:36 (1)	08:12	13:53 (3)	08:44					
	21:39	20:41	19:29	17:22	19	15:55 (1)	16:33	57	14:50 (3)	16:27	73	14:57 (3)	
26	05:46	06:36	07:27	07:19	15:34 (1)	08:13	13:54 (3)	08:44					
	21:37	20:39	19:27	17:20	23	15:57 (1)	16:32	56	14:50 (3)	16:28	72	14:58 (3)	
27	05:48	06:37	07:28	07:20	15:32 (1)	08:15	13:55 (3)	08:44					
	21:36	20:36	19:25	17:18	26	15:58 (1)	16:31	55	14:50 (3)	16:28	72	14:59 (3)	
28	05:49	06:39	07:30	07:22	14:15 (3)	08:16	13:55 (3)	08:45					
	21:34	20:34	19:22	17:16	38	15:59 (1)	16:30	55	14:50 (3)	16:29	71	14:59 (3)	
29	05:51	06:41	07:32	07:24	14:10 (3)	08:18	13:55 (3)	08:45					
	21:33	20:32	19:20	17:14	50	16:00 (1)	16:29	55	14:50 (3)	16:30	71	15:00 (3)	
30	05:52	06:42	07:33	07:26	14:06 (3)	08:19	13:56 (3)	08:45					
	21:31	20:30	19:18	17:12	56	15:59 (1)	16:28	55	14:51 (3)	16:31	71	15:01 (3)	
31	05:54	06:44		07:28	14:03 (3)				08:45				
	21:29	20:27		17:10	64	16:00 (1)			16:32	69	15:01 (3)		
Potential sun hours	503	454	381	331		265			242				
Total, worst case					290		2103		2073				
Sun reduction					0,34		0,23		0,19				
Oper. time red.					0,95		0,95		0,95				
Wind dir. red.					0,71		0,72		0,72				
Total reduction					0,23		0,16		0,13				
Total, real					66		331		269				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
				Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: Q - Mettrayweg 17a

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June
1   08:45	14:17 (2)	08:18	14:28 (2)	07:24	16:35 (3)	07:13
1   16:33	48	15:05 (2)	17:21	46	15:14 (2)	18:14
2   08:45		14:17 (2)	08:16		14:29 (2)	07:22
2   16:34	48	15:05 (2)	17:23	45	15:14 (2)	18:15
3   08:45		14:17 (2)	08:14		14:31 (2)	07:19
3   16:35	49	15:06 (2)	17:25	43	15:14 (2)	18:17
4   08:44		14:18 (2)	08:13		14:32 (2)	07:17
4   16:37	49	15:07 (2)	17:27	41	15:13 (2)	18:19
5   08:44		14:17 (2)	08:11		14:33 (2)	07:15
5   16:38	50	15:07 (2)	17:29	38	15:11 (2)	18:21
6   08:44		14:18 (2)	08:09		14:34 (2)	07:13
6   16:39	50	15:08 (2)	17:31	36	15:10 (2)	18:23
7   08:43		14:18 (2)	08:08		14:36 (2)	07:10
7   16:40	50	15:08 (2)	17:33	32	15:08 (2)	18:24
8   08:43		14:19 (2)	08:06		14:38 (2)	07:08
8   16:42	50	15:09 (2)	17:35	29	15:07 (2)	18:26
9   08:42		14:19 (2)	08:04		14:41 (2)	07:06
9   16:43	51	15:10 (2)	17:36	24	15:05 (2)	18:28
10   08:42		14:19 (2)	08:02		14:45 (2)	07:04
10   16:44	51	15:10 (2)	17:38	17	15:02 (2)	18:30
11   08:41		14:19 (2)	08:01			07:01
11   16:46	51	15:10 (2)	17:40			18:32
12   08:41		14:19 (2)	07:59			06:59
12   16:47	52	15:11 (2)	17:42			18:33
13   08:40		14:20 (2)	07:57			06:57
13   16:49	52	15:12 (2)	17:44			18:35
14   08:39		14:20 (2)	07:55			06:54
14   16:50	53	15:13 (2)	17:46			18:37
15   08:38		14:20 (2)	07:53			06:52
15   16:52	53	15:13 (2)	17:48			18:39
16   08:38		14:20 (2)	07:51			06:50
16   16:53	54	15:14 (2)	17:50			18:40
17   08:37		14:21 (2)	07:49			06:48
17   16:55	53	15:14 (2)	17:51			18:42
18   08:36		14:20 (2)	07:47			06:45
18   16:57	54	15:14 (2)	17:53			18:44
19   08:35		14:21 (2)	07:45			06:43
19   16:58	53	15:14 (2)	17:55			18:46
20   08:34		14:21 (2)	07:43			06:41
20   17:00	54	15:15 (2)	17:57			18:47
21   08:32		14:22 (2)	07:41			16:52 (3)
21   17:02	54	15:16 (2)	17:59	13		06:38
22   08:31		14:22 (2)	07:39			17:05 (3)
22   17:03	53	15:15 (2)	18:01	21		18:49
23   08:30		14:22 (2)	07:37			16:48 (3)
23   17:05	54	15:16 (2)	18:03	26		06:34
24   08:29		14:23 (2)	07:35			17:11 (3)
24   17:07	53	15:16 (2)	18:04	35		18:53
25   08:28		14:23 (2)	07:32			16:40 (3)
25   17:09	53	15:16 (2)	18:06	49		06:29
26   08:26		14:24 (2)	07:30			17:30 (1)
26   17:11	52	15:16 (2)	18:08	53		18:56
27   08:25		14:24 (2)	07:28			16:39 (3)
27   17:12	52	15:16 (2)	18:10	56		06:27
28   08:24		14:25 (2)	07:26			17:34 (1)
28   17:14	51	15:16 (2)	18:12	58		19:00
29   08:22		14:26 (2)				07:20
29   17:16	49	15:15 (2)				20:03
30   08:21		14:26 (2)				07:17
30   17:18	49	15:15 (2)				20:05
31   08:19		14:27 (2)				07:15
31   17:20	48	15:15 (2)				20:06
Potential sun hours	258		277			367
Total, worst case		1593		662		1150
Sun reduction		0,21		0,30		0,33
Oper. time red.		0,95		0,95		0,95
Wind dir. red.		0,73		0,69		0,66
Total reduction		0,15		0,20		0,21
Total, real		233		132		240

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
				Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: Q - Mettrayweg 17a

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	July	August	September	October		November		December						
1	05:18	05:55	06:46		07:35	17:10 (3)	07:29		14:13 (2)	08:21		14:01 (2)		
	22:00	21:28	20:25		19:15	58	18:08 (1)	17:09	18	14:31 (2)	16:28	52	14:53 (2)	
2	05:19	05:57	06:47		07:37	17:10 (3)	07:31		14:10 (2)	08:22		14:02 (2)		
	22:00	21:26	20:23		19:13	60	18:10 (1)	17:07	24	14:34 (2)	16:27	51	14:53 (2)	
3	05:20	05:58	06:49		07:38	17:09 (3)	07:33		14:07 (2)	08:24		14:02 (2)		
	21:59	21:24	20:21		19:11	62	18:11 (1)	17:05	30	14:37 (2)	16:26	51	14:53 (2)	
4	05:21	06:00	06:50		07:40	17:08 (3)	07:35		14:05 (2)	08:25		14:03 (2)		
	21:59	21:23	20:18		19:08	63	18:11 (1)	17:03	33	14:38 (2)	16:26	51	14:54 (2)	
5	05:21	06:02	06:52		07:42	17:08 (3)	07:37		14:04 (2)	08:26		14:03 (2)		
	21:58	21:21	20:16		19:06	64	18:12 (1)	17:01	36	14:40 (2)	16:25	50	14:53 (2)	
6	05:22	06:03	06:54		07:44	17:08 (3)	07:38		14:02 (2)	08:28		14:04 (2)		
	21:58	21:19	20:14		19:04	64	18:12 (1)	16:59	39	14:41 (2)	16:25	50	14:54 (2)	
7	05:23	06:05	06:55		07:45	17:08 (3)	07:40		14:01 (2)	08:29		14:04 (2)		
	21:57	21:17	20:11		19:01	64	18:12 (1)	16:58	41	14:42 (2)	16:24	50	14:54 (2)	
8	05:24	06:06	06:57		07:47	17:07 (3)	07:42		14:00 (2)	08:30		14:05 (2)		
	21:57	21:15	20:09		18:59	64	18:11 (1)	16:56	44	14:44 (2)	16:24	49	14:54 (2)	
9	05:25	06:08	06:59		07:49	17:07 (3)	07:44		13:59 (2)	08:31		14:05 (2)		
	21:56	21:14	20:07		18:57	64	18:11 (1)	16:54	45	14:44 (2)	16:24	49	14:54 (2)	
10	05:26	06:10	07:00		07:50	17:08 (3)	07:46		13:59 (2)	08:33		14:07 (2)		
	21:55	21:12	20:04		18:55	63	18:11 (1)	16:53	46	14:45 (2)	16:24	48	14:55 (2)	
11	05:27	06:11	07:02		07:52	17:08 (3)	07:47		13:58 (2)	08:34		14:07 (2)		
	21:54	21:10	20:02		18:52	62	18:10 (1)	16:51	48	14:46 (2)	16:23	48	14:55 (2)	
12	05:28	06:13	07:04		07:54	17:09 (3)	07:49		13:58 (2)	08:35		14:08 (2)		
	21:54	21:08	20:00		18:50	61	18:10 (1)	16:50	49	14:47 (2)	16:23	47	14:55 (2)	
13	05:29	06:14	07:05		07:56	17:09 (3)	07:51		13:57 (2)	08:36		14:08 (2)		
	21:53	21:06	19:57		18:48	59	18:08 (1)	16:48	50	14:47 (2)	16:23	48	14:56 (2)	
14	05:30	06:16	07:07		07:57	17:10 (3)	07:53		13:57 (2)	08:37		14:09 (2)		
	21:52	21:04	19:55		18:46	57	18:07 (1)	16:47	51	14:48 (2)	16:23	47	14:56 (2)	
15	05:32	06:18	07:09		07:59	17:11 (3)	07:55		13:57 (2)	08:38		14:09 (2)		
	21:51	21:02	19:53		18:43	54	18:05 (1)	16:45	52	14:49 (2)	16:23	47	14:56 (2)	
16	05:33	06:19	07:10		08:01	17:12 (3)	07:56		13:57 (2)	08:38		14:10 (2)		
	21:50	21:00	19:50		18:41	52	18:04 (1)	16:44	52	14:49 (2)	16:23	47	14:57 (2)	
17	05:34	06:21	07:12		08:03	17:13 (3)	07:58		13:57 (2)	08:39		14:10 (2)		
	21:49	20:58	19:48		18:39	44	18:01 (1)	16:42	53	14:50 (2)	16:24	46	14:56 (2)	
18	05:35	06:23	07:13		08:04	17:15 (3)	08:00		13:57 (2)	08:40		14:11 (2)		
	21:48	20:56	19:46		18:37	29	17:44 (3)	16:41	53	14:50 (2)	16:24	46	14:57 (2)	
19	05:37	06:24	07:15		08:06	17:16 (3)	08:02		13:56 (2)	08:41		14:12 (2)		
	21:46	20:54	19:43		18:35	25	17:41 (3)	16:40	54	14:50 (2)	16:24	46	14:58 (2)	
20	05:38	06:26	07:17	17:34 (3)	08:08	17:19 (3)	08:03		13:57 (2)	08:41		14:12 (2)		
	21:45	20:52	19:41	11	17:45 (3)	18:33	19	17:38 (3)	16:38	53	14:50 (2)	16:24	46	14:58 (2)
21	05:39	06:27	07:18	17:29 (3)	08:10	17:24 (3)	08:05		13:57 (2)	08:42		14:12 (2)		
	21:44	20:49	19:39	20	17:49 (3)	18:30	9	17:33 (3)	16:37	54	14:51 (2)	16:25	46	14:58 (2)
22	05:41	06:29	07:20	17:25 (3)	08:11				13:57 (2)	08:42		14:12 (2)		
	21:43	20:47	19:36	26	17:51 (3)	18:28			13:58 (2)	08:43		14:14 (2)		
23	05:42	06:31	07:22		17:23 (3)	08:13			13:58 (2)	08:43		14:14 (2)		
	21:41	20:45	19:34	30	17:53 (3)	18:26			14:51 (2)	16:26		45	14:59 (2)	
24	05:43	06:32	07:23		17:21 (3)	08:15			13:58 (2)	08:43		14:14 (2)		
	21:40	20:43	19:32	34	17:55 (3)	18:24			14:52 (2)	16:26		46	15:00 (2)	
25	05:45	06:34	07:25		17:18 (3)	07:17			13:58 (2)	08:44		14:14 (2)		
	21:39	20:41	19:29	37	17:55 (3)	17:22			14:51 (2)	16:27		46	15:00 (2)	
26	05:46	06:36	07:27		17:17 (3)	07:19			13:58 (2)	08:44		14:15 (2)		
	21:37	20:39	19:27	39	17:56 (3)	17:20			14:52 (2)	16:28		46	15:01 (2)	
27	05:48	06:37	07:28		17:16 (3)	07:20			13:59 (2)	08:44		14:15 (2)		
	21:36	20:36	19:25	41	17:57 (3)	17:18			14:52 (2)	16:28		47	15:02 (2)	
28	05:49	06:39	07:30		17:14 (3)	07:22			13:59 (2)	08:45		14:15 (2)		
	21:34	20:34	19:22	43	17:57 (3)	17:16			14:52 (2)	16:29		47	15:02 (2)	
29	05:51	06:41	07:32		17:13 (3)	07:24			14:00 (2)	08:45		14:16 (2)		
	21:33	20:32	19:20	47	18:02 (1)	17:14			14:52 (2)	16:30		47	15:03 (2)	
30	05:52	06:42	07:33		17:12 (3)	07:26			14:01 (2)	08:45		14:16 (2)		
	21:31	20:30	19:18	55	18:07 (1)	17:12			14:53 (2)	16:31		47	15:03 (2)	
31	05:54	06:44			07:28		14:19 (2)			08:45		14:16 (2)		
	21:29	20:27			17:10	7	14:26 (2)			16:32		48	15:04 (2)	
	Potential sun hours	503	454	381	331			265		242				
	Total, worst case			383		1104			1403		1480			
	Sun reduction			0,37		0,34			0,23		0,19			
	Oper. time red.			0,95		0,95			0,95		0,95			
	Wind dir. red.			0,66		0,66			0,73		0,73			
	Total reduction			0,24		0,21			0,16		0,13			
	Total, real			90		237			225		196			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: R - Mettrayweg 24

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June	
1	08:45	08:18	07:24	16:05 (2)	07:13	18:42 (3)	06:07   05:21
	16:33	17:21	18:14	53 16:58 (2)	20:08 39	19:21 (3)   21:00	21:46
2	08:45	08:16	07:22	16:06 (2)	07:10	18:41 (3)   06:05	05:21
	16:34	17:23	18:15	52 16:58 (2)	20:10 41	19:22 (3)   21:01	21:47
3	08:45	08:14	07:19	16:06 (2)	07:08	18:41 (3)   06:03	05:20
	16:35	17:25	18:17	52 16:58 (2)	20:12 41	19:22 (3)   21:03	21:48
4	08:44	08:13	07:17	16:07 (2)	07:06	18:40 (3)   06:02	05:19
	16:37	17:27	18:19	50 16:57 (2)	20:13 41	19:21 (3)   21:05	21:49
5	08:44	08:11	07:15	16:06 (2)	07:03	18:40 (3)   06:00	05:18
	16:38	17:29	18:21	50 16:56 (2)	20:15 41	19:21 (3)   21:06	21:50
6	08:44	08:09	07:13	16:07 (2)	07:01	18:40 (3)   05:58	05:18
	16:39	17:31	18:23	49 16:56 (2)	20:17 41	19:21 (3)   21:08	21:51
7	08:43	08:08	07:10	16:08 (2)	06:59	18:41 (3)   05:56	05:17
	16:40	17:33	18:24	47 16:55 (2)	20:18 39	19:20 (3)   21:10	21:52
8	08:43	08:06	07:08	16:08 (2)	06:56	18:40 (3)   05:54	05:17
	16:42	17:35	18:26	45 16:53 (2)	20:20 39	19:19 (3)   21:11	21:53
9	08:42	08:04	07:06	16:09 (2)	06:54	18:41 (3)   05:52	05:16
	16:43	17:36	18:28	43 16:52 (2)	20:22 37	19:18 (3)   21:13	21:54
10	08:42	08:02	16:27 (2)	07:04	16:11 (2)	06:52	18:41 (3)   05:51
	16:44	17:38	13 16:40 (2)	18:30	40 16:51 (2)	20:24 37	19:18 (3)   21:15
11	08:41	08:00	16:23 (2)	07:01	16:11 (2)	06:50	18:42 (3)   05:49
	16:46	17:40	21 16:44 (2)	18:32	38 16:49 (2)	20:25 35	19:17 (3)   21:16
12	08:41	07:59	16:20 (2)	06:59	16:13 (2)	06:47	18:42 (3)   05:47
	16:47	17:42	27 16:47 (2)	18:33	35 16:48 (2)	20:27 33	19:15 (3)   21:18
13	08:40	07:57	16:18 (2)	06:57	16:15 (2)	06:45	18:43 (3)   05:46
	16:49	17:44	31 16:49 (2)	18:35	31 16:46 (2)	20:29 30	19:13 (3)   21:19
14	08:39	07:55	16:16 (2)	06:54	16:17 (2)	06:43	18:45 (3)   05:44
	16:50	17:46	35 16:51 (2)	18:37	26 16:43 (2)	20:31 27	19:12 (3)   21:21
15	08:38	07:53	16:15 (2)	06:52	16:21 (2)	06:41	18:46 (3)   05:43
	16:52	17:48	37 16:52 (2)	18:39	29 18:08 (1)	20:32 24	19:10 (3)   21:23
16	08:38	07:51	16:14 (2)	06:50	16:28 (2)	06:39	18:49 (3)   05:41
	16:53	17:50	40 16:54 (2)	18:40	20 18:10 (1)	20:34 19	19:08 (3)   21:24
17	08:37	07:49	16:11 (2)	06:47	17:52 (1)	06:36	18:52 (3)   05:39
	16:55	17:51	43 16:54 (2)	18:42	19 18:11 (1)	20:36 13	19:05 (3)   21:26
18	08:36	07:47	16:11 (2)	06:45	17:51 (1)	06:34	18:53 (3)   05:14
	16:57	17:53	44 16:55 (2)	18:44	21 18:12 (1)	20:37	19:27 (3)   21:59
19	08:35	07:45	16:10 (2)	06:43	17:50 (1)	06:32	18:53 (3)   05:14
	16:58	17:55	46 16:56 (2)	18:46	23 18:13 (1)	20:39	19:29 (3)   22:00
20	08:34	07:43	16:09 (2)	06:41	17:49 (1)	06:30	18:53 (3)   05:14
	17:00	17:57	48 16:57 (2)	18:47	24 18:13 (1)	20:41	19:30 (3)   22:00
21	08:32	07:41	16:08 (2)	06:38	17:48 (1)	06:28	18:54 (3)   05:14
	17:02	17:59	49 16:57 (2)	18:49	25 18:13 (1)	20:43	19:32 (3)   22:00
22	08:31	07:39	16:08 (2)	06:36	17:48 (1)	06:26	18:53 (3)   05:14
	17:03	18:01	50 16:58 (2)	18:51	26 18:14 (1)	20:44	19:33 (3)   22:00
23	08:30	07:37	16:08 (2)	06:34	17:47 (1)	06:23	18:51 (3)   05:15
	17:05	18:03	51 16:59 (2)	18:53	26 18:13 (1)	20:46	19:34 (3)   22:01
24	08:29	07:35	16:06 (2)	06:31	17:47 (1)	06:21	18:53 (3)   05:15
	17:07	18:04	52 16:58 (2)	18:54	28 18:15 (3)	20:48	19:36 (3)   22:01
25	08:28	07:32	16:06 (2)	06:29	17:48 (1)	06:19	18:53 (3)   05:15
	17:09	18:06	52 16:58 (2)	18:56	29 18:17 (3)	20:49	19:37 (3)   22:01
26	08:26	07:30	16:06 (2)	06:27	17:48 (1)	06:17	18:52 (3)   05:16
	17:11	18:08	53 16:59 (2)	18:58	30 18:18 (3)	20:51	19:38 (3)   22:01
27	08:25	07:28	16:06 (2)	06:24	17:47 (3)	06:15	18:56 (3)   05:16
	17:12	18:10	53 16:59 (2)	19:00	32 18:19 (3)	20:53	19:40 (3)   22:01
28	08:24	07:26	16:06 (2)	06:22	17:46 (3)	06:13	18:55 (3)   05:17
	17:14	18:12	53 16:59 (2)	19:01	34 18:20 (3)	20:55	19:41 (3)   22:01
29	08:22			07:20	18:44 (3)	06:11	18:54 (3)   05:17
	17:16			20:03	36 19:20 (3)	20:56	19:42 (3)   22:00
30	08:21			07:17	18:44 (3)	06:09	18:53 (3)   05:18
	17:18			20:05	37 19:21 (3)	20:58	19:44 (3)   22:00
31	08:19			07:15	18:43 (3)		18:52 (3)
	17:20			20:06	39 19:22 (3)		18:45 (3)
Potential sun hours	258	277	367	416	486	500	
Total, worst case		798	1089	577			
Sun reduction		0,30	0,33	0,42			
Oper. time red.		0,95	0,95	0,95			
Wind dir. red.		0,69	0,65	0,60			
Total reduction		0,20	0,21	0,24			
Total, real		157	224	139			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: R - Mettrayweg 24

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	July	August	September	October	November	December						
1	05:18	05:55	06:46	18:41 (3)	07:35	16:53 (2)	07:29	15:56 (2)	08:21			
	22:00	21:28	20:25	35	19:16 (3)	19:15	33	17:26 (2)	17:09	12	16:08 (2)	16:28
2	05:19	05:57	06:47	18:39 (3)	07:37	16:51 (2)	07:31					08:22
	22:00	21:26	20:23	37	19:16 (3)	19:13	36	17:27 (2)	17:07			16:27
3	05:20	05:58	06:49	18:39 (3)	07:38	16:49 (2)	07:33					08:24
	21:59	21:24	20:21	37	19:16 (3)	19:11	40	17:29 (2)	17:05			16:26
4	05:21	06:00	06:50	18:37 (3)	07:40	16:47 (2)	07:35					08:25
	21:59	21:23	20:18	39	19:16 (3)	19:08	42	17:29 (2)	17:03			16:26
5	05:21	06:02	06:52	18:37 (3)	07:42	16:46 (2)	07:37					08:26
	21:58	21:21	20:16	39	19:16 (3)	19:06	44	17:30 (2)	17:01			16:25
6	05:22	06:03	06:54	18:36 (3)	07:44	16:45 (2)	07:38					08:28
	21:58	21:19	20:14	41	19:17 (3)	19:04	46	17:31 (2)	16:59			16:25
7	05:23	06:05	06:55	18:35 (3)	07:45	16:44 (2)	07:40					08:29
	21:57	21:17	20:11	41	19:16 (3)	19:01	47	17:31 (2)	16:58			16:24
8	05:24	06:06	06:57	18:35 (3)	07:47	16:42 (2)	07:42					08:30
	21:57	21:15	20:09	41	19:16 (3)	18:59	49	17:31 (2)	16:56			16:24
9	05:25	06:08	06:59	18:34 (3)	07:49	16:41 (2)	07:44					08:31
	21:56	21:14	20:07	41	19:15 (3)	18:57	50	17:31 (2)	16:54			16:24
10	05:26	06:10	07:00	18:35 (3)	07:50	16:41 (2)	07:46					08:33
	21:55	21:12	20:04	40	19:15 (3)	18:55	51	17:32 (2)	16:53			16:24
11	05:27	06:11	07:02	18:35 (3)	07:52	16:40 (2)	07:47					08:34
	21:54	21:10	20:02	39	19:14 (3)	18:52	52	17:32 (2)	16:51			16:23
12	05:28	06:13	07:04	18:34 (3)	07:54	16:40 (2)	07:49					08:35
	21:54	21:08	20:00	39	19:13 (3)	18:50	52	17:32 (2)	16:50			16:23
13	05:29	06:14	07:05	18:35 (3)	07:56	16:39 (2)	07:51					08:36
	21:53	21:06	19:57	38	19:13 (3)	18:48	52	17:31 (2)	16:48			16:23
14	05:30	06:16	07:07	18:35 (3)	07:57	16:38 (2)	07:53					08:37
	21:52	21:04	19:55	36	19:11 (3)	18:46	53	17:31 (2)	16:47			16:23
15	05:32	06:18	07:09	18:36 (3)	07:59	16:38 (2)	07:55					08:38
	21:51	21:02	19:53	34	19:10 (3)	18:43	53	17:31 (2)	16:45			16:23
16	05:33	06:19	07:10	18:37 (3)	08:01	16:38 (2)	07:56					08:38
	21:50	21:00	19:50	32	19:09 (3)	18:41	53	17:31 (2)	16:44			16:23
17	05:34	06:21	07:12	18:36 (1)	08:03	16:38 (2)	07:58					08:39
	21:49	20:58	19:48	31	19:07 (3)	18:39	52	17:30 (2)	16:42			16:24
18	05:35	06:23	07:13	18:36 (1)	08:04	16:39 (2)	08:00					08:40
	21:48	20:56	19:46	29	19:05 (3)	18:37	51	17:30 (2)	16:41			16:24
19	05:37	06:24	07:15	18:34 (1)	08:06	16:38 (2)	08:02					08:41
	21:46	20:54	19:43	28	19:02 (3)	18:35	51	17:29 (2)	16:40			16:24
20	05:38	06:26	07:17	18:34 (1)	08:08	16:38 (2)	08:03					08:41
	21:45	20:52	19:41	25	18:59 (3)	18:33	50	17:28 (2)	16:38			16:24
21	05:39	06:27	07:18	18:34 (1)	08:10	16:39 (2)	08:05					08:42
	21:44	20:49	19:39	25	18:59 (1)	18:30	49	17:28 (2)	16:37			16:25
22	05:41	06:29	07:20	18:33 (1)	08:11	16:40 (2)	08:07					08:42
	21:43	20:47	19:36	25	18:58 (1)	18:28	47	17:27 (2)	16:36			16:25
23	05:42	06:31	07:22	18:33 (1)	08:13	16:40 (2)	08:08					08:43
	21:41	20:45	19:34	25	18:58 (1)	18:26	46	17:26 (2)	16:35			16:26
24	05:43	06:32	07:23	18:34 (1)	08:15	16:41 (2)	08:10					08:43
	21:40	20:43	19:32	23	18:57 (1)	18:24	44	17:25 (2)	16:34			16:26
25	05:45	06:34	07:25	18:33 (1)	07:17	15:42 (2)	08:12					08:44
	21:39	20:41	19:29	22	18:55 (1)	17:22	42	16:24 (2)	16:33			16:27
26	05:46	06:36	18:53 (3)	07:27	18:34 (1)	07:19	15:43 (2)	08:13				08:44
	21:37	20:39	14	19:07 (3)	19:27	20	18:54 (1)	17:20	40	16:23 (2)	16:32	
27	05:48	06:37	18:50 (3)	07:28	18:36 (1)	07:20	15:45 (2)	08:15				08:44
	21:36	20:36	20	19:10 (3)	19:25	17	18:53 (1)	17:18	36	16:21 (2)	16:31	
28	05:49	06:39	18:48 (3)	07:30	17:03 (2)	07:22	15:46 (2)	08:16				08:45
	21:34	20:34	24	19:12 (3)	19:22	28	18:49 (1)	17:16	34	16:20 (2)	16:30	
29	05:51	06:41	18:45 (3)	07:32	16:59 (2)	07:24	15:48 (2)	08:18				08:45
	21:33	20:32	28	19:13 (3)	19:20	26	18:45 (1)	17:14	30	16:18 (2)	16:29	
30	05:52	06:42	18:44 (3)	07:33	16:56 (2)	07:26	15:49 (2)	08:19				08:45
	21:31	20:30	30	19:14 (3)	19:18	29	17:25 (2)	17:12	26	16:15 (2)	16:28	
31	05:54	06:44	18:42 (3)		07:28		15:52 (2)					08:45
	21:29	20:27	33	19:15 (3)		17:10	20	16:12 (2)				16:32
	Potential sun hours	503	454		381		331		265			242
	Total, worst case			149	962		1371		12			
	Sun reduction			0,41	0,37		0,34		0,23			
	Oper. time red.			0,95	0,95		0,95		0,95			
	Wind dir. red.			0,60	0,61		0,69		0,69			
	Total reduction			0,24	0,22		0,22		0,15			
	Total, real			35	207		306		2			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: S - Mettrayweg 13

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April		May		June					
1	08:45	08:18	07:24	07:13		06:07		19:18 (2)	05:22		19:19 (2)		
	16:33	17:22	18:14	20:08		21:00	46	20:04 (1)	21:46	83	20:52 (3)		
2	08:45	08:16	07:22	07:10		06:05		19:17 (2)	05:21		19:20 (2)		
	16:34	17:23	18:15	20:10		21:01	48	20:05 (2)	21:47	83	20:53 (3)		
3	08:45	08:14	07:19	07:08		06:03		19:16 (2)	05:20		19:20 (2)		
	16:35	17:25	18:17	20:12		21:03	49	20:05 (2)	21:48	82	20:53 (3)		
4	08:44	08:13	07:17	07:06		06:02		19:15 (2)	05:19		19:20 (2)		
	16:37	17:27	18:19	20:13		21:05	51	20:06 (2)	21:49	81	20:52 (3)		
5	08:44	08:11	07:15	07:03		06:00		19:15 (2)	05:18		19:22 (2)		
	16:38	17:29	18:21	20:15		21:06	52	20:07 (2)	21:50	79	20:53 (3)		
6	08:44	08:09	07:13	07:01		05:58		19:15 (2)	05:18		19:22 (2)		
	16:39	17:31	18:23	20:17		21:08	52	20:07 (2)	21:51	79	20:53 (3)		
7	08:43	08:08	07:10	06:59		05:56		19:14 (2)	05:17		19:23 (2)		
	16:40	17:33	18:24	20:18		21:10	53	20:07 (2)	21:52	78	20:53 (3)		
8	08:43	08:06	07:08	06:56		05:54		19:14 (2)	05:17		19:23 (2)		
	16:42	17:35	18:26	20:20		21:11	54	20:08 (2)	21:53	77	20:53 (3)		
9	08:42	08:04	07:06	06:54		05:52		19:13 (2)	05:16		19:24 (2)		
	16:43	17:36	18:28	20:22		21:13	55	20:08 (2)	21:54	76	20:53 (3)		
10	08:42	08:02	07:04	06:52		05:51		19:13 (2)	05:16		19:25 (2)		
	16:44	17:38	18:30	20:24		21:15	54	20:07 (2)	21:55	76	20:54 (3)		
11	08:41	08:00	07:01	06:50		05:49		19:13 (2)	05:15		19:24 (2)		
	16:46	17:40	18:32	20:25		21:16	55	20:08 (2)	21:55	75	20:53 (3)		
12	08:41	07:59	06:59	06:47		05:47		19:13 (2)	05:15		19:25 (2)		
	16:47	17:42	18:33	20:27		21:18	64	20:37 (3)	21:56	75	20:54 (3)		
13	08:40	07:57	06:57	06:45		05:46		19:13 (2)	05:15		19:26 (2)		
	16:49	17:44	18:35	20:29		21:19	70	20:40 (3)	21:57	73	20:54 (3)		
14	08:39	07:55	06:54	06:43		05:44		19:13 (2)	05:14		19:26 (2)		
	16:50	17:46	18:37	20:31		21:21	74	20:42 (3)	21:57	73	20:54 (3)		
15	08:38	07:53	06:52	06:41		05:43		19:13 (2)	05:14		19:27 (2)		
	16:52	17:48	18:39	20:32		21:23	77	20:44 (3)	21:58	74	20:55 (3)		
16	08:38	07:51	06:50	06:39	19:53 (1)	05:41		19:13 (2)	05:14		19:27 (2)		
	16:53	17:50	18:40	20:34	11	20:04 (1)	21:24	79	20:44 (3)	21:58	73	20:55 (3)	
17	08:37	07:49	06:47	06:36		19:51 (1)	05:39		19:13 (2)	05:14		19:28 (2)	
	16:55	17:51	18:42	20:36	15	20:06 (1)	21:26	82	20:46 (3)	21:59	72	20:55 (3)	
18	08:36	07:47	06:45	06:34		19:49 (1)	05:38		19:14 (2)	05:14		19:28 (2)	
	16:57	17:53	18:44	20:37	19	20:08 (1)	21:27	82	20:47 (3)	21:59	72	20:55 (3)	
19	08:35	07:45	06:43	06:32		19:47 (1)	05:37		19:13 (2)	05:14		19:28 (2)	
	16:58	17:55	18:46	20:39	20	20:07 (1)	21:29	84	20:47 (3)	22:00	72	20:55 (3)	
20	08:34	07:43	06:41	06:30		19:46 (1)	05:35		19:14 (2)	05:14		19:28 (2)	
	17:00	17:57	18:47	20:41	22	20:08 (1)	21:30	85	20:48 (3)	22:00	71	20:55 (3)	
21	08:32	07:41	06:38	06:28		19:45 (1)	05:34		19:14 (2)	05:14		19:28 (2)	
	17:02	17:59	18:49	20:43	24	20:09 (1)	21:32	86	20:49 (3)	22:00	71	20:55 (3)	
22	08:31	07:39	06:36	06:26		19:37 (2)	05:32		19:15 (2)	05:14		19:28 (2)	
	17:03	18:01	18:51	20:44	32	20:09 (1)	21:33	85	20:49 (3)	22:00	71	20:55 (3)	
23	08:30	07:37	06:34	06:23		19:32 (2)	05:31		19:15 (2)	05:15		19:29 (2)	
	17:05	18:03	18:53	20:46	37	20:09 (1)	21:34	86	20:50 (3)	22:01	72	20:56 (3)	
24	08:29	07:35	06:31	06:21		19:29 (2)	05:30		19:16 (2)	05:15		19:29 (2)	
	17:07	18:04	18:54	20:48	40	20:09 (1)	21:36	86	20:50 (3)	22:01	72	20:56 (3)	
25	08:28	07:32	06:29	06:19		19:27 (2)	05:29		19:16 (2)	05:15		19:29 (2)	
	17:09	18:06	18:56	20:49	41	20:08 (1)	21:37	87	20:51 (3)	22:01	72	20:56 (3)	
26	08:26	07:30	06:27	06:17		19:24 (2)	05:28		19:17 (2)	05:16		19:30 (2)	
	17:11	18:08	18:58	20:51	44	20:08 (1)	21:38	85	20:51 (3)	22:01	72	20:57 (3)	
27	08:25	07:28	06:24	06:15		19:23 (2)	05:26		19:17 (2)	05:16		19:29 (2)	
	17:12	18:10	19:00	20:53	44	20:07 (1)	21:40	85	20:51 (3)	22:01	73	20:57 (3)	
28	08:24	07:26	06:22	06:13		19:21 (2)	05:25		19:17 (2)	05:17		19:30 (2)	
	17:14	18:12	19:01	20:55	45	20:06 (1)	21:41	86	20:52 (3)	22:01	73	20:57 (3)	
29	08:22		06:20	06:11		19:21 (2)	05:24		19:18 (2)	05:17		19:29 (2)	
	17:16		20:03	20:56	45	20:06 (1)	21:42	85	20:52 (3)	22:00	73	20:57 (3)	
30	08:21		06:17	06:09		19:19 (2)	05:23		19:18 (2)	05:18		19:29 (2)	
	17:18		20:05	20:58	46	20:05 (1)	21:44	84	20:52 (3)	22:00	75	20:58 (3)	
31	08:19		06:15			05:22		19:18 (2)					
	17:20		20:06			21:45		84	20:52 (3)				
	Potential sun hours	258	277	367	416			486		500			
	Total, worst case					485		2205		2248			
	Sun reduction					0,42		0,42		0,37			
	Oper. time red.					0,95		0,95		0,95			
	Wind dir. red.					0,53		0,53		0,54			
	Total reduction					0,21		0,21		0,19			
	Total, real					102		470		426			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: S - Mettrayweg 13

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

		July		August		September	October	November	December			
1	05:18	19:29 (2)	05:55		19:23 (2)	06:46	07:35	07:29	08:21			
	22:00	74	20:57 (3)	21:28	61	20:46 (3)	20:25	19:15	17:09	16:28		
2	05:19	19:29 (2)	05:57		19:24 (2)	06:47	07:37	07:31	08:22			
	22:00	76	20:58 (3)	21:26	54	20:18 (2)	20:23	19:13	17:07	16:27		
3	05:20	19:29 (2)	05:58		19:23 (2)	06:49	07:38	07:33	08:24			
	21:59	77	20:59 (3)	21:24	55	20:18 (2)	20:21	19:11	17:05	16:26		
4	05:21	19:29 (2)	06:00		19:24 (2)	06:50	07:40	07:35	08:25			
	21:59	77	20:59 (3)	21:23	54	20:18 (2)	20:18	19:08	17:03	16:26		
5	05:21	19:28 (2)	06:02		19:24 (2)	06:52	07:42	07:37	08:26			
	21:58	78	20:59 (3)	21:21	53	20:17 (2)	20:16	19:06	17:01	16:25		
6	05:22	19:28 (2)	06:03		19:24 (2)	06:54	07:44	07:38	08:28			
	21:58	79	20:59 (3)	21:19	53	20:17 (2)	20:14	19:04	16:59	16:25		
7	05:23	19:28 (2)	06:05		19:24 (2)	06:55	07:45	07:40	08:29			
	21:57	79	20:59 (3)	21:17	52	20:16 (2)	20:11	19:01	16:58	16:24		
8	05:24	19:28 (2)	06:06		19:25 (2)	06:57	07:47	07:42	08:30			
	21:57	81	21:00 (3)	21:15	51	20:16 (2)	20:09	18:59	16:56	16:24		
9	05:25	19:28 (2)	06:08		19:25 (2)	06:59	07:49	07:44	08:31			
	21:56	81	21:00 (3)	21:14	50	20:15 (2)	20:07	18:57	16:54	16:24		
10	05:26	19:28 (2)	06:10		19:26 (2)	07:00	07:50	07:46	08:32			
	21:55	81	21:00 (3)	21:12	49	20:15 (2)	20:04	18:55	16:53	16:24		
11	05:27	19:27 (2)	06:11		19:26 (2)	07:02	07:52	07:47	08:34			
	21:54	83	21:00 (3)	21:10	47	20:13 (2)	20:02	18:52	16:51	16:23		
12	05:28	19:27 (2)	06:13		19:27 (2)	07:04	07:54	07:49	08:35			
	21:54	83	21:00 (3)	21:08	46	20:13 (2)	20:00	18:50	16:50	16:23		
13	05:29	19:27 (2)	06:14		19:27 (2)	07:05	07:56	07:51	08:36			
	21:53	84	21:00 (3)	21:06	46	20:13 (1)	19:57	18:48	16:48	16:23		
14	05:30	19:26 (2)	06:16		19:29 (2)	07:07	07:57	07:53	08:37			
	21:52	85	21:00 (3)	21:04	45	20:14 (1)	19:55	18:46	16:47	16:23		
15	05:32	19:26 (2)	06:18		19:29 (2)	07:09	07:59	07:55	08:38			
	21:51	85	21:00 (3)	21:02	45	20:14 (1)	19:53	18:43	16:45	16:23		
16	05:33	19:26 (2)	06:19		19:31 (2)	07:10	08:01	07:56	08:38			
	21:50	86	21:00 (3)	21:00	44	20:15 (1)	19:50	18:41	16:44	16:23		
17	05:34	19:25 (2)	06:21		19:31 (2)	07:12	08:02	07:58	08:39			
	21:49	86	21:00 (3)	20:58	44	20:15 (1)	19:48	18:39	16:42	16:24		
18	05:35	19:26 (2)	06:23		19:34 (2)	07:13	08:04	08:00	08:40			
	21:48	86	21:01 (3)	20:56	41	20:15 (1)	19:46	18:37	16:41	16:24		
19	05:37	19:25 (2)	06:24		19:35 (2)	07:15	08:06	08:02	08:41			
	21:46	86	21:00 (3)	20:54	39	20:14 (1)	19:43	18:35	16:40	16:24		
20	05:38	19:25 (2)	06:26		19:38 (2)	07:17	08:08	08:03	08:41			
	21:45	86	21:00 (3)	20:51	36	20:14 (1)	19:41	18:33	16:38	16:24		
21	05:39	19:24 (2)	06:27		19:44 (2)	07:18	08:10	08:05	08:42			
	21:44	86	20:59 (3)	20:49	30	20:14 (1)	19:39	18:30	16:37	16:25		
22	05:41	19:25 (2)	06:29		19:50 (1)	07:20	08:11	08:07	08:42			
	21:43	86	21:00 (3)	20:47	23	20:13 (1)	19:36	18:28	16:36	16:25		
23	05:42	19:24 (2)	06:31		19:51 (1)	07:22	08:13	08:08	08:43			
	21:41	85	20:59 (3)	20:45	22	20:13 (1)	19:34	18:26	16:35	16:26		
24	05:43	19:24 (2)	06:32		19:51 (1)	07:23	08:15	08:10	08:43			
	21:40	84	20:58 (3)	20:43	20	20:11 (1)	19:32	18:24	16:34	16:26		
25	05:45	19:23 (2)	06:34		19:52 (1)	07:25	07:17	08:12	08:44			
	21:39	84	20:57 (3)	20:41	18	20:10 (1)	19:29	17:22	16:33	16:27		
26	05:46	19:24 (2)	06:36		19:53 (1)	07:27	07:19	08:13	08:44			
	21:37	82	20:57 (3)	20:39	15	20:08 (1)	19:27	17:20	16:32	16:28		
27	05:48	19:23 (2)	06:37		19:55 (1)	07:28	07:20	08:15	08:44			
	21:36	81	20:56 (3)	20:36	11	20:06 (1)	19:25	17:18	16:31	16:28		
28	05:49	19:24 (2)	06:39		07:30	07:22	08:16	08:16	08:45			
	21:34	78	20:55 (3)	20:34		19:22	17:16	16:30	16:29			
29	05:51	19:23 (2)	06:41			07:32	07:24	08:18	08:45			
	21:33	77	20:54 (3)	20:32		19:20	17:14	16:29	16:30			
30	05:52	19:23 (2)	06:42			07:33	07:26	08:19	08:45			
	21:31	73	20:52 (3)	20:30		19:18	17:12	16:28	16:31			
31	05:54	19:23 (2)	06:44				07:28		08:45			
	21:29	69	20:50 (3)	20:27				17:10		16:32		
	Potential sun hours	503				381	331	265	242			
	Total, worst case		2518		1104							
	Sun reduction		0,40		0,41							
	Oper. time red.		0,95		0,95							
	Wind dir. red.		0,54		0,53							
	Total reduction		0,20		0,21							
	Total, real		514		227							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: T - Mettrayweg 18

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June	July	August	September	October	November	December							
1   08:45	08:18	07:24	07:13	06:07	19:03 (2)	05:22	19:24 (2)	05:18	20:17 (3)	05:55	19:14 (2)	06:46	07:35	07:29	08:21				
16:33	17:21	18:14	20:08	21:00	53	19:56 (2)	21:46	47	20:41 (3)	22:00	28	20:45 (3)	21:28	78	20:48 (3)	20:25	17:09	16:28	
2   08:45	08:16	07:22	07:10	06:05	19:03 (2)	05:21	19:27 (2)	05:19	20:17 (3)	05:57	19:14 (2)	06:47	07:37	07:31	08:22				
16:34	17:23	18:15	20:10	21:01	53	19:56 (2)	21:47	42	20:42 (3)	22:00	29	20:46 (3)	21:26	77	20:47 (3)	20:23	19:13	17:07	16:27
3   08:45	08:14	07:19	07:08	06:03	19:03 (2)	05:20	20:09 (3)	05:20	20:17 (3)	05:58	19:13 (2)	06:49	07:38	07:33	08:24				
16:35	17:25	18:17	20:12	21:03	53	19:56 (2)	21:48	33	20:42 (3)	21:59	29	20:46 (3)	21:24	76	20:46 (3)	20:21	19:11	17:05	16:26
4   08:44	08:13	07:17	07:06	06:02	19:02 (2)	05:19	20:09 (3)	05:21	20:17 (3)	06:00	19:13 (2)	06:50	07:40	07:35	08:25				
16:37	17:27	18:19	20:13	21:05	53	19:55 (2)	21:49	32	20:41 (3)	21:59	30	20:47 (3)	21:23	74	20:45 (3)	20:18	19:08	17:03	16:26
5   08:44	08:11	07:15	07:03	06:00	19:03 (2)	05:18	20:10 (3)	05:21	20:16 (3)	06:02	19:13 (2)	06:52	07:42	07:37	08:26				
16:38	17:29	18:21	20:15	21:06	53	19:56 (2)	21:50	32	20:42 (3)	21:58	31	20:47 (3)	21:21	69	20:42 (3)	20:16	19:06	17:01	16:25
6   08:44	08:09	07:13	07:01	05:58	19:03 (2)	05:18	20:10 (3)	05:22	20:17 (3)	06:03	19:13 (2)	06:54	07:44	07:38	08:28				
16:39	17:31	18:23	20:17	21:08	60	20:28 (3)	21:51	31	20:41 (3)	21:58	30	20:47 (3)	21:19	66	20:41 (3)	20:14	19:04	16:59	16:25
7   08:43	08:08	07:10	06:59	05:56	19:02 (2)	05:17	20:11 (3)	05:23	20:17 (3)	06:05	19:12 (2)	06:55	07:45	07:40	08:29				
16:40	17:33	18:24	20:18	21:10	68	20:31 (3)	21:52	31	20:42 (3)	21:57	31	20:48 (3)	21:17	57	20:35 (3)	20:11	19:01	16:58	16:24
8   08:43	08:06	07:08	06:56	05:54	19:03 (2)	05:17	20:11 (3)	05:24	20:17 (3)	06:06	19:12 (2)	06:57	07:47	07:42	08:30				
16:42	17:35	18:26	20:20	21:11	71	20:34 (3)	21:53	30	20:41 (3)	21:57	31	20:48 (3)	21:15	53	20:05 (2)	20:09	18:59	16:56	16:24
9   08:42	08:04	07:06	06:54	05:52	19:03 (2)	05:16	20:12 (3)	05:25	20:17 (3)	06:08	19:12 (2)	06:59	07:49	07:44	08:31				
16:43	17:36	18:28	20:22	21:13	74	20:35 (3)	21:54	29	20:41 (3)	21:56	32	20:49 (3)	21:14	53	20:05 (2)	20:07	18:57	16:54	16:24
10   08:42	08:02	07:04	06:52	05:51	19:03 (2)	05:16	20:13 (3)	05:26	19:36 (2)	06:10	19:12 (2)	07:00	07:50	07:46	08:32				
16:44	17:38	18:30	20:24	21:15	76	20:36 (3)	21:55	29	20:42 (3)	21:55	38	20:49 (3)	21:21	53	20:05 (2)	20:04	18:55	16:53	16:24
11   08:41	08:00	07:01	06:50	05:49	19:04 (2)	05:15	20:12 (3)	05:27	19:33 (2)	06:11	19:11 (2)	07:02	07:52	07:47	08:34				
16:46	17:40	18:32	20:25	21:16	77	20:37 (3)	21:55	29	20:41 (3)	21:54	46	20:50 (3)	21:10	53	20:04 (2)	20:02	18:52	16:51	16:23
12   08:41	07:59	06:59	06:47	05:47	19:04 (2)	05:15	20:13 (3)	05:28	19:31 (2)	06:13	19:12 (2)	07:04	07:54	07:49	08:35				
16:47	17:42	18:33	20:27	21:18	79	20:38 (3)	21:56	28	20:41 (3)	21:54	50	20:50 (3)	21:08	52	20:04 (2)	20:00	18:50	16:50	16:23
13   08:40	07:57	06:57	06:45	19:48 (1)	05:46	19:05 (2)	05:15	20:14 (3)	05:29	19:30 (2)	06:14	19:11 (2)	07:05	07:56	07:51	08:36			
16:49	17:44	18:35	20:29	11   19:59 (1)	21:19	79	20:39 (3)	21:57	27	20:41 (3)	21:53	53	20:50 (3)	21:06	52	20:03 (2)	19:57	18:48	16:48
14   08:39	07:55	06:54	06:43	19:46 (1)	05:44	19:05 (2)	05:14	20:14 (3)	05:30	19:28 (2)	06:16	19:12 (2)	07:07	07:57	07:53	08:37			
16:50	17:46	18:37	20:31	15   20:01 (1)	21:21	79	20:39 (3)	21:57	27	20:41 (3)	21:52	58	20:51 (3)	21:04	51	20:03 (1)	19:55	18:46	16:23
15   08:38	07:53	06:52	06:41	19:27 (2)	05:43	19:06 (2)	05:14	20:15 (3)	05:32	19:27 (2)	06:18	19:12 (2)	07:09	07:59	07:55	08:38			
16:52	17:48	18:39	20:32	29   20:02 (1)	21:23	80	20:40 (3)	21:58	27	20:42 (3)	21:51	60	20:51 (3)	21:02	53	20:05 (1)	19:53	18:43	16:45
16:53	17:49	18:40	20:34	41   20:03 (1)	21:24	80	20:40 (3)	21:58	27	20:42 (3)	21:50	62	20:51 (3)	21:00	54	20:06 (1)	19:50	18:41	16:44
17   08:37	07:49	06:47	06:36	19:19 (2)	05:39	19:07 (2)	05:14	20:15 (3)	05:34	19:25 (2)	06:21	19:12 (2)	07:12	08:02	07:58	08:39			
16:55	17:51	18:42	20:36	45   20:04 (1)	21:26	78	20:40 (3)	21:59	27	20:42 (3)	21:49	64	20:51 (3)	20:58	55	20:07 (1)	19:48	18:39	16:42
18   08:36	07:47	06:45	06:34	19:17 (2)	05:38	19:08 (2)	05:14	20:16 (3)	05:35	19:24 (2)	06:23	19:13 (2)	07:13	08:04	08:00	08:40			
16:57	17:53	18:44	20:37	47   20:04 (1)	21:27	77	20:41 (3)	21:59	26	20:42 (3)	21:48	68	20:52 (3)	20:56	55	20:08 (1)	19:46	18:37	16:41
19   08:35	07:45	06:43	06:32	19:14 (2)	05:37	19:08 (2)	05:14	20:16 (3)	05:37	19:23 (2)	06:24	19:13 (2)	07:15	08:06	08:02	08:41			
16:58	17:55	18:46	20:39	50   20:04 (1)	21:29	77	20:41 (3)	22:00	26	20:42 (3)	21:46	70	20:52 (3)	20:54	55	20:08 (1)	19:43	18:35	16:40
20   08:34	07:43	06:41	06:30	19:12 (2)	05:35	19:09 (2)	05:14	20:16 (3)	05:38	19:22 (2)	06:26	19:14 (2)	07:17	08:08	08:03	08:41			
17:00	17:57	18:47	20:41	52   20:04 (1)	21:30	76	20:41 (3)	22:00	26	20:42 (3)	21:45	71	20:52 (3)	20:51	54	20:08 (1)	19:41	18:33	16:24
21   08:32	07:41	06:38	06:28	19:11 (2)	05:34	19:10 (2)	05:14	20:16 (3)	05:39	19:21 (2)	06:27	19:15 (2)	07:18	08:10	08:05	08:42			
17:02	17:59	18:49	20:43	52   20:03 (1)	21:32	74	20:41 (3)	22:00	26	20:42 (3)	21:44	72	20:51 (3)	20:49	54	20:09 (1)	19:39	18:30	16:25
22   08:31	07:39	06:36	06:26	19:09 (2)	05:32	19:11 (2)	05:14	20:16 (3)	05:41	19:21 (2)	06:29	19:15 (2)	07:20	08:11	08:07	08:42			
17:03	18:01	18:51	20:44	54   20:03 (1)	21:33	74	20:42 (3)	22:00	26	20:42 (3)	21:43	73	20:52 (3)	20:47	53	20:08 (1)	19:36	18:28	16:25
23   08:30	07:37	06:34	06:23	19:08 (2)	05:31	19:12 (2)	05:15	20:17 (3)	05:42	19:22 (2)	06:31	19:17 (2)	07:22	08:13	08:08	08:43			
17:05	18:03	18:53	20:46	55   20:03 (1)	21:34	72   20:42 (3)	22:01	26   20:43 (3)	21:41	76	20:52 (3)	20:45	51	20:08 (1)	19:34	18:26	16:26		
24   08:29	07:35	06:31	06:21	19:07 (2)	05:30	19:13 (2)	05:15	20:17 (3)	05:43	19:19 (2)	06:32	19:18 (2)	07:23	08:15	08:10	08:43			
17:07	18:04	18:54	20:48	55   20:02 (1)	21:36	69   20:42 (3)	22:01	26   20:43 (3)	21:40	76	20:51 (3)	20:43	49	20:07 (1)	19:32	18:24	16:26		
25   08:28	07:32	06:29	06:19	19:06 (2)	05:29	19:14 (2)	05:15	20:16 (3)	05:45	19:18 (2)	06:34	19:20 (2)	07:25	07:17	08:12	08:44			
17:09	18:06	18:56	20:49	55   20:01 (1)	21:37	68   20:42 (3)	22:01	27   20:43 (3)	21:39	78	20:51 (3)	20:41	47	20:07 (1)	19:29	17:22	16:33	16:27	
26   08:26	07:30	06:27	06:17	19:05 (2)	05:28	19:16 (2)	05:16	20:17 (3)	05:46	19:18 (2)	06:36	19:21 (2)	07:27	07:19	08:13	08:44			
17:11	18:08	18:58	20:51	55   20:00 (1)	21:38	65   20:42 (3)	2												

## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: U - Meijerinkstraat 32

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June			
1	08:45	08:18		07:24	16:05 (2)	07:13	18:32 (3)	06:07	05:21
	16:33	17:21		18:14	38 16:43 (2)	20:08	34 19:06 (3)	21:00	21:46
2	08:45	08:16	16:20 (2)	07:22	16:07 (2)	07:10	18:33 (3)	06:05	05:21
	16:34	17:23	8 16:28 (2)	18:15	35 16:42 (2)	20:10	32 19:05 (3)	21:01	21:47
3	08:45	08:14	16:16 (2)	07:19	16:09 (2)	07:08	18:34 (3)	06:03	05:20
	16:35	17:25	17 16:33 (2)	18:17	31 16:40 (2)	20:12	30 19:04 (3)	21:03	21:48
4	08:44	08:13	16:14 (2)	07:17	16:11 (2)	07:06	18:34 (3)	06:02	05:19
	16:37	17:27	22 16:36 (2)	18:19	28 16:39 (2)	20:13	27 19:01 (3)	21:05	21:49
5	08:44	08:11	16:11 (2)	07:15	16:13 (2)	07:03	18:36 (3)	06:00	05:18
	16:38	17:29	27 16:38 (2)	18:21	22 16:35 (2)	20:15	23 18:59 (3)	21:06	21:50
6	08:44	08:09	16:10 (2)	07:13	16:16 (2)	07:01	18:39 (3)	05:58	05:18
	16:39	17:31	30 16:40 (2)	18:23	16 16:32 (2)	20:17	18 18:57 (3)	21:08	21:51
7	08:43	08:08	16:08 (2)	07:10		06:59	18:42 (3)	05:56	05:17
	16:40	17:33	33 16:41 (2)	18:24		20:18	12 18:54 (3)	21:10	21:52
8	08:43	08:06	16:07 (2)	07:08		06:56		05:54	05:17
	16:42	17:35	35 16:42 (2)	18:26		20:20		21:11	21:53
9	08:42	08:04	16:06 (2)	07:06		06:54		05:52	05:16
	16:43	17:36	38 16:44 (2)	18:28		20:22		21:13	21:54
10	08:42	08:02	16:06 (2)	07:04	17:52 (1)	06:52		05:51	05:16
	16:44	17:38	39 16:45 (2)	18:30	8 18:00 (1)	20:24		21:15	21:55
11	08:41	08:00	16:05 (2)	07:01	17:48 (1)	06:50		05:49	05:15
	16:46	17:40	41 16:46 (2)	18:32	14 18:02 (1)	20:25		21:16	21:55
12	08:41	07:59	16:04 (2)	06:59	17:46 (1)	06:47		05:47	05:15
	16:47	17:42	43 16:47 (2)	18:33	18 18:04 (1)	20:27		21:18	21:56
13	08:40	07:57	16:04 (2)	06:57	17:45 (1)	06:45		05:46	05:15
	16:49	17:44	44 16:48 (2)	18:35	20 18:05 (1)	20:29		21:19	21:57
14	08:39	07:55	16:03 (2)	06:54	17:43 (1)	06:43		05:44	05:14
	16:50	17:46	45 16:48 (2)	18:37	22 18:05 (1)	20:31		21:21	21:57
15	08:38	07:53	16:03 (2)	06:52	17:43 (1)	06:41		05:43	05:14
	16:52	17:48	46 16:49 (2)	18:39	23 18:06 (1)	20:32		21:23	21:58
16	08:38	07:51	16:02 (2)	06:50	17:42 (1)	06:39		05:41	05:14
	16:53	17:50	47 16:49 (2)	18:40	25 18:07 (1)	20:34		21:24	21:58
17	08:37	07:49	16:01 (2)	06:47	17:41 (3)	06:36		05:39	05:14
	16:55	17:51	47 16:48 (2)	18:42	25 18:06 (1)	20:36		21:26	21:59
18	08:36	07:47	16:01 (2)	06:45	17:39 (3)	06:34		05:38	05:14
	16:57	17:53	48 16:49 (2)	18:44	28 18:07 (3)	20:37		21:27	21:59
19	08:35	07:45	16:01 (2)	06:43	17:38 (3)	06:32		05:37	05:14
	16:58	17:55	48 16:49 (2)	18:46	30 18:08 (3)	20:39		21:29	22:00
20	08:34	07:43	16:01 (2)	06:41	17:36 (3)	06:30		05:35	05:14
	17:00	17:57	48 16:49 (2)	18:47	33 18:09 (3)	20:41		21:30	22:00
21	08:32	07:41	16:01 (2)	06:38	17:35 (3)	06:28		05:34	05:14
	17:02	17:59	48 16:49 (2)	18:49	34 18:09 (3)	20:43		21:32	22:00
22	08:31	07:39	16:02 (2)	06:36	17:34 (3)	06:26		05:32	05:14
	17:03	18:01	47 16:49 (2)	18:51	36 18:10 (3)	20:44		21:33	22:00
23	08:30	07:37	16:02 (2)	06:34	17:33 (3)	06:23		05:31	05:15
	17:05	18:03	47 16:49 (2)	18:53	37 18:10 (3)	20:46		21:34	22:01
24	08:29	07:35	16:02 (2)	06:31	17:33 (3)	06:21		05:30	05:15
	17:07	18:04	45 16:47 (2)	18:54	37 18:10 (3)	20:48		21:36	22:01
25	08:28	07:32	16:02 (2)	06:29	17:32 (3)	06:19		05:29	05:15
	17:09	18:06	45 16:47 (2)	18:56	38 18:10 (3)	20:49		21:37	22:01
26	08:26	07:30	16:03 (2)	06:27	17:31 (3)	06:17		05:28	05:16
	17:11	18:08	43 16:46 (2)	18:58	39 18:10 (3)	20:51		21:38	22:01
27	08:25	07:28	16:04 (2)	06:24	17:31 (3)	06:15		05:26	05:16
	17:12	18:10	42 16:46 (2)	19:00	39 18:10 (3)	20:53		21:40	22:01
28	08:24	07:26	16:05 (2)	06:22	17:32 (3)	06:13		05:25	05:17
	17:14	18:12	40 16:45 (2)	19:01	37 18:09 (3)	20:55		21:41	22:01
29	08:22			07:20	18:31 (3)	06:11		05:24	05:17
	17:16			20:03	37 19:08 (3)	20:56		21:42	22:00
30	08:21			07:17	18:31 (3)	06:09		05:23	05:18
	17:18			20:05	37 19:08 (3)	20:58		21:44	22:00
31	08:19			07:15	18:32 (3)			05:22	
	17:20			20:06	35 19:07 (3)			21:45	
Potential sun hours	258	277	367	416		486	500		
Total, worst case		1063	822	176					
Sun reduction		0,30	0,33	0,42					
Oper. time red.		0,95	0,95	0,95					
Wind dir. red.		0,69	0,63	0,61					
Total reduction		0,20	0,20	0,25					
Total, real		211	163	43					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
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## SHADOW - Calendar

Calculation: Schaduw gevoelige objecten VKAShadow receptor: U - Meijerinkstraat 32

Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	July	August	September	October		November		December					
1	05:18	05:55	06:46		07:35	18:25 (1)	07:29	15:35 (2)	08:21				
	22:00	21:28	20:25		19:15	19	18:44 (1)	17:09	39	16:14 (2)	16:28		
2	05:19	05:57	06:47		07:37	18:26 (1)	07:31	15:36 (2)	08:22				
	22:00	21:26	20:23		19:13	16	18:42 (1)	17:07	37	16:13 (2)	16:27		
3	05:20	05:58	06:49		07:38	18:28 (1)	07:33	15:37 (2)	08:24				
	21:59	21:24	20:21		19:11	12	18:40 (1)	17:05	35	16:12 (2)	16:26		
4	05:21	06:00	06:50		07:40			07:35		15:38 (2)	08:25		
	21:59	21:23	20:18		19:08			17:03	33	16:11 (2)	16:26		
5	05:21	06:02	06:52	18:38 (3)	07:42			07:37		15:40 (2)	08:26		
	21:58	21:21	20:16	12	18:50 (3)	19:06		17:01	29	16:09 (2)	16:25		
6	05:22	06:03	06:54	18:35 (3)	07:44			07:38		15:41 (2)	08:28		
	21:58	21:19	20:14	18	18:53 (3)	19:04		16:59	27	16:08 (2)	16:25		
7	05:23	06:05	06:55	18:32 (3)	07:45	16:55 (2)	07:40			15:44 (2)	08:29		
	21:57	21:17	20:11	22	18:54 (3)	19:01	11	17:06 (2)	16:58	22	16:06 (2)	16:24	
8	05:24	06:06	06:57	18:30 (3)	07:47	16:49 (2)	07:42			15:46 (2)	08:30		
	21:57	21:15	20:09	26	18:56 (3)	18:59	20	17:09 (2)	16:56	17	16:03 (2)	16:24	
9	05:25	06:08	06:59	18:27 (3)	07:49	16:46 (2)	07:44			15:51 (2)	08:31		
	21:56	21:14	20:07	30	18:57 (3)	18:57	26	17:12 (2)	16:54	7	15:58 (2)	16:24	
10	05:26	06:10	07:00	18:26 (3)	07:50	16:44 (2)	07:46				08:33		
	21:55	21:12	20:04	32	18:58 (3)	18:55	30	17:14 (2)	16:53			16:24	
11	05:27	06:11	07:02	18:25 (3)	07:52	16:42 (2)	07:47				08:34		
	21:54	21:10	20:02	34	18:59 (3)	18:52	33	17:15 (2)	16:51			16:23	
12	05:28	06:13	07:04	18:23 (3)	07:54	16:40 (2)	07:49				08:35		
	21:54	21:08	20:00	35	18:58 (3)	18:50	36	17:16 (2)	16:50			16:23	
13	05:29	06:14	07:05	18:23 (3)	07:56	16:38 (2)	07:51				08:36		
	21:53	21:06	19:57	36	18:59 (3)	18:48	38	17:16 (2)	16:48			16:23	
14	05:30	06:16	07:07	18:21 (3)	07:57	16:37 (2)	07:53				08:37		
	21:52	21:04	19:55	37	18:58 (3)	18:46	40	17:17 (2)	16:47			16:23	
15	05:32	06:18	07:09	18:21 (3)	07:59	16:36 (2)	07:55				08:38		
	21:51	21:02	19:53	38	18:59 (3)	18:43	42	17:18 (2)	16:45			16:23	
16	05:33	06:19	07:10	18:21 (3)	08:01	16:35 (2)	07:56				08:38		
	21:50	21:00	19:50	38	18:59 (3)	18:41	44	17:19 (2)	16:44			16:23	
17	05:34	06:21	07:12	18:20 (3)	08:03	16:34 (2)	07:58				08:39		
	21:49	20:58	19:48	38	18:58 (3)	18:39	45	17:19 (2)	16:42			16:24	
18	05:35	06:23	07:13	18:20 (3)	08:04	16:34 (2)	08:00				08:40		
	21:48	20:56	19:46	38	18:58 (3)	18:37	46	17:20 (2)	16:41			16:24	
19	05:37	06:24	07:15	18:19 (3)	08:06	16:32 (2)	08:02				08:41		
	21:46	20:54	19:43	38	18:57 (3)	18:35	47	17:19 (2)	16:40			16:24	
20	05:38	06:26	07:17	18:19 (3)	08:08	16:32 (2)	08:03				08:41		
	21:45	20:52	19:41	37	18:56 (3)	18:33	47	17:19 (2)	16:38			16:24	
21	05:39	06:27	07:18	18:20 (3)	08:10	16:32 (2)	08:05				08:42		
	21:44	20:49	19:39	36	18:56 (3)	18:30	47	17:19 (2)	16:37			16:25	
22	05:41	06:29	07:20	18:19 (3)	08:11	16:32 (2)	08:07				08:42		
	21:43	20:47	19:36	35	18:54 (3)	18:28	47	17:19 (2)	16:36			16:25	
23	05:42	06:31	07:22	18:20 (3)	08:13	16:31 (2)	08:08				08:43		
	21:41	20:45	19:34	33	18:53 (3)	18:26	48	17:19 (2)	16:35			16:26	
24	05:43	06:32	07:23	18:21 (3)	08:15	16:32 (2)	08:10				08:43		
	21:40	20:43	19:32	31	18:52 (3)	18:24	47	17:19 (2)	16:34			16:26	
25	05:45	06:34	07:25	18:21 (3)	07:17	15:32 (2)	08:12				08:44		
	21:39	20:41	19:29	29	18:50 (3)	17:22	47	16:19 (2)	16:33			16:27	
26	05:46	06:36	07:27	18:23 (3)	07:19	15:32 (2)	08:13				08:44		
	21:37	20:39	19:27	26	18:49 (3)	17:20	47	16:19 (2)	16:32			16:28	
27	05:48	06:37	07:28	18:24 (1)	07:20	15:32 (2)	08:15				08:44		
	21:36	20:36	19:25	24	18:48 (1)	17:18	46	16:18 (2)	16:31			16:28	
28	05:49	06:39	07:30	18:23 (1)	07:22	15:33 (2)	08:16				08:45		
	21:34	20:34	19:22	24	18:47 (1)	17:16	45	16:18 (2)	16:30			16:29	
29	05:51	06:41	07:32	18:24 (1)	07:24	15:33 (2)	08:18				08:45		
	21:33	20:32	19:20	23	18:47 (1)	17:14	44	16:17 (2)	16:29			16:30	
30	05:52	06:42	07:33	18:24 (1)	07:26	15:33 (2)	08:19				08:45		
	21:31	20:30	19:18	22	18:46 (1)	17:12	43	16:16 (2)	16:28			16:31	
31	05:54	06:44			07:28		15:34 (2)				08:45		
	21:29	20:27			17:10	41	16:15 (2)				16:32		
Potential sun hours	503	454	381		331		265				242		
Total, worst case				792		1054		246					
Sun reduction				0,37		0,34		0,23					
Oper. time red.				0,95		0,95		0,95					
Wind dir. red.				0,61		0,69		0,69					
Total reduction				0,22		0,22		0,15					
Total, real				172		236		37					

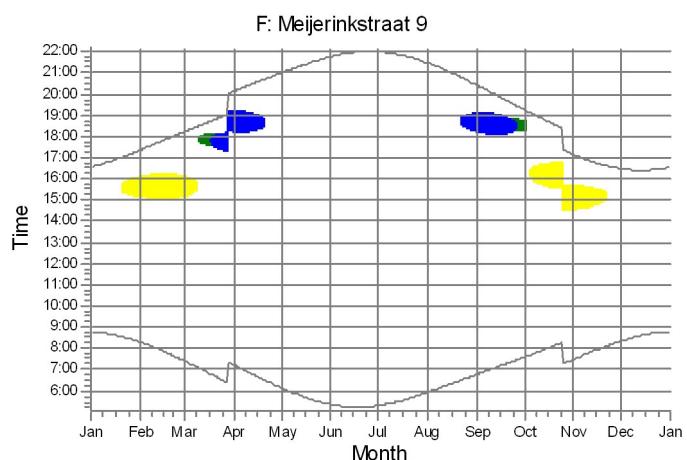
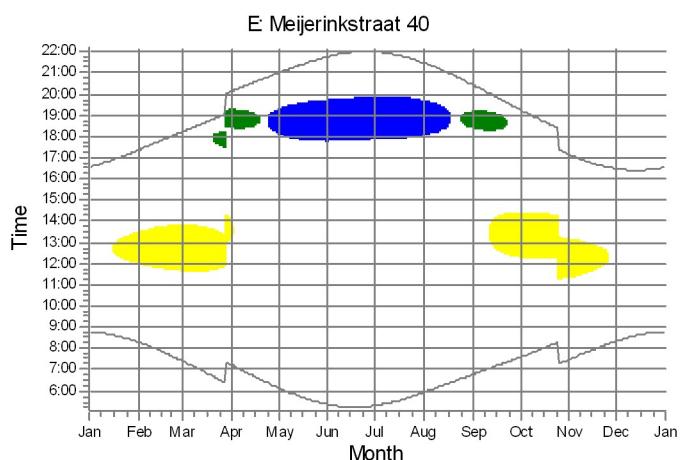
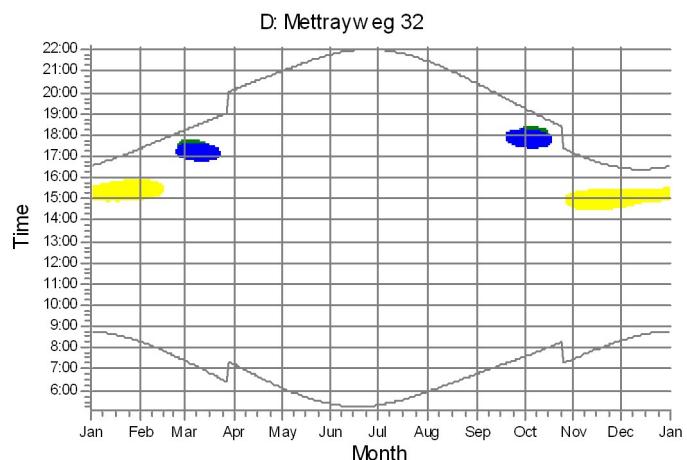
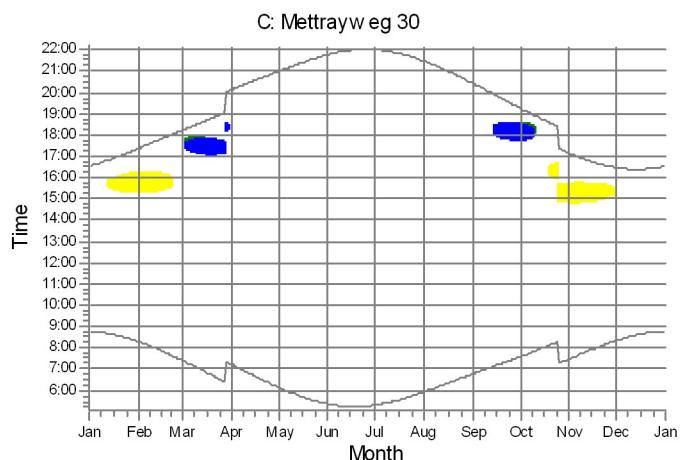
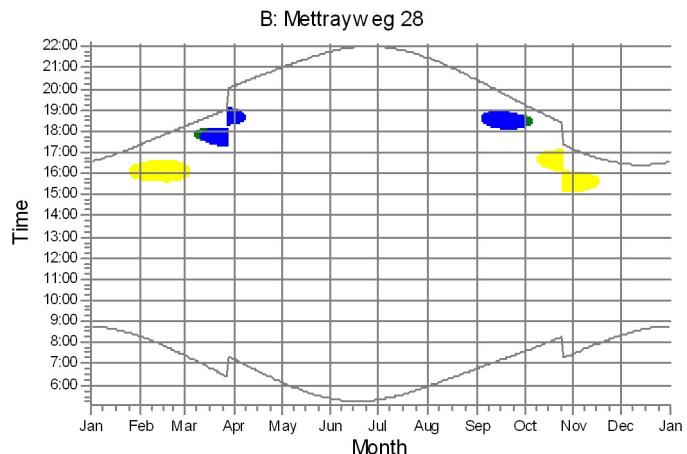
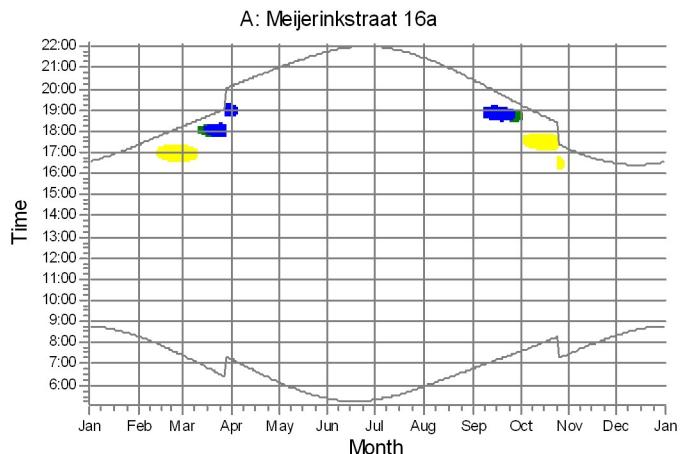
Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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## Bijlage 3 Slagschaduw op maatgevende adressen grafisch over het jaar

## SHADOW - Calendar, graphical

Calculation: Schaduw gevoelige objecten VKA



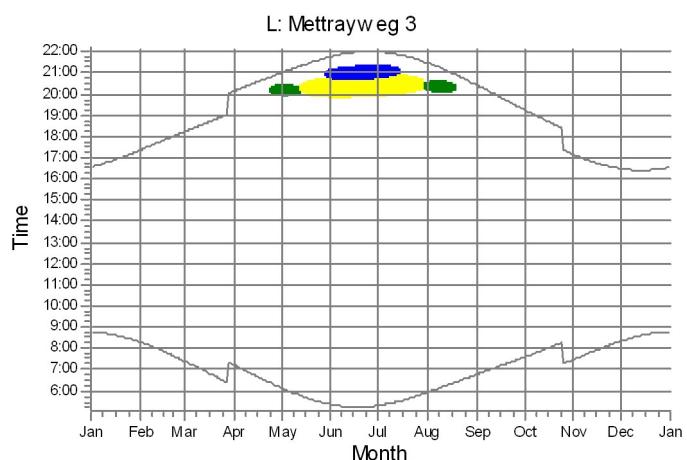
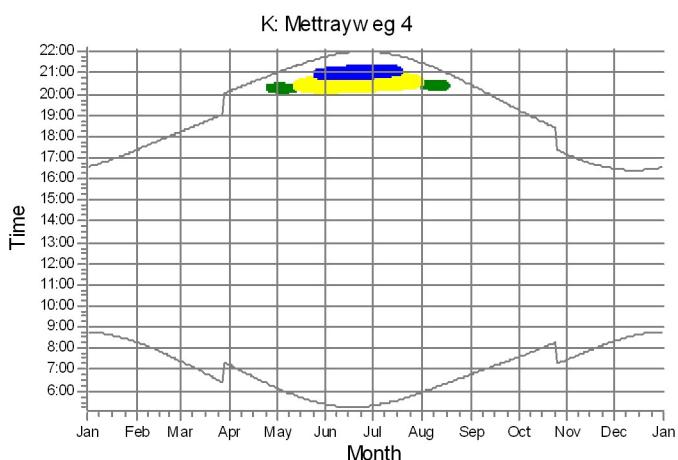
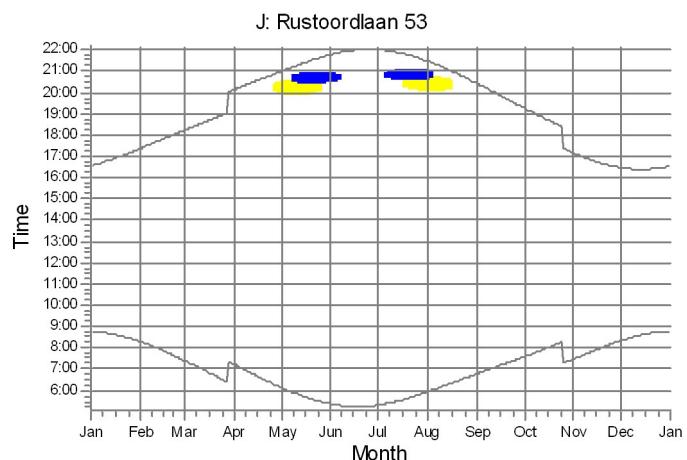
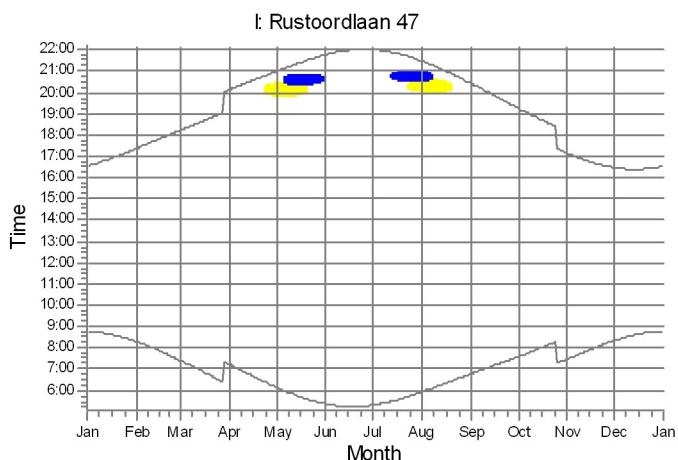
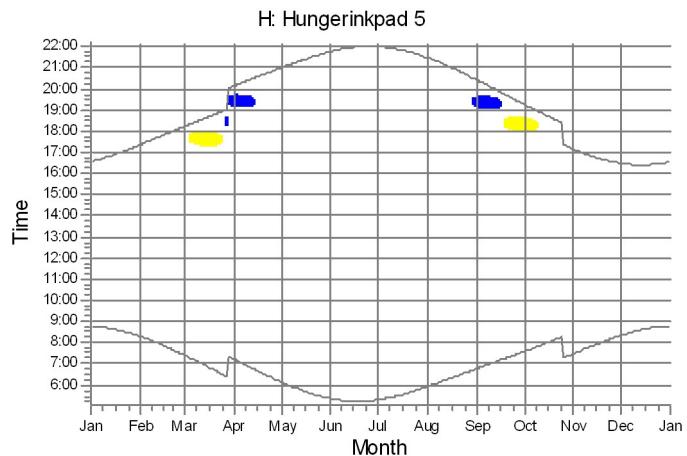
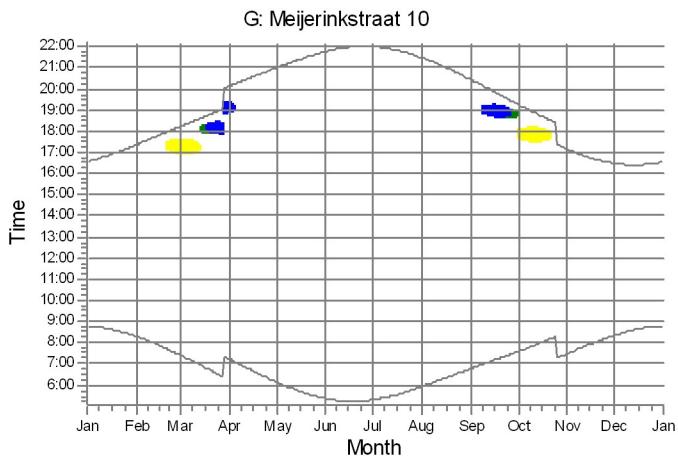
WTGs



- 1: GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (13)
- 2: GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (14)
- 3: GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (15)

## SHADOW - Calendar, graphical

Calculation: Schaduw gevoelige objecten VKA



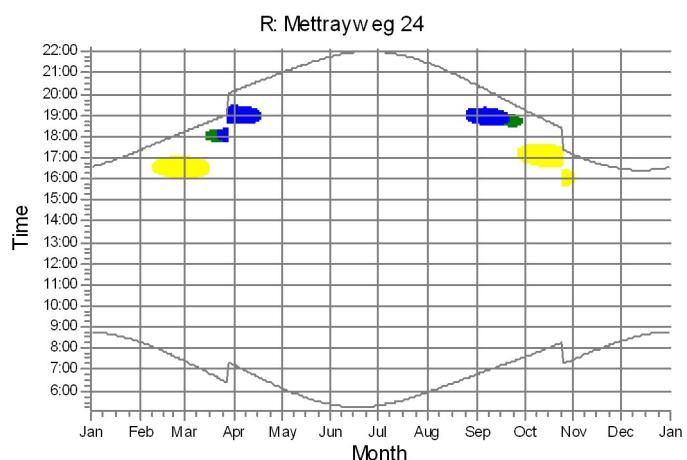
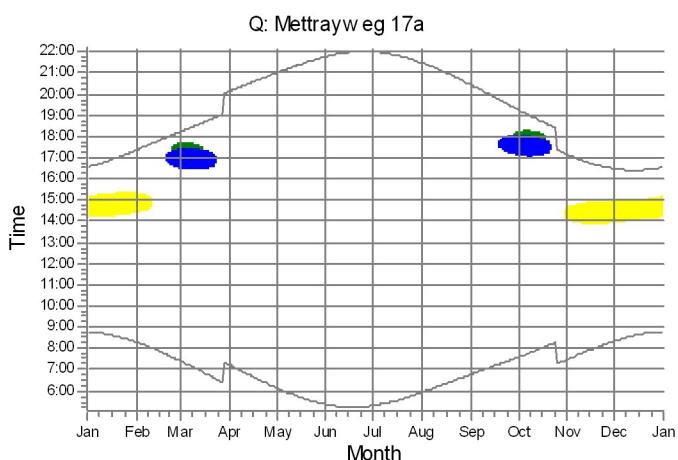
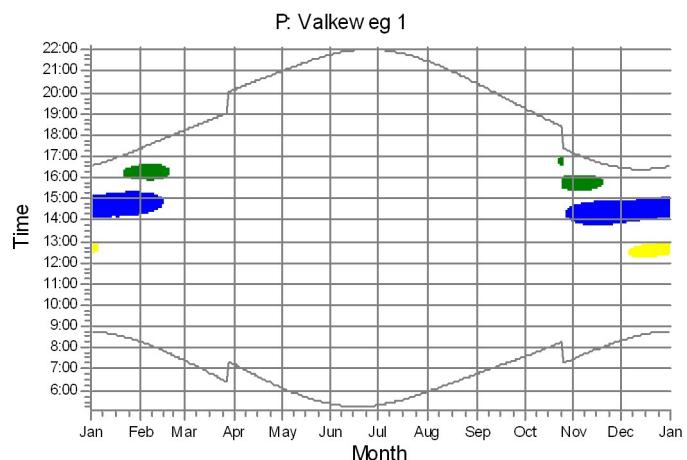
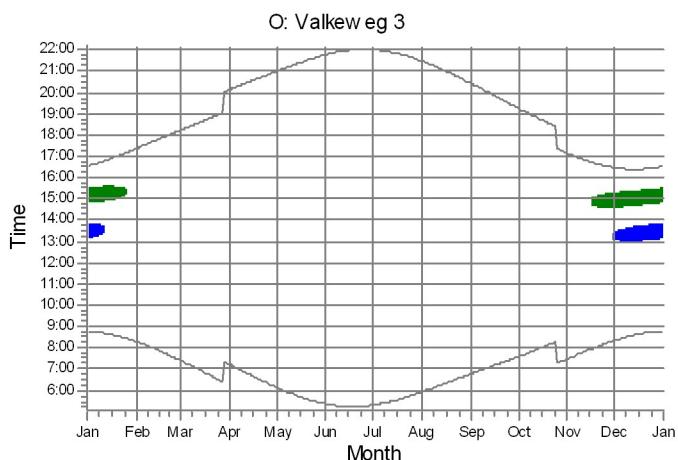
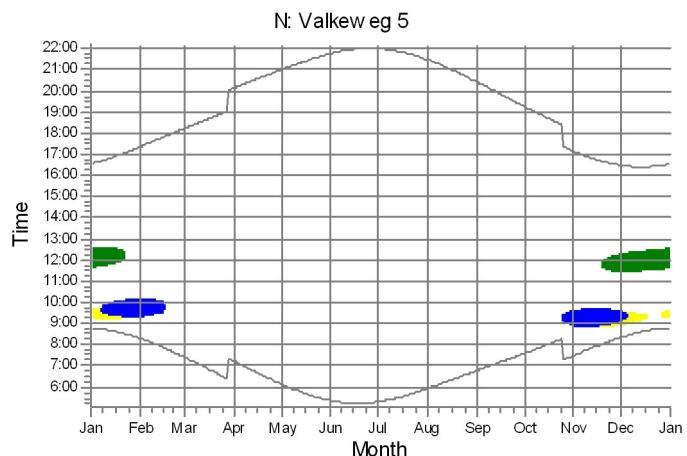
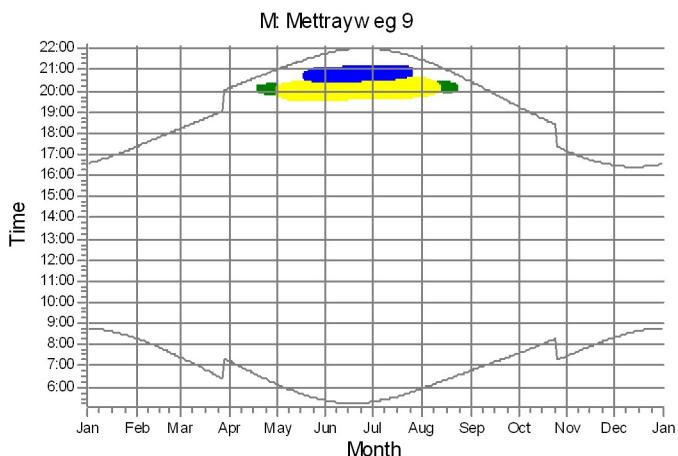
WTGs



- 1: GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (13)
- 2: GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (14)
- 3: GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (15)

## SHADOW - Calendar, graphical

Calculation: Schaduw gevoelige objecten VKA



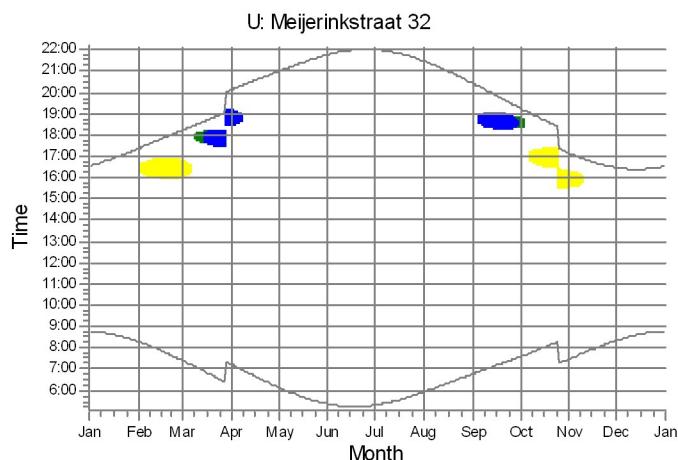
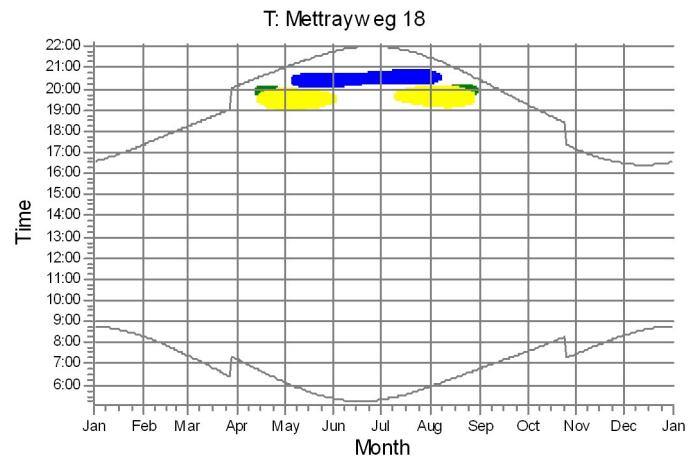
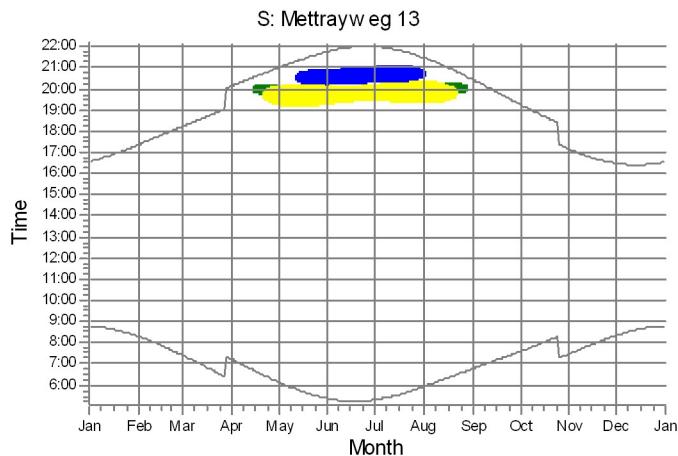
WTGs



- 1: GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (13)
- 2: GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (14)
- 3: GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (15)

## SHADOW - Calendar, graphical

Calculation: Schaduw gevoelige objecten VKA



WTGs



- 1: GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (13)
- 2: GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (14)
- 3: GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (15)

## Bijlage 4 Uitgangspunten en invoergegevens

## SHADOW - Main Result

Calculation: Schaduw gevoelige objecten VKA

### Assumptions for shadow calculations

Maximum distance for influence

Calculate only when more than 20 % of sun is covered by the blade

Please look in WTG table

Minimum sun height over horizon for influence

3 °

Day step for calculation

1 days

Time step for calculation

1 minutes

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:

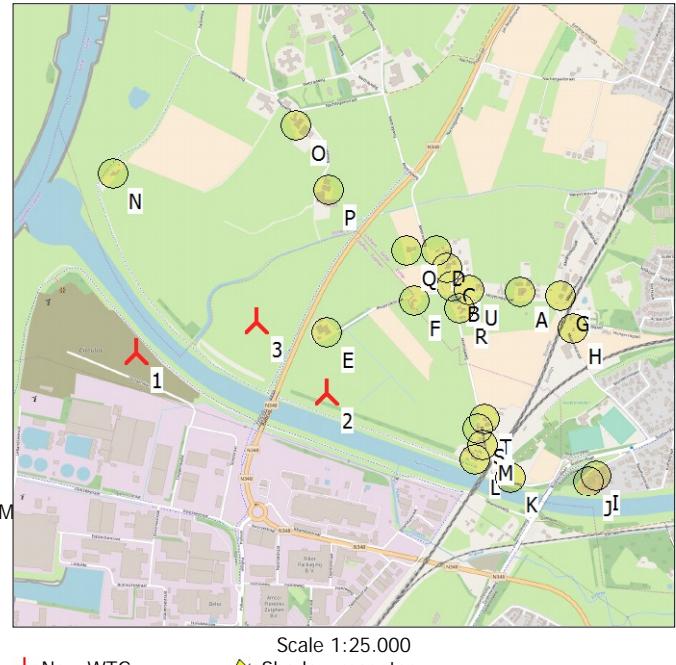
Height contours used: Project Wizard Elevation Data Grid (SRTM: Shuttle DTM)

Obstacles not used in calculation

Eye height for map: 1,5 m

Grid resolution: 1,0 m

All coordinates are in  
Dutch Stereo-RD/NAP 2008



### WTGs

X (east) (north)	Y	Z	Row data/Description	WTG type		Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]	RPM	Shadow data
				Valid	Manufact.							
1	210.380	464.181	16,9 GE WIND ENERGY GE 2.75...Yes	GE WIND ENERGY	GE 2.75-120-2.750	GE WIND ENERGY	2.750	120,0	125,0	1.440	0,0	
2	211.012	464.057	5,8 GE WIND ENERGY GE 2.75...Yes	GE WIND ENERGY	GE 2.75-120-2.750	GE WIND ENERGY	2.750	120,0	125,0	1.440	0,0	
3	210.773	464.286	6,5 GE WIND ENERGY GE 2.75...Yes	GE WIND ENERGY	GE 2.75-120-2.750	GE WIND ENERGY	2.750	120,0	125,0	1.440	0,0	

### Shadow receptor-Input

No.	Name	X (east)	Y (north)	Z	Width	Height	Elevation a.g.l.	Degrees from south cw	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
		[m]	[m]	[m]	[m]	[m]	[m]	[°]	[°]		[m]
A	Meijerinkstraat 16a	211.648	464.397	10,2	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
B	Mettrayweg 28	211.419	464.413	10,3	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
C	Mettrayweg 30	211.402	464.474	9,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
D	Mettrayweg 32	211.368	464.527	8,3	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
E	Meijerinkstraat 40	211.007	464.256	8,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
F	Meijerinkstraat 9	211.295	464.364	9,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
G	Meijerinkstraat 10	211.781	464.385	10,1	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
H	Hungerinkpad 5	211.824	464.278	8,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
I	Rustoordlaan 47	211.903	463.795	9,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
J	Rustoordlaan 53	211.877	463.771	10,9	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
K	Mettrayweg 4	211.623	463.785	8,9	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
L	Mettrayweg 3	211.505	463.840	8,6	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
M	Mettrayweg 9	211.527	463.890	10,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
N	Valkeweg 5	210.296	464.770	8,6	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
O	Valkeweg 3	210.899	464.935	9,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
P	Valkeweg 1	211.010	464.725	7,4	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
Q	Mettrayweg 17a	211.271	464.527	6,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
R	Mettrayweg 24	211.445	464.339	8,2	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
S	Mettrayweg 13	211.512	463.943	9,2	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
T	Mettrayweg 18	211.532	463.976	8,4	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0
U	Meijerinkstraat 32	211.478	464.400	10,1	1,0	1,0	1,0	0,0	90,0	"Green house mode"	2,0

## SHADOW - Main Result

Calculation: Schaduw gevoelige objecten VKA

### Calculation Results

Shadow receptor

No.	Name	Shadow, expected values
		Shadow hours
		per year
		[h/year]
A	Meijerinkstraat 16a	9:19
B	Mettrayweg 28	16:32
C	Mettrayweg 30	15:42
D	Mettrayweg 32	18:00
E	Meijerinkstraat 40	93:19
F	Meijerinkstraat 9	27:06
G	Meijerinkstraat 10	6:57
H	Hungerinkpad 5	6:10
I	Rustoordlaan 47	7:50
J	Rustoordlaan 53	9:05
K	Mettrayweg 4	17:07
L	Mettrayweg 3	18:03
M	Mettrayweg 9	25:35
N	Valkeweg 5	12:07
O	Valkeweg 3	7:16
P	Valkeweg 1	19:22
Q	Mettrayweg 17a	22:31
R	Mettrayweg 24	17:49
S	Mettrayweg 13	29:00
T	Mettrayweg 18	25:06
U	Meijerinkstraat 32	14:23

Total amount of flickering on the shadow receptors caused by each WTG

No.	Name	Worst case	Expected
		[h/year]	[h/year]
1	GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (13)	199:06	35:21
2	GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (14)	750:15	143:32
3	GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (15)	544:11	104:08

Total times in Receptor wise and WTG wise tables can differ, as a WTG can lead to flicker at 2 or more receptors simultaneously and/or receptors may receive flicker from 2 or more WTGs simultaneously.

## Bijlage 5 Slagschaduw per windturbine

## SHADOW - Calendar per WTG

Calculation: Schaduw gevoelige objecten VKAWTG: 1 - GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (13)  
Assumptions for shadow calculations

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

Operational time												
N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June	
1	08:45 14:54-15:27/33 16:33 11:43-12:29/46	08:18 15:58-16:30/32 17:22 18:14 20:08 21:00	07:24 17:10-17:41/31 17:23 18:15 20:10 21:01	07:13 18:29-19:11/42 17:45 18:08 19:52-20:27/35	06:07 19:48-20:27/39 19:50-20:27/37	05:22 21:46	
2	08:45 14:54-15:27/33 16:34 11:42-12:29/47	08:16 15:58-16:30/32 17:23 18:15 20:10 21:01	07:22 17:09-17:42/33 17:25 18:17 20:12 21:03	07:10 18:29-19:12/43 17:45 18:08 19:52-20:27/35	06:05 19:50-20:27/37	05:21 21:47	
3	08:45 14:55-15:27/32 16:36 11:43-12:29/46	08:15 15:58-16:31/33 17:25 18:17 20:12 21:03	07:19 17:09-17:45/36 17:45 18:08 19:52-20:27/35	07:08 18:29-19:12/43 17:45 18:08 19:52-20:27/35	06:03 19:52-20:27/35	05:20 21:48	
4	08:44 14:56-15:28/32 16:37 11:44-12:30/46	08:13 15:58-16:31/33 17:27 18:19 20:13 21:05	07:17 17:08-17:48/40 17:45 18:08 19:54-20:26/32	07:06 18:28-19:11/43 17:45 18:08 19:54-20:26/32	06:02 19:54-20:26/32	05:19 21:49	
5	08:44 14:56-15:28/32 16:38 11:45-12:30/45	08:11 15:58-16:31/33 17:29 18:21 20:15 21:06	07:15 17:07-17:50/43 17:45 18:08 19:56-20:27/31	07:03 18:28-19:11/43 17:45 18:08 19:56-20:27/31	06:00 19:56-20:27/31	05:18 21:50	
6	08:44 14:56-15:29/33 16:39 11:46-12:30/44	08:09 15:57-16:32/35 17:31 18:23 20:17 21:08	07:13 17:07-17:51/44 17:45 18:08 19:57-20:26/29	07:01 18:28-19:10/42 17:45 18:08 19:57-20:26/29	05:58 19:57-20:26/29	05:18 21:51	
7	08:43 14:56-15:29/33 16:40 11:46-12:30/44	08:08 15:57-16:31/34 17:33 18:25 20:19 21:10	07:10 17:08-17:52/44 17:45 18:08 19:59-20:25/26	06:59 18:28-19:10/42 17:45 18:08 19:59-20:25/26	05:56 19:59-20:25/26	05:17 21:52	
8	08:43 14:58-15:30/32 16:42 11:47-12:31/44	08:06 15:57-16:31/34 17:35 18:26 20:20 21:11	07:08 17:07-17:54/47 17:45 18:08 19:09/41 20:20	06:57 18:28-19:09/41 17:45 18:08 19:09/41 20:20	05:54 20:01-20:25/24	05:17 21:53	
9	08:43 14:58-15:30/32 16:43 11:48-12:30/42	08:04 15:59-16:32/33 17:37 18:28 20:22 21:13	07:06 17:08-17:58/50 17:45 18:08 19:08/40 20:22	06:54 18:28-19:08/40 17:45 18:08 19:08/40 20:22	05:53 20:01-20:24/23	05:16 21:54	
10	08:42 14:58-15:30/32 16:44 11:48-12:30/42	08:02 15:59-16:32/33 17:38 18:30 20:24 21:15	07:04 17:09-18:00/51 17:45 18:08 19:07/38 20:24	06:52 18:29-19:07/38 17:45 18:08 19:07/38 20:24	05:51 20:01-20:23/22	05:16 21:55	
11	08:41 14:58-15:30/32 16:46 11:49-12:30/41	08:01 16:00-16:31/31 17:40 18:32 20:25 21:16	07:01 17:09-18:02/53 17:45 18:08 19:07/37 20:25	06:50 18:30-19:07/37 17:45 18:08 19:07/37 20:25	05:49 20:03-20:22/19	05:15 21:55	
12	08:41 15:00-15:31/31 16:47 11:51-12:30/39	07:59 16:00-16:31/31 17:42 18:33 20:27 21:18	06:59 17:11-18:07/56 17:45 18:08 19:05/35 20:27	06:48 18:30-19:05/35 17:45 18:08 19:05/35 20:27	05:47 20:04-20:20/16	05:15 21:56	
13	08:40 15:00-15:31/31 16:49 11:52-12:30/38	07:57 16:01-16:30/29 17:44 18:35 20:29 21:19	06:57 17:13-18:10/57 17:45 18:08 19:59/11 20:29	06:45 19:48-19:59/11 17:45 18:08 19:59/11 20:29	05:46 20:06-20:16/10	05:15 21:57	
14	08:39 15:01-15:31/30 16:50 11:53-12:29/36	07:55 16:02-16:29/27 17:46 18:37 20:31 21:21	06:54 17:15-18:11/56 17:45 18:08 19:46-20:01/15 20:31	06:43 19:46-20:01/15 17:45 18:08 19:46-20:01/15 20:31	05:44 20:09-20:13/4	05:14 21:57	
15	08:38 15:01-15:31/30 16:52 11:54-12:29/35	07:53 16:03-16:28/25 17:48 18:39 20:32 21:23	06:52 17:27-18:13/46 17:45 18:08 19:44-20:02/18 20:32	06:41 19:44-20:02/18 17:45 18:08 19:44-20:02/18 20:32	05:43 20:06-20:16/10	05:14 21:58	
16	08:38 15:02-15:31/29 16:54 11:55-12:28/33	07:51 16:05-16:27/22 17:50 18:40 20:34 21:24	06:50 17:28-18:15/47 17:45 18:08 19:43-20:04/21 20:34	06:39 19:43-20:04/21 17:45 18:08 19:43-20:04/21 20:34	05:41 20:09-20:13/4	05:14 21:59	
17	08:37 15:03-15:31/28 16:55 11:57-12:28/31	07:49 16:06-16:24/18 17:52 18:42 20:36 21:26	06:48 17:29-18:16/47 17:45 18:08 19:39-18:55/16 20:36	06:36 19:42-20:06/24 17:45 18:08 19:39-18:55/16 20:36	05:40 20:04-20:20/16	05:14 21:59	
18	08:36 15:03-15:30/27 16:57 11:57-12:26/29	07:47 16:09-16:21/12 17:53 18:44 20:37 21:27	06:45 17:31-18:16/45 17:45 18:08 19:44-18:50/6 20:37	06:34 19:41-20:08/27 17:45 18:08 19:44-18:50/6 20:37	05:38 20:04-20:23/22	05:14 21:59	
19	08:35 15:04-15:30/26 16:58 11:59-12:25/26	07:45 16:05-16:27/22 17:55 18:46 20:39 21:29	06:43 17:35-18:16/41 17:45 18:08 19:40-20:07/27 20:39	06:32 19:40-20:07/27 17:45 18:08 19:40-20:07/27 20:39	05:37 20:04-20:23/22	05:14 22:00	
20	08:34 15:06-15:30/24 17:00 12:02-12:24/22	07:43 16:07-16:30/24 17:57 18:47 20:41 21:30	06:41 17:35-18:15/40 17:45 18:08 19:40-20:11/31 20:41	06:30 19:40-20:11/31 17:45 18:08 19:40-20:11/31 20:41	05:35 20:04-20:20/16	05:14 22:00	
21	08:33 15:07-15:30/23 17:02 12:05-12:22/17	07:41 16:08-16:23/20 17:59 18:49 20:43 21:32	06:38 17:35-18:15/40 17:45 18:08 19:39-20:13/34 20:43	06:28 19:39-20:13/34 17:45 18:08 19:39-20:13/34 20:43	05:34 20:04-20:23/22	05:14 22:00	
22	08:31 15:08-15:28/20 17:04 12:08-12:17/9	07:39 16:09-16:24/18 18:01 18:51 20:44 21:33	06:36 17:35-18:14/39 17:45 18:08 19:39-20:14/35 20:44	06:26 19:39-20:14/35 17:45 18:08 19:39-20:14/35 20:44	05:33 20:04-20:23/22	05:14 22:01	
23	08:30 16:08-16:15/7 17:05 15:10-15:27/17	07:37 16:09-16:21/12 18:03 18:53 20:46 21:34	06:34 17:35-18:13/38 17:45 18:08 19:40-20:15/35 20:46	06:24 19:40-20:15/35 17:45 18:08 19:40-20:15/35 20:46	05:31 20:04-20:23/22	05:15 22:01	
24	08:29 16:06-16:19/13 17:07 15:13-15:26/13	07:35 16:05-16:27/4 18:05 18:54 20:48 21:36	06:31 17:35-18:13/38 17:45 18:08 19:40-20:15/35 20:48	06:21 19:40-20:15/35 17:45 18:08 19:40-20:15/35 20:48	05:30 20:04-20:23/22	05:15 22:01	
25	08:28 16:03-16:21/18 17:09 15:16-15:23/7	07:32 16:16-17:30/14 18:06 18:56 20:49 21:37	06:29 17:36-18:12/36 17:45 18:08 19:40-20:20/40 20:49	06:19 19:40-20:20/40 17:45 18:08 19:40-20:20/40 20:49	05:29 20:04-20:20/16	05:15 22:01	
26	08:26 16:03-16:23/20 17:11 15:18-15:27/11	07:30 17:14-17:34/20 18:08 18:58 20:51 21:39	06:27 17:35-18:11/36 17:45 18:08 19:41-20:22/41 20:51	06:17 19:41-20:22/41 17:45 18:08 19:41-20:22/41 20:51	05:28 20:04-20:23/22	05:16 22:01	
27	08:25 16:01-16:24/23 17:12 15:20-15:29/12	07:28 17:13-17:38/25 18:10 19:00 20:53 21:40	06:24 17:34-18:10/36 17:45 18:08 19:42-20:24/42 20:53	06:15 19:42-20:24/42 17:45 18:08 19:42-20:24/42 20:53	05:26 20:04-20:23/22	05:16 22:01	
28	08:24 16:01-16:26/25 17:14 15:21-15:30/14	07:26 17:11-17:40/29 18:12 19:01 20:55 21:41	06:22 17:33-18:11/38 17:45 18:08 19:44-20:25/41 20:55	06:13 19:44-20:25/41 17:45 18:08 19:44-20:25/41 20:55	05:25 20:04-20:23/22	05:17 22:01	
29	08:22 16:00-16:27/27 17:16 15:23-15:31/16	07:20 18:32-19:11/39 18:03 19:05 20:56 21:42	06:20 18:32-19:11/39 17:45 18:03 19:46-20:26/40 20:56	06:11 19:46-20:26/40 17:45 18:03 19:46-20:26/40 20:56	05:24 20:04-20:23/22	05:17 22:01	
30	08:21 15:59-16:28/29 17:18 15:24-15:31/18	07:17 18:31-19:11/40 18:05 19:05 20:58 21:44	06:17 19:47-20:27/40 17:45 18:05 19:47-20:27/40 20:58	06:09 19:47-20:27/40 17:45 18:05 19:47-20:27/40 20:58	05:23 20:04-20:23/22	05:18 22:00	
31	08:19 15:59-16:29/30 17:20 15:25-15:32/20	07:15 18:30-19:12/42 18:06 19:06 20:56 21:45	06:15 19:48-20:28/42 17:45 18:06 19:48-20:28/42 20:56	06:11 19:48-20:28/42 17:45 18:06 19:48-20:28/42 20:56	05:22 20:04-20:23/22	05:17 22:00	
	Potential sun hours	258	277	367	416	486	500
	Sum of minutes with flicker	1686	619	1329	1177	347	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Schaduw gevoelige objecten VKAWTG: 1 - GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (13)  
Assumptions for shadow calculations

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
0,21 0,30 0,33 0,42 0,42 0,37 0,40 0,41 0,37 0,34 0,23 0,19

	Operational time												
	N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
	337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	July			August			September			October			November			December		
1	05:18			05:55	20:14-20:31/17		06:46	18:29-19:06/37		07:35	17:50-18:47/57		07:29	15:28-16:00/32		08:21	14:40-15:12/32	
	22:00			21:28			20:25			19:15			17:09			16:28	11:31-12:12/41	
2	05:19			05:57	20:13-20:33/20		06:47	18:27-19:05/38		07:37	17:49-18:43/54		07:31	15:27-16:01/34		08:22	14:41-15:13/32	
	22:00			21:26			20:23			19:13			17:07			16:27	11:32-12:13/41	
3	05:20			05:58	20:11-20:33/22		06:49	18:26-19:06/40		07:38	17:47-18:40/53		07:33	15:27-16:01/34		08:24	14:41-15:13/32	
	21:59			21:24			20:21			19:11			17:05			16:26	11:31-12:13/42	
4	05:21			06:00	20:11-20:35/24		06:51	18:26-19:07/41		07:40	17:45-18:36/51		07:35	15:27-16:01/34		08:25	14:42-15:14/32	
	21:59			21:23			20:18			19:08			17:03			16:26	11:32-12:15/43	
5	05:21			06:02	20:10-20:35/25		06:52	18:24-19:06/42		07:42	17:44-18:33/49		07:37	15:27-16:01/34		08:26	14:42-15:14/32	
	21:58			21:21			20:16			19:06			17:01			16:25	11:31-12:15/44	
6	05:22			06:03	20:08-20:36/28		06:54	18:24-19:07/43		07:44	17:44-18:29/45		07:39	15:27-16:01/34		08:28	14:43-15:15/32	
	21:58			21:19			20:14			19:04			17:00			16:25	11:32-12:16/44	
7	05:23			06:05	20:06-20:36/30		06:55	18:23-19:06/43		07:45	17:44-18:28/44		07:40	15:28-16:01/33		08:29	14:43-15:15/32	
	21:57			21:17			20:11			19:01			16:58			16:24	11:32-12:17/45	
8	05:24			06:06	20:05-20:36/31		06:57	18:23-19:06/43		07:47	17:42-18:25/43		07:42	15:28-16:01/33		08:30	14:43-15:15/32	
	21:57			21:15			20:09			18:59			16:56			16:24	11:32-12:17/45	
9	05:25			06:08	20:03-20:36/33		06:59	18:22-19:05/43		07:49	17:42-18:24/42		07:44	15:28-16:01/33		08:31	14:43-15:15/32	
	21:56			21:14			20:07			18:57			16:54			16:24	11:33-12:18/45	
10	05:26			06:10	20:01-20:36/35		07:00	18:22-19:05/43		07:50	17:42-18:21/39		07:46	15:29-16:00/31		08:33	14:44-15:17/33	
	21:55			21:12			20:05			18:55			16:53			16:24	11:33-12:19/46	
11	05:27			06:11	19:57-20:35/38		07:02	18:22-19:05/43		07:52	17:43-18:16/33		07:48	15:30-16:00/30		08:34	14:45-15:17/32	
	21:54			21:10			20:02			18:52			16:51			16:23	11:33-12:19/46	
12	05:28			06:13	19:56-20:35/39		07:04	18:22-19:03/41		07:54	17:43-18:15/32		07:49	15:31-15:59/28		08:35	14:45-15:17/32	
	21:54			21:08			20:00			18:50			16:50			16:23	11:33-12:20/47	
13	05:29			06:14	19:54-20:34/40		07:05	18:22-19:03/41		07:56	17:43-18:13/30		07:51	15:32-15:59/27		08:36	14:45-15:18/33	
	21:53			21:06			19:57			18:48			16:48			16:23	11:33-12:20/47	
14	05:30			06:16	19:54-20:34/40		07:07	18:22-19:01/39		07:57	17:44-18:11/27		07:53	15:33-15:58/25		08:37	14:46-15:18/32	
	21:52			21:04			19:55			18:46			16:47			16:23	11:34-12:21/47	
15	05:32			06:18	19:51-20:32/41		07:09	18:23-19:01/38		07:59	17:45-18:09/24		07:55	15:34-15:57/23		08:38	14:46-15:19/33	
	21:51			21:02			19:53			18:43			16:45			16:23	11:34-12:22/48	
16	05:33			06:19	19:49-20:31/42		07:10	18:24-19:00/36		08:01	17:47-18:04/17		07:56	15:36-15:56/20		08:38	14:47-15:19/32	
	21:50			21:00			19:50			18:41			16:44			16:23	11:35-12:22/47	
17	05:34			06:21	19:47-20:29/42		07:12	18:24-18:59/35		08:03	17:50-18:01/11		07:58	15:37-15:55/18		08:39	14:47-15:19/32	
	21:49			20:58			19:48			18:39			16:42	14:50-14:57/7		16:24	11:34-12:22/48	
18	05:35			06:23	19:47-20:25/38		07:14	18:24-18:59/35		08:04			08:00	15:40-15:53/13		08:40	14:48-15:19/31	
	21:48			20:56			19:46			18:37			16:41	14:47-15:00/13		16:24	11:35-12:23/48	
19	05:37			06:24	19:45-20:21/36		07:15	18:22-18:59/37		08:06			08:02	15:42-15:49/7		08:41	14:48-15:20/32	
	21:46			20:54			19:43			18:35			16:40	14:44-15:01/17		16:24	11:36-12:24/48	
20	05:38			06:26	19:45-20:20/35		07:17	18:21-18:59/38		08:08			08:03	14:43-15:03/20		08:41	14:48-15:20/32	
	21:45			20:52			19:41			18:33			16:39	11:43-11:52/9		16:24	11:35-12:23/48	
21	05:39			06:28	19:45-20:19/34		07:18	18:21-19:00/39		08:10			08:05	14:42-15:05/23		08:42	14:49-15:21/32	
	21:44			20:49			19:39			18:31			16:37	11:40-11:57/17		16:25	11:36-12:24/48	
22	05:41			06:29	19:44-20:17/33		07:20	18:19-18:59/40		08:11			08:07	14:42-15:06/24		08:43	14:49-15:21/32	
	21:43			20:47			19:36			18:28			16:36	11:38-12:00/22		16:25	11:36-12:24/48	
23	05:42			06:31	19:44-20:15/31		07:22	18:19-19:00/41		08:13	16:45-16:46/1		08:08	14:41-15:07/26		08:43	14:50-15:22/32	
	21:41			20:45			19:34			18:26			16:35	11:36-12:02/26		16:26	11:37-12:25/48	
24	05:43			06:32	19:44-20:11/27		07:23	18:19-19:00/41		08:15	16:39-16:52/13		08:10	14:41-15:08/27		08:43	14:50-15:22/32	
	21:40			20:43			19:32			18:24			16:34	11:36-12:04/28		16:26	11:38-12:26/48	
25	05:45			06:34	19:44-20:10/26		07:25	18:15-18:59/44		07:17	15:36-15:55/19		08:12	14:40-15:08/28		08:44	14:51-15:22/31	
	21:39			20:41	18:46-18:54/8		19:29			17:22			16:33	11:34-12:05/31		16:27	11:39-12:27/48	
26	05:46			06:36	19:44-20:08/24		07:27	18:12-18:59/47		07:19	15:34-15:57/23		08:13	14:40-15:09/29		08:44	14:52-15:24/32	
	21:37			20:39	18:40-18:57/17		19:27			17:20			16:32	11:33-12:06/33		16:28	11:39-12:27/48	
27	05:48			06:37	19:45-20:06/21		07:28	18:11-18:58/47		07:20	15:32-15:58/26		08:15	14:41-15:10/29		08:44	14:52-15:24/32	
	21:36			20:36	18:38-19:00/22		19:25			17:18			16:31	11:33-12:08/35		16:29	11:39-12:27/48	
28	05:49			06:39	19:46-20:04/18		07:30	18:08-18:55/47		07:22	15:31-15:59/28		08:16	14:41-15:11/30		08:45	14:52-15:24/32	
	21:34			20:34	18:36-19:02/26		19:22			17:16			16:30	11:33-12:09/36		16:29	11:40-12:27/47	
29	05:51			06:41	19:47-20:02/15		07:32	18:04-18:52/48		07:24	15:30-16:00/30		08:18	14:40-15:11/31		08:45	14:53-15:25/32	
	21:33			20:32	18:33-19:03/30		19:20	17:59-18:02/3		17:14			16:29	11:32-12:10/38		16:30	11:40-12:28/48	
30	05:52	20:17-20:25/8		06:42	19:49-19:59/10		07:33	17:54-18:50/56		07:26	15:29-15:59/30		08:19	14:41-15:12/31		08:45	14:53-15:25/32	
	21:31			20:30	18:32-19:04/32		19:18			17:12			16:28	11:32-12:11/39		16:31	11:41-12:28/47	
31	05:54	20:16-20:29/13		06:44	18:30-19:05/35					17:10			07:28	15:28-16:00/32		08:45	14:54-15:26/32	
	21:29			20:27						17								

## SHADOW - Calendar per WTG

Calculation: Schaduw gevoelige objecten VKAWTG: 2 - GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (14)  
Assumptions for shadow calculations

Sunshine probability S/S0 (Sun hours/Possible sun hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
0,21 0,30 0,33 0,42 0,42 0,37 0,40 0,41 0,37 0,34 0,23 0,19

### Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	January	February	March	April	May	June	
1	08:45 14:17:15:30/73 09:21:09:34/13 16:33 12:31-12:50/19	08:18 14:28-16:24/116 12:04-13:25/81 17:22 09:29-09:45/16	07:24 15:12-17:32/140 18:14 11:44-13:44/120	07:13 13:27-13:41/14 20:08	06:07 19:03-20:26/83 21:00	05:22 19:19-20:48/89 21:46	
2	08:45 14:17-15:30/73 09:20-09:34/14 16:34 12:31-12:49/18	08:16 14:29-16:28/119 12:03-13:26/83 17:23 09:31-09:42/11	07:22 15:14-17:33/139 18:15 11:44-13:44/120	07:10 20:10	06:05 19:03-20:27/84 21:01	05:21 19:20-20:49/89 21:47	
3	08:45 14:17-15:31/74 09:20-09:35/15 16:35 12:33-12:48/15	08:14 14:31-16:33/122 17:25 12:03-13:28/85	07:19 15:16-17:33/137 18:17 11:44-13:45/121	07:08 20:12	06:03 19:03-20:28/85 21:03	05:20 19:20-20:48/88 21:48	
4	08:44 14:18-15:33/75 09:20-09:37/17 16:37 12:36-12:47/11	08:13 14:32-16:36/124 17:27 12:01-13:29/88	07:17 16:07-17:33/86 11:44-13:45/121 18:19 15:18-16:00/42	07:06 20:13	06:02 19:02-20:28/86 21:05	05:19 19:20-20:48/88 21:49	
5	08:44 14:17-15:33/76 09:19-09:37/18 16:38 12:38-12:45/7	08:11 14:33-16:38/125 17:29 12:00-13:30/90	07:15 16:06-17:32/86 15:19-15:57/38 18:21 17:34-17:47/13 11:43-13:44/121	07:03 20:15	06:00 19:03-20:29/86 21:06	05:18 19:22-20:49/87 21:50	
6	08:44 14:18-15:35/77 16:39 09:20-09:39/19	08:09 14:34-16:40/126 17:31 11:59-13:31/92	07:13 16:07-17:31/84 15:22-15:55/33 18:23 17:32-17:50/18 11:43-13:44/121	07:01 20:17	05:58 19:03-20:29/86 21:08	05:18 19:22-20:49/87 21:51	
7	08:43 14:18-15:35/77 16:40 09:19-09:39/20	08:08 14:36-16:41/125 17:33 11:58-13:32/94	07:10 16:08-17:52/104 11:43-13:44/121 18:24 15:26-15:52/26	06:59 20:19	05:56 19:02-20:29/87 21:10	05:17 19:23-20:50/87 21:52	
8	08:43 14:19-15:37/78 16:42 09:19-09:41/22	08:07 14:38-16:42/124 17:35 11:57-13:33/96	07:08 16:08-17:52/104 11:43-13:43/120 18:26 15:29-15:47/18	06:57 20:20	05:54 19:03-20:29/86 21:11	05:17 19:23-20:49/86 21:53	
9	08:42 14:19-15:37/78 16:43 09:19-09:42/23	08:04 15:07-16:44/97 11:57-13:35/98 17:37 14:41-15:05/24	07:06 16:09-17:54/105 18:28 11:43-13:43/120	06:54 20:22	05:52 19:03-20:29/86 21:13	05:16 19:24-20:50/86 21:54	
10	08:42 14:19-15:38/79 16:44 09:19-09:42/23	08:02 15:07-16:45/98 11:56-13:36/100 17:38 14:45-15:02/17	07:04 16:11-17:01/50 11:43-13:42/119 18:30 17:03-17:55/52	06:52 20:24	05:51 19:03-20:29/86 21:15	05:16 19:25-20:50/85 21:55	
11	08:41 14:19-15:38/79 16:46 09:18-09:43/25	08:01 15:07-16:46/99 17:40 11:55-13:37/102	07:01 16:11-16:49/38 11:42-13:41/119 18:32 17:04-17:45/50	06:50 20:25	05:49 19:04-20:29/85 21:16	05:15 19:24-20:50/86 21:55	
12	08:41 14:19-15:39/80 16:47 09:19-09:44/25	07:59 15:07-16:47/100 17:42 11:54-13:38/104	06:59 16:13-16:48/35 17:06-17:22/16 18:33 17:23-17:55/32 11:43-13:41/118	06:47 20:27	05:47 19:04-20:30/86 21:18	05:15 19:25-20:50/85 21:56	
13	08:40 14:20-15:47/87 16:49 09:19-09:45/26	07:57 15:07-16:49/102 16:56-17:01/5 17:44 11:54-13:39/105	06:57 16:15-16:46/31 17:11-17:18/7 18:35 17:23-17:55/32 11:43-13:41/118	06:45 20:29	05:46 19:05-20:34/89 21:19	05:15 19:26-20:51/85 21:57	
14	08:39 14:20-15:50/90 16:50 09:19-09:46/27	07:55 15:06-17:06/120 17:45 11:53-13:39/106	06:54 16:17-16:43/26 11:43-13:39/116 18:37 17:22-17:55/33	06:43 20:31	05:44 19:05-20:35/90 21:21	05:14 19:26-20:51/85 21:57	
15	08:38 14:20-15:52/92 16:52 09:19-09:46/27	07:53 15:05-17:09/123 17:48 11:52-13:40/108	06:52 16:21-16:39/18 11:43-13:39/116 18:39 17:22-17:55/33	06:41 20:32	05:43 19:06-20:37/91 21:23	05:14 19:27-20:51/84 21:58	
16	08:38 14:20-15:54/94 16:54 09:19-09:47/28	07:50 15:06-17:11/125 17:50 11:52-13:41/109	06:50 16:28-16:33/5 11:44-13:38/114 18:40 17:22-17:55/33	06:39 20:34	05:41 19:06-20:38/92 21:24	05:14 19:27-20:52/85 21:58	
17	08:37 14:21-15:55/94 12:34-12:49/15 16:55 09:19-09:48/29	07:49 15:06-17:11/125 17:52 11:50-13:40/110	06:48 17:22-17:53/31 18:42 11:44-13:36/112	06:36 20:36	05:39 19:07-20:40/93 21:26	05:14 19:28-20:52/84 21:59	
18	08:36 14:20-15:57/97 12:28-12:53/25 16:57 09:19-09:47/28	07:47 15:06-17:13/127 17:53 11:49-13:41/112	06:45 17:22-17:53/31 18:44 11:45-13:36/111	06:34 20:37	05:38 19:08-20:41/93 21:27	05:14 19:28-20:52/84 21:59	
19	08:35 14:21-15:59/98 12:25-12:57/32 16:58 09:19-09:48/29	07:45 15:06-17:14/128 17:55 11:49-13:42/113	06:43 17:23-17:52/29 18:46 11:46-13:35/109	06:32 20:39	05:37 19:08-20:41/93 21:29	05:14 19:28-20:52/84 22:00	
20	08:34 14:21-16:00/99 12:23-13:01/38 17:00 09:20-09:49/29	07:43 15:06-17:20/134 17:47 11:48-13:42/114	06:41 17:23-17:51/28 18:47 11:46-13:33/107	06:30 20:41	05:35 19:09-20:42/93 21:30	05:14 19:28-20:52/84 22:00	
21	08:32 14:22-16:02/100 12:21-13:04/43 17:02 09:20-09:49/29	07:41 15:07-17:25/138 17:59 11:48-13:43/115	06:38 17:24-17:49/25 18:49 11:47-13:32/105	06:28 20:43	05:34 19:10-20:43/93 21:32	05:14 19:28-20:52/84 22:00	
22	08:31 14:22-16:02/100 12:21-13:06/48 17:04 09:20-09:49/29	07:39 15:07-17:27/140 18:08 11:48-13:43/115	06:36 17:26-17:48/22 18:51 11:48-13:40/102	06:26 20:44	05:32 19:11-20:44/93 21:33	05:14 19:28-20:52/84 22:01	
23	08:30 14:22-16:04/102 12:21-13:09/52 17:05 09:21-09:49/28	07:37 15:08-17:29/141 18:03 11:47-13:44/117	06:34 17:27-17:45/18 18:53 11:49-13:28/99	06:24 20:46	05:31 19:12-20:45/93 21:34	05:15 19:29-20:53/84 22:01	
24	08:29 14:23-16:05/102 12:21-13:11/56 17:07 09:21-09:50/29	07:35 15:08-17:30/142 18:04 11:46-13:43/117	06:31 17:29-17:43/141 18:54 11:50-13:26/96	06:21 20:48	05:30 19:13-20:45/92 21:36	05:15 19:29-20:53/84 22:01	
25	08:28 14:23-16:06/103 12:21-13:13/60 17:09 09:21-09:49/28	07:32 15:09-17:31/142 18:06 11:46-13:44/118	06:29 15:52-13:24/92 18:56 10:49-20:20/17/17	06:19 20:49	05:29 19:14-20:46/92 21:37	05:15 19:29-20:53/84 22:01	
26	08:26 14:24-16:12/108 12:21-13:15/63 17:11 09:23-09:50/27	07:30 15:10-17:32/142 18:08 11:45-13:44/119	06:27 15:54-13:21/87 18:58 10:49-20:17/27	06:17 20:51	05:28 19:16-20:46/90 21:38	05:16 19:30-20:54/84 22:01	
27	08:25 14:24-16:15/111 12:20-13:17/67 17:12 09:23-09:49/26	07:28 15:11-17:32/141 18:10 11:45-13:45/120	06:24 11:56-13:18/82 19:00 10:50-13:15/76	06:15 20:53	05:26 19:17-20:47/90 21:40	05:16 19:29-20:54/84 22:01	
28	08:24 14:25-16:18/113 12:20-13:19/69 17:14 09:24-09:49/25	07:26 15:12-17:33/141 18:12 11:45-13:45/120	06:22 11:59-13:15/76 19:01 10:55-13:15/71	06:13 20:55	05:25 19:17-20:47/90 21:41	05:17 19:30-20:54/84 22:01	
29	08:22 14:26-16:19/113 12:20-13:20/72 17:16 09:25-09:48/23	07:20 13:02-14:10/68 18:13 11:46-13:44/119	06:11 19:04-20:23/79 20:03 10:55-13:15/71	06:11 20:56	05:24 19:18-20:47/89 21:42	05:17 19:29-20:54/85 22:00	
30	08:21 14:26-16:21/115 12:20-13:22/76 17:18 09:25-09:47/22	07:17 13:07-14:05/58 20:05 10:55-13:15/71	06:09 19:04-20:26/82 20:58 10:55-13:15/71	06:09 20:58	05:23 19:18-20:47/89 21:44	05:18 19:29-20:54/85 22:00	
31	08:19 14:27-16:23/116 12:20-13:24/78 17:20 09:27-09:46/19	07:15 13:14-13:58/44 20:06 10:55-13:15/71	06:15 19:04-20:26/82 20:56 10:55-13:15/71	06:15 20:56	05:22 19:18-20:47/89 21:45	05:18 19:29-20:54/85 22:00	
	Potential sun hours Sum of minutes with flicker	258 4459	277 6490	5115	820 486	2760 500	2560

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker  
Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

Project:

## IJsselwind alternatieven scenarios

Licensed user:

Royal HaskoningDHV

Koggelaan 21

NL-8017 JN Zwolle

+ 31 (0) 610 274 220

Fabian Kruiper / fabian.kruiper@rhdhv.com

Calculated:

8-10-2018 11:34/3.2.712

## SHADOW - Calendar per WTG

Calculation: Schaduw gevoelige objecten VKAWTG: 2 - GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (14)  
Assumptions for shadow calculations

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

## Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	July	August	September	October	November	December	
1	05:18 19:29-20:54/85   22:00	05:55 19:14-20:39/85   21:28	06:46 20:25   20:25	07:35 16:53-17:26/33 17:47-18:00/13   19:15 18:02-18:34/32 12:22-14:20/118	07:29 14:36-16:14/98 11:25-13:05/100   17:09 14:13-14:31/18	08:21 14:01-15:21/80   16:28 09:00-09:25/25	
2	05:19 19:29-20:55/86   22:00	05:57 19:14-20:40/86   21:26	06:47 20:23   20:23	07:37 16:51-17:27/36 12:21-14:20/119   19:13 17:44-18:33/49	07:31 14:36-16:13/97 11:26-13:04/98   17:07 14:10-14:34/24	08:22 14:02-15:21/79   16:27 09:02-09:25/23	
3	05:20 19:29-20:55/86   21:59	05:58 19:13-20:39/86   21:24	06:49 20:21   20:21	07:38 16:49-17:29/40 12:21-14:20/119   19:11 17:42-18:33/51	07:33 14:07-16:12/125   17:05 11:27-13:03/96	08:24 14:02-15:20/78   16:26 09:02-09:25/23	
4	05:21 19:29-20:55/86   21:59	06:00 19:13-20:40/87   21:23	06:51 20:18   20:18	07:40 16:47-18:31/104   19:08 12:20-14:19/119	07:35 14:05-16:11/126   17:03 11:28-13:02/94	08:25 14:03-15:21/78   16:26 09:03-09:25/22	
5	05:21 19:28-20:55/87   21:58	06:02 19:13-20:39/86   21:21	06:52 20:16   20:16	07:42 16:45-18:30/104 12:20-14:20/120   19:06 16:10-16:21/11	07:37 14:04-16:09/125   17:01 11:29-13:01/92	08:26 14:03-15:20/77   16:25 09:04-09:25/21	
6	05:22 19:28-20:55/87   21:58	06:03 19:13-20:39/86   21:19	06:54 20:14   20:14	07:44 16:45-18:28/103 12:19-14:20/121   19:04 16:04-16:26/22	07:38 14:02-16:08/126   17:00 11:30-13:00/90	08:28 14:04-15:21/77   16:25 09:06-09:25/19	
7	05:23 19:28-20:55/87   21:57	06:05 19:12-20:38/86   21:17	06:55 20:11   20:11	07:45 16:44-18:27/103 12:19-14:20/121   19:01 16:06-16:29/29	07:40 14:01-16:06/125   16:58 11:31-12:59/88	08:29 14:04-15:20/76 09:06-09:25/19   16:24 12:25-12:32/7	
8	05:24 19:28-20:56/88   21:57	06:06 19:12-20:38/86   21:15	06:57 20:09   20:09	07:47 16:42-18:07/85 15:56-16:31/35   18:59 18:08-18:23/15 12:18-14:19/121	07:42 14:00-16:03/123   16:56 11:33-12:58/85	08:30 14:05-15:20/75 09:07-09:24/17   16:24 12:23-13:41/11	
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	Potential sun hours	503	454	381	331	265	3093
	Sum of minutes with flicker	2783	1821	2183	7430	5501	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker	Day in month	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Schaduw gevoelige objecten VKAWTG: 3 - GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (15)  
Assumptions for shadow calculations

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
0,21 0,30 0,33 0,42 0,42 0,37 0,40 0,41 0,37 0,34 0,23 0,19

### Operational time

	N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321	

	January	February	March	April	May	June
1	08:45 14:13-15:02/49	08:18 14:21-15:14/53	07:24 16:35-17:30/55	07:13 18:17-19:38/81	06:07 18:14-19:12/58	05:22 20:08-21:09/61
	16:33 13:14-13:45/31	17:22 09:24-10:06/42	18:14	20:08	21:00	21:46 17:50-19:38/108
2	08:45 14:13-15:02/49	08:16 14:22-15:14/52	07:22 16:35-17:31/56	07:10 18:17-19:39/82	06:05 18:11-19:14/63	05:21 20:09-21:10/61
	16:34 13:14-13:45/31	17:23 09:24-10:06/42	18:15	20:10	21:01	21:47 17:51-19:39/108
3	08:45 14:13-15:03/50	08:14 14:23-15:14/51	07:19 16:34-17:32/58	07:08 18:17-19:39/82	06:03 18:09-19:16/67	05:20 20:09-21:10/61
	16:35 13:15-13:45/30	17:25 09:25-10:07/42	18:17	20:12	21:03	21:48 17:51-19:39/108
4	08:44 14:14-15:04/50	08:13 14:24-15:13/49	07:17 16:34-17:35/61	07:06 18:16-19:38/82	06:02 18:07-19:17/70	05:19 20:09-21:10/61
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7	08:43 14:14-15:06/52	08:08 14:27-15:11/44	07:10 16:32-17:44/72	06:59 18:17-19:38/81	05:56 20:16-20:40/24	05:17 20:11-21:12/61
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30	08:21 14:20-15:15/55		07:17 18:19-19:37/78	06:09 18:16-19:10/54	05:23 20:08-21:07/59	05:18 20:17-21:18/61
	17:18 09:24-10:06/42		20:05	20:58	21:44 17:51-19:37/106	22:00 17:56-19:46/110
31	08:19 14:21-15:15/54		07:15 18:18-19:38/80	06:22 18:20-21:08/60	05:22 20:08-21:08/60	
	17:20 09:24-10:06/42		20:06	21:45	21:45 17:51-19:37/106	
	Potential sun hours	258	277	367	416	486
	Sum of minutes with flicker	2686	1338	2468	1460	3976
						5091

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Schaduw gevoelige objecten VKAWTG: 3 - GE WIND ENERGY GE 2.75-120 2750 120.0 !O! hub: 125,0 m (TOT: 185,0 m) (15)  
 Sunshine probability S/S0 (Sun hours/Possible sun hours) []  
 Assumptions for shadow calculations

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,21	0,30	0,33	0,42	0,42	0,37	0,40	0,41	0,37	0,34	0,23	0,19

Operational time												
N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
337	460	739	530	550	486	879	1.683	1.093	643	509	412	8.321

	July	August	September	October	November	December	
1	05:18 20:17-21:17/60	05:55 20:20-20:57/37	06:46 18:17-19:32/75	07:35 17:10-18:31/81	07:29 14:01-14:36/35	08:21 13:56-14:50/54	09:12-09:30/18
	22:00 17:56-19:45/109	21:28 18:08-19:36/88	20:25	19:15	17:09 08:58-09:32/34	16:28 13:10-13:20/10	
2	05:19 20:17-21:18/61	05:57 20:21-20:56/35	06:47 18:15-19:32/77	07:37 17:10-18:27/77	07:31 13:59-14:38/39	08:22 13:57-14:51/54	09:15-09:29/14
	22:00 17:56-19:46/110	21:26 18:09-19:36/87	20:23	19:13	17:07 08:57-09:33/36	16:27 13:09-13:24/15	
3	05:20 20:17-21:18/61	05:58 20:22-20:54/32	06:49 18:15-19:33/78	07:38 17:09-18:26/77	07:33 13:58-14:39/41	08:24 13:58-14:51/53	09:17-09:27/10
	21:59 17:57-19:46/109	21:24 18:10-19:34/84	20:21	19:11	17:05 08:57-09:34/37	16:26 13:07-13:25/18	
4	05:21 20:17-21:18/61	06:00 20:23-20:53/30	06:51 18:14-19:33/79	07:40 17:08-18:24/76	07:35 13:57-14:41/44	08:25 13:59-14:51/52	09:21-09:24/3
	21:59 17:57-19:46/109	21:23 18:11-19:34/83	20:18	19:08	17:03 08:56-09:35/39	16:26 13:06-13:27/21	
5	05:21 20:16-21:17/61	06:02 20:25-20:51/26	06:52 18:13-19:34/81	07:42 17:08-18:23/75	07:37 13:56-14:42/46	08:26 13:59-14:51/52	
	21:58 17:57-19:46/109	21:21 18:12-19:32/80	20:16	19:06	17:01 08:56-09:35/39	16:25 13:05-13:28/23	
6	05:22 20:17-21:18/61	06:03 20:27-20:50/23	06:54 18:12-19:34/82	07:44 17:08-18:21/73	07:38 13:55-14:42/47	08:28 14:00-14:52/52	
	21:58 17:57-19:46/109	21:19 18:14-19:31/77	20:14	19:04	17:00 08:55-09:36/41	16:25 13:05-13:30/25	
7	05:23 20:17-21:18/61	06:05 20:31-20:35/4 18:14-19:29/75	06:55 18:11-19:33/82	07:45 17:08-18:19/71	07:40 13:54-14:43/49	08:29 14:01-14:52/51	
	21:57 17:58-19:46/108	21:17 20:41-20:48/7	20:11	19:01	16:58 08:55-09:36/41	16:24 13:04-13:31/27	
8	05:24 20:17-21:18/61	06:06 18:16-19:28/72	06:57 18:11-19:33/82	07:47 17:07-18:16/69	07:42 13:53-14:44/51	08:30 14:01-14:51/50	
	21:57 17:58-19:46/108	21:15	20:09	18:59	16:56 08:55-09:37/42	16:21 13:04-13:32/28	
9	05:25 20:17-21:18/61	06:08 18:17-19:26/69	06:59 18:10-19:32/82	07:49 17:07-18:12/65	07:44 13:53-14:45/52	08:31 14:01-14:51/50	
	21:56 17:58-19:46/108	21:14	20:07	18:57	16:54 08:55-09:37/42	16:24 13:03-13:33/30	
10	05:26 20:17-21:17/60	06:10 18:19-19:25/66	07:00 18:10-19:32/82	07:50 17:08-18:07/59	07:46 13:52-14:45/53	08:33 14:03-14:52/49	
	21:55 17:59-19:46/107	21:12	20:04	18:55	16:53 08:55-09:37/42	16:24 13:04-13:35/31	
11	05:27 20:16-21:17/61	06:11 18:20-19:22/62	07:02 18:10-19:31/81	07:52 17:08-18:06/58	07:48 13:52-14:46/54	08:33 14:03-14:52/49	
	21:54 17:59-19:46/107	21:10	20:02	18:52	16:51 08:55-09:37/42	16:23 13:04-13:35/31	
12	05:28 20:16-21:17/61	06:13 18:23-19:20/57	07:04 18:10-19:29/79	07:54 17:09-18:05/56	07:49 13:52-14:46/54	08:35 14:04-14:53/49	
	21:54 17:59-19:46/107	21:08	20:00	18:50	16:50 08:55-09:37/42	16:23 13:04-13:36/32	
13	05:29 20:16-21:16/60	06:14 18:25-19:17/52	07:05 18:10-19:28/78	07:56 17:09-18:02/53	07:51 13:51-14:47/56	08:36 14:05-14:53/48	
	21:53 17:59-19:46/107	21:06	19:57	18:48	16:48 08:56-09:38/42	16:23 13:04-13:37/33	
14	05:30 20:16-21:16/60	06:16 18:28-19:15/47	07:07 18:07-19:26/79	07:57 17:10-18:01/51	07:53 13:51-14:47/56	08:37 14:05-14:53/48	
	21:52 18:00-19:46/106	21:04	19:55	18:46	16:47 08:56-09:38/42	16:23 13:04-13:38/34	
15	05:32 20:16-21:15/59	06:18 18:30-19:11/41	07:09 18:04-19:24/80	07:59 17:11-17:59/48	07:55 13:51-14:48/57	08:38 14:06-14:54/48	
	21:51 18:00-19:45/105	21:02	19:53	18:43	16:45 08:57-09:38/41	16:23 13:05-13:38/33	
16	05:33 20:16-21:14/58	06:19 18:34-19:07/33	07:10 18:02-19:12/70	08:01 17:12-17:56/44	07:56 13:51-14:48/57	08:38 14:07-14:54/47	
	21:50 18:00-19:45/105	21:00	19:50	18:41	16:44 08:57-09:38/41	16:23 13:05-13:39/34	
17	05:34 20:16-21:13/57	06:21 18:39-19:01/22	07:12 17:59-19:11/72	08:03 17:13-17:53/40	07:58 13:52-14:49/57	08:39 14:06-14:54/48	
	21:49 18:00-19:45/105	20:58	19:48	18:39	16:42 08:58-09:38/40	16:24 13:04-13:39/35	
18	05:35 20:16-21:12/56	06:23	07:13 17:58-19:11/73	08:04 17:15-17:44/29	08:00 13:52-14:49/57	08:40 14:07-14:54/47	
	21:48 18:01-19:45/104	20:56	19:46	18:37	16:41 08:59-09:37/38	16:24 13:05-13:40/35	
19	05:37 20:16-21:09/53	06:24	07:15 17:56-19:09/73	08:06 17:16-17:41/25	08:02 13:51-14:48/57	08:41 14:08-14:55/47	
	21:46 18:01-19:45/104	20:54	19:43	18:35	16:40 08:59-09:37/38	16:24 13:06-13:41/35	
20	05:38 20:16-21:06/50	06:26	07:17 17:55-19:09/74	08:08 17:19-17:38/19	08:03 13:51-14:49/58	08:41 14:08-14:55/47	
	21:45 18:01-19:44/103	20:52	19:41	18:33	16:38 08:59-09:36/37	16:24 13:06-13:41/35	
21	05:39 20:16-21:05/49	06:27	07:18 17:29-19:08/99	08:10 17:24-17:33/9	08:05 13:52-14:49/57	08:42 14:09-14:56/47	
	21:44 18:02-19:43/101	20:49	19:39	18:31	16:37 09:00-09:36/36	16:25 13:06-13:42/36	
22	05:41 20:17-21:05/48	06:29	07:20 17:25-19:06/101	08:11	08:07 13:52-14:49/57	08:43 14:09-14:56/47	
	21:43 18:03-19:44/101	20:47	19:36	18:28	16:36 09:01-09:36/33	16:23 13:06-13:42/36	
23	05:42 20:16-21:03/47	06:31 18:37-18:50/13	07:22 17:23-19:05/102	08:13	08:08 13:53-14:50/57	08:43 14:10-14:57/47	
	21:41 18:03-19:43/100	20:45	19:34	18:26	16:35 09:02-09:36/34	16:26 13:07-13:43/36	
24	05:43 20:16-21:03/47	06:32 18:32-18:53/21	07:23 17:21-19:03/102	08:15	08:10 13:54-14:50/56	08:43 14:10-14:57/47	
	21:40 18:03-19:42/99	20:43	19:32	18:24	16:34 09:04-09:35/31	16:26 13:08-13:43/35	
25	05:45 20:16-21:02/46	06:34 18:29-18:55/26	07:25 17:18-18:59/101	08:17	08:12 13:53-14:50/57	08:44 14:10-14:57/47	
	21:39 18:03-19:41/98	20:41	19:29	17:22	16:33 09:04-09:34/30	16:27 13:08-13:43/35	
26	05:46 20:17-21:03/46	06:36 18:26-19:07/41	07:27 17:17-18:54/97	08:19 09:11-09:20/9	08:13 13:54-14:50/56	08:44 14:11-14:58/47	
	21:37 18:04-19:41/97	20:39	19:27	17:20	16:32 09:05-09:34/29	16:28 13:09-13:44/35	
27	05:48 20:17-21:02/45	06:37 18:25-19:10/45	07:28 17:16-18:51/95	08:20 09:07-09:24/17	08:15 13:55-14:50/55	08:44 14:12-14:59/47	
	21:36 18:05-19:40/95	20:36	19:25	17:18	16:31 09:07-09:34/27	16:29 13:10-13:44/34	
28	05:49 20:18-21:03/45	06:39 18:23-19:12/49	07:30 17:14-18:43/89	08:22 14:15-14:25/10	08:16 13:55-14:50/55	08:45 14:12-14:59/47	
	21:34 18:06-19:40/94	20:34	19:22	17:16	09:04-09:27/23	16:30 09:08-09:33/25	16:29 13:10-13:44/34
29	05:51 20:18-21:02/44	06:41 18:21-19:13/52	07:32 17:13-18:39/86	08:24 14:10-14:30/20	08:18 13:55-14:50/55	08:45 14:12-15:00/48	
	21:33 18:06-19:39/93	20:32	19:20	17:14	09:03-09:29/26	16:29 09:09-09:32/23	16:30 13:11-13:44/33
30	05:52 20:18-21:00/42	06:42 18:20-19:14/54	07:33 17:12-18:36/84	08:26 14:06-14:32/26	08:19 13:56-14:51/55	08:45 14:12-15:01/49	
	21:31 18:06-19:38/92	20:30 19:20-19:28/8	19:18	17:12	09:01-09:31/30	16:28 09:11-09:32/21	16:31 13:12-13:45/33
31	05:54 20:19-20:59/40	06:44 18:18-19:15/57		17:28	14:03-14:35/32		16:32 13:13-13:45/32
	21:29 18:08-19:38/90	20:27 19:16-19:30/14		17:10	08:59-09:31/32		
	Potential sun hours	503	454	381	331	265	242
	Sum of minutes with flicker	4881	1669	2530	1380	2667	2505

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker