



Annual Dark Sky Report 2017

Elan Valley Estate



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Figure 1: Orion Nebula by David Tolliday

1 General

1.1 Elan Valley Estate IDA contacts

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Please note the former IDA contacts Les and Kris Fry stepped down in December 2016.

There are no plans to upgrade the Elan Estate's current tier status, which is Silver. On Monday, 14th August 2017, an Elan Valley Dark Sky Park meeting was held to seek the views of the tourism agents, workers, tenants and users of the area. It was a very productive meeting with twenty people in attendance and it was suggested that the Elan Valley Dark Sky Park should take more of an educational approach, to target those who are new to astronomy. A lot of suggestions were made which are currently being considered.

The Elan Valley Trust and Dŵr Cymru Welsh Water have noticed an increasing number of users who visit the Elan Valley Estate at night-time, mainly to take advantage of the beautiful landscape lit by starlight. These images can be seen on our Twitter and Facebook pages. Annual visitors to the Elan Estate exceeds 150,000.

The Elan Valley Trust holiday cottages are becoming increasingly popular destinations for astronomers. The locations of these properties are far away from local light pollution and some of them are ideally placed for panoramic views of the night sky, with others being an ideal base to explore.

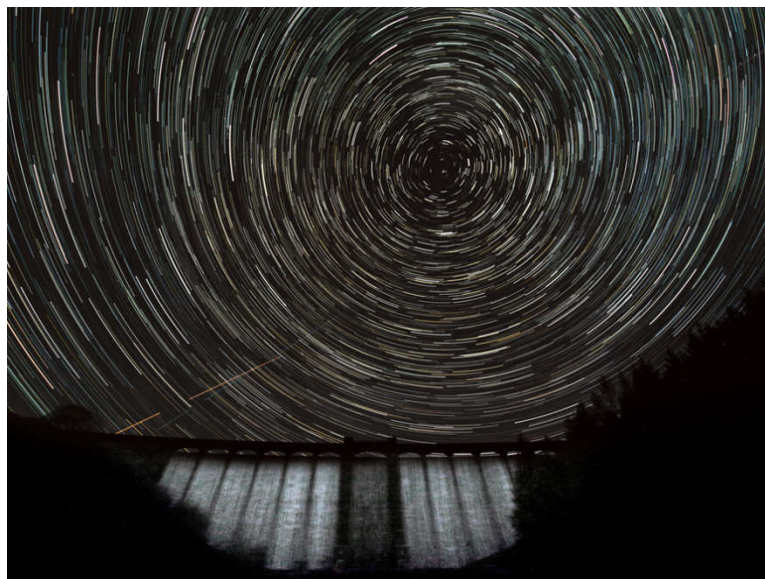


Figure 2: Star trails at the Claerwen Dam by David Tolliday

2 Lighting

2.1 Parks/Reserves:

The Elan Valley Visitor Centre had a new parking meter installed in October 2016. It has a bright blue light and is quite visible from a distance. It is currently non-compliant and solutions towards compliance will be investigated.

The Elan Valley Trust has submitted two plans to refurbish and upgrade two properties on the Estate, one of which is already a commercial enterprise. There are plans to extend Penbont Tearooms and provide more bed spaces. The need for IDA compliance with regard to lighting schemes has been included in the plans which are currently on the Powys Planning Portal. It is hoped that Penbont will be a suitable venue for dark sky events in and around that area.

There are plans to convert and alter Cwm Clyd Farmstead into bunkhouse accommodation. This site is ideal for groups wanting to use the facilities for astronomical activities. The need for IDA compliance with regard to lighting schemes has been included in the plans which are currently on the Powys Planning Portal.

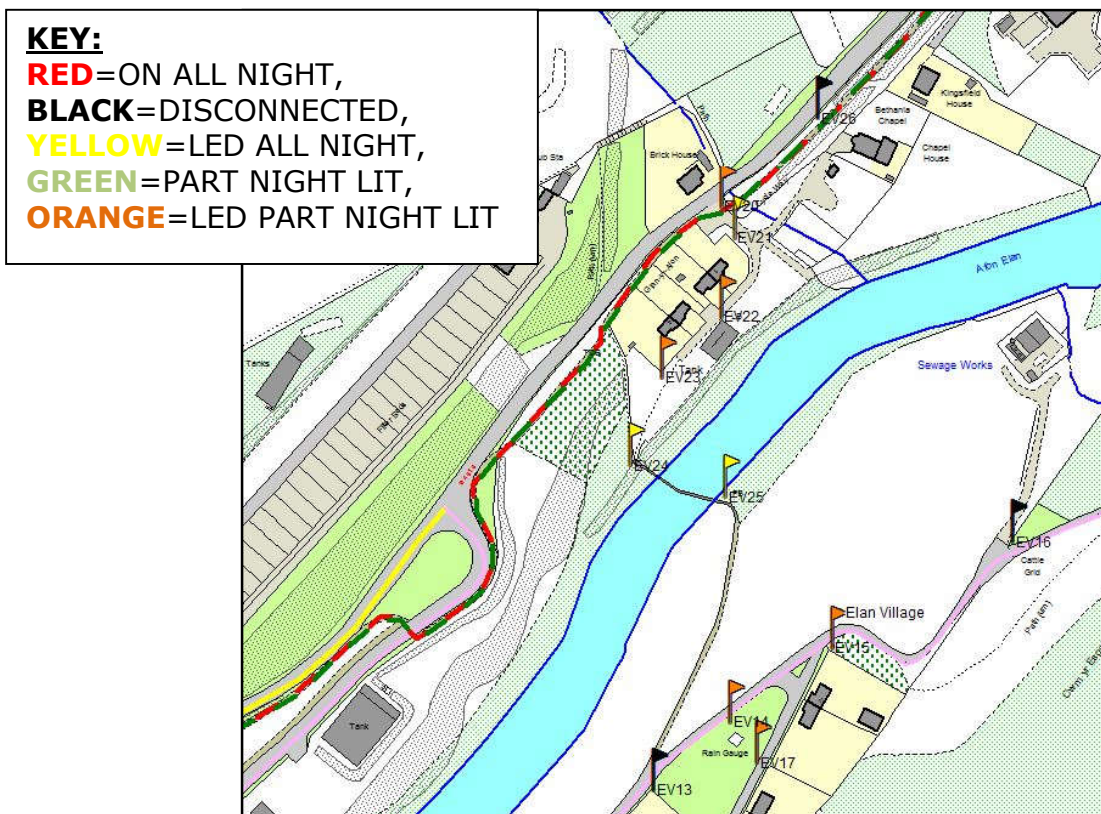
There was no new territory added to the Elan Valley Estate.

2.2 Communities:

One street light, EV20, was converted to part-night lit from being on all night.

2.3 Current Street Lighting Map of 2017.

Please note that EV20 is part-night lit. Street lighting maps from 2015 are available in our previous IDA reports.



3 Sky Quality

3.1 SQM Readings

Taken between 25th May and 15th September 2017

KEY: * Indicates readings were taken outside of Astronomical Darkness.

SITE 1: POWYS BORDER CAR PARK	25/07	01/08	28/08
1	21.52	21.52	21.3
2	21.57	21.58	21.35
3	21.51	21.55	21.4
4	21.49	21.43	21.39
5	21.46	21.56	21.36
MPSAS Average	21.51	21.52	21.36
NELM conversion	6.39	6.39	6.31
Average total MPSAS: 21.46	NELM Conversion: 6.36	+/- 2016: -0.27 NELM	

SITE 2: BRIDGE CROSSING BY ABERGWNGU	01/08	28/08	15/09
1	21.69	21.3	21.27
2	21.41	21.36	21.18
3	21.47	21.36	21.23
4	21.43	21.35	21.21
5	21.47	21.26	21.23
MPSAS Average	21.49	21.32	21.22
NELM conversion	6.38	6.29	6.23
Average total MPSAS: 21.34	NELM Conversion: 6.30	+/- 2016: -0.29 NELM	

SITE 3: PENRHIW WEN	*25/05	25/07	01/08
1	21.67	21.5	21.59
2	21.64	21.54	21.63
3	21.65	21.5	21.58
4	21.62	21.43	21.6
5	21.62	21.46	21.61
MPSAS Average	21.64	21.49	21.60
NELM conversion	6.45	6.38	6.43
Average total MPSAS: 21.57	NELM Conversion: 6.41	+/-2016: -0.22 NELM	

SITE 4: VISITORS CENTRE	*25/05	28/08	15/09
1	21.59	21.36	21.37
2	21.57	21.34	21.43
3	21.56	21.29	21.3
4	21.54	21.3	21.37
5	21.55	21.31	21.37
MPSAS Average	21.56	21.32	21.36
NELM conversion	6.41	6.29	6.31
Average total MPSAS: 21.41 NELM Conversion: 6.33 +/- 2016: -0.15 NELM			

SITE 5: CABAN VIEW LAY-BY	*25/05	28/08	15/09
1	21.64	21.39	21.42
2	21.74	21.32	21.32
3	21.63	21.32	21.2
4	21.63	21.32	21.41
5	21.56	21.32	21.31
MPSAS Average	21.64	21.33	21.33
NELM conversion	6.45	6.30	6.29
Average total MPSAS: 21.43 NELM Conversion: 6.34 +/- 2016: -0.22 NELM			

SITE 6: PANTYGWARTHEG	*25/05	28/08	15/09
1	21.54	21.46	21.29
2	21.47	21.34	21.43
3	21.49	21.35	21.34
4	21.48	21.39	21.46
5	21.49	21.34	21.37
MPSAS Average	21.49	21.37	21.37
NELM conversion	6.38	6.32	6.32
Average total MPSAS: 21.41 NELM Conversion: 6.33 +/- 2016: -0.17 NELM			

SITE 7: CLAERWEN BOTTOM CAR PARK	*25/05	28/08	15/09
1	21.4	21.39	21.38
2	21.28	21.29	21.42
3	21.26	21.34	21.3
4	21.28	21.39	21.45
5	21.28	21.29	21.32
MPSAS Average	21.30	21.34	21.37
NELM conversion	6.28	6.30	6.31
Average total MPSAS: 21.33 NELM Conversion: 6.29 +/- 2016: -0.17 NELM			

**SITE 8: CLAERWEN ROAD, 28/08
SECOND INLET**

1	21.46
2	21.49
3	21.53
4	21.46
5	21.40

MPSAS Average 21.46

NELM conversion 6.37

Average total MPSAS: 21.46 NELM Conversion: 6.37 +/- 2016: -0.22 NELM

SITE 9: CYCLE TRACK 28/08 15/09

1	21.30	21.43
2	21.31	21.47
3	21.29	21.43
4	21.30	21.4
5	21.30	21.49

MPSAS Average 21.30 21.44

NELM conversion 6.28 6.35

Average total MPSAS: 21.37 NELM Conversion: 6.31 +/- 2016: -0.25 NELM

**SITE 10: GRAIG GOCH *25/05 25/07 28/08
CAR PARK**

1	21.62	21.38	21.35
2	21.61	21.46	21.34
3	21.54	21.46	21.32
4	21.58	21.44	21.34
5	21.57	21.42	21.32

MPSAS Average 21.58 21.43 21.33

NELM conversion 6.42 6.35 6.3

Average total MPSAS: 21.44 NELM Conversion: 6.35 +/- 2016: -0.09 NELM

SITE 11: HIRNANT BENDS *25/05 28/08 15/09

1	21.66	21.38	21.4
2	21.66	21.34	21.22
3	21.63	21.44	21.21
4	21.64	21.34	21.27
5	21.61	21.35	21.21

MPSAS Average 21.64 21.37 21.26

NELM conversion 6.45 6.31 6.26

Average total MPSAS: 21.42 NELM Conversion: 6.34 +/- 2016: -0.23 NELM

SITE 12: PONT AR ELAN CAR PARK	*25/05	25/07	15/09
1	21.86	21.63	21.42
2	21.69	21.64	21.4
3	21.67	21.66	21.38
4	21.65	21.71	21.47
5	21.64	21.64	21.33
MPSAS Average	21.70	21.66	21.4
NELM conversion	6.48	6.46	6.33
Average total MPSAS: 21.58 NELM Conversion: 6.42 +/- 2016: -0.04 NELM			

SITE 13: TEIFI POOLS	25/07		
1	21.53		
2	21.82		
3	21.6		
4	21.62		
5	21.75		
MPSAS Average	21.66		
NELM conversion	6.46		
Average total MPSAS: 21.66 NELM Conversion: 6.46 +/- 2016: -0.02 NELM			

2017 Sites average range: 21.33 - 21.66 MPSAS
2017 Sites average range: 6.29 - 6.46 NELM
2016 Sites average range: 21.43 - 22.48 MPSAS
2016 Sites average range: 6.37 - 6.81 NELM

The SQM results for 2017 have revealed that there has been a declining range of **0.02 to 0.29 NELM**, compared to 2016 figures. There has not been the benefit of multiple readings taken over the winter period, where in the UK, the skies tend to be darker due to the absence of the Milky Way. As quoted on the Unihedron website, the presence of the Milky Way can reduce readings by 0.10 MPSAS: <http://unihedron.com/projects/darksky/faqsqml.php>

On some site visits, there was the presence of mist and moisture in the atmosphere, which can amplify local light pollution in neighbouring communities. In addition, there have been different individuals recording SQM data in 2017. There are no additional artificial light pollution sources within the Elan Estate boundary. It is believed that after midnight, higher SQM readings can be obtained. However, some of the SQM readings were obtained an hour or so before midnight but conducted during Astronomy Dark times.

With regard to installing permanently sited SQMs on various sites on the Elan Estate, ongoing investigations and research continues.

4 Conservation and Research (Parks/Reserves)

The only research study currently being conducted on the Elan Valley Estate is the continuing PhD study on the upland habitats.

5 Funding

5.1 Heritage Lottery Funding

The wider Elan Links, Heritage Lottery fund has been given second phase approval, subject to written confirmation. Alongside this development, the Access and Recreation Plan has been produced, including star gazing, astronomy and astrophotography. This plan identifies actions such as signage, information and a 'hub', which is now directing our actions, inside and away from the HLF. Under this grant, funding is limited to signage at present.

5.2 Tourism Amenity Investment Support (TAIS)

The Elan Valley Trust is currently waiting upon second phase approval for a TAIS Grant from the Welsh Government. Within this application there are funds set aside for a basic 'hub', or observing area within the Elan Estate, signage and interpretation materials at the main observing areas promoted, such as the Claerwen and Graig Goch car parks.

5.3 Future Funding

The Elan Valley Trust is currently looking to update the Estate Tearoom and Bed and Breakfast facilities. These plans are currently progressing through the Powys Planning Department. With these improvements the Elan Valley Trust are looking to apply for a Welsh Government Micro-Business Fund. This will incorporate aspects of 'Dark Skies' with seating in a spacious conservatory, working to introducing people to star gazing, appreciating the IDA and the Elan Estate's status with permanent display materials.

6 Arts and Culture

On 6th September, the Elan Valley Visitor Centre hosted a book launch to promote Martin Griffiths' *Dark Land, Dark Skies: The Mabinogion in the Night Sky*. The book links Welsh and Celtic mythologies with astronomy. Martin Griffiths is an astronomer, author and science presenter with Dark Sky Wales. The IDA and the Elan Valley Dark Sky Park are mentioned on page 9 and again on pages 13 and 14.

<https://www.serenbooks.com/author/martin-griffiths>

'Project Dark Skies' will appear as a feature/topic of the events programme ran by CARAD (Community Arts Rhayader and District) within the HLF project. An account of this will be available in the 2018 Elan Valley Annual Dark Sky Report.

7 Outreach

Below are Astronomy-related events held on the Elan Valley Estate over 2017:

Date	Event	Leader	Attendees
23 rd April	Meteorite Talk	Usk Astronomical Society	34
23 rd April	Pop-Up Planetarium	Usk Astronomical Society	105
18 th June	Pop-Up Planetarium	University of Aberystwyth	81
15 th July	All is Aflutter and Aglow!	Sorcha Lewis	11
23 rd Aug.	Blast Off! Bottle Rockets	EV Rangers	25
26 th Aug.	Exploring Night Time Nature	Sorcha Lewis	20
17 th Sept.	Pop-Up Planetarium	University of Aberystwyth	47

8 Community and Media Relations

The Elan Valley Trust and Dŵr Cymru Welsh Water are still promoting Dark Skies through online social media platforms such as Twitter, Facebook and Flickr.

The Elan Valley Trust has recommenced engaging their audience with monthly astronomy reports.

The Elan Valley Trust has increased and created more content on Dark Skies on their website: <http://www.elanvalley.org.uk/explore/dark-skies>

Charlotte Harley and Jenny Phillips were invited as keynote speakers to the European Dark Sky Conference in Galloway.



Figure 3: European Dark Skies Conference Attendees

The IDA 'Stop Light Pollution' campaign postcard has been distributed to key areas of the Estate, such as the Elan Valley Trust reception, Elan Valley Visitor Centre and the holiday cottages that are owned by the Elan Estate.



In February 2017, letters were sent to the farming tenants on the Elan Valley Estate, asking them to review their lighting compliance.

charlotte

Subject: FW: Re - Elan Estate : Miscellaneous

From: alec@elanvalleytrust.org [mailto:alec@elanvalleytrust.org]

Sent: 02 February 2017 14:05

To: [REDACTED]

Cc: 'Charlotte'

Subject: Re - Elan Estate : Miscellaneous

To : ALL AGRICULTURAL TENANTS

I am writing to all agricultural tenants to draw your attention to a number of matters :-

- 1) [REDACTED]
- 2) [REDACTED]
- 3) [REDACTED]
- 4) **Dark Skies** : as you are probably aware the Estate has been awarded "Dark Sky" status. There are a number of improvements we need to do to existing lighting on various buildings around the Estate to reduce light pollution. However if you intend installing any additional outside lighting I would be grateful if you could use a design of light that minimises any light pollution e.g. a light that is hooded and angled downwards.

Best wishes

Alec Baker
Elan Estate Manager
Elan Valley Trust
01597 810449

