



Brecon Beacons
DARK SKY RESERVE
GWARCHODFA AWYR DYWYLL
Bannau Brycheiniog

Brecon Beacons National Park International Dark Sky Reserve

Update Report 2020



The Brecon Beacons National Park International Dark Sky Reserve

Update Report 2020

We are proud to present this update to the Brecon Beacons International Dark Sky Reserve following six years of enjoying the prestigious International Dark Sky Reserve status.

We hope this update will show our continued efforts to develop the Dark Sky Reserve and raise awareness of the critical importance of dark skies and its role in nature conservation.

The past year has built on the wonders of the dark sky and natural beauty of the Park to increase the level of sustainable tourism, particularly for those staying overnight. Although encouraging progress was made in 2019, 2020 has been hampered by the requirements to contain the Covid 19 pandemic. However the restrictions have provided the impetus to develop virtual technologies in order to maintain engagement of hospitality businesses within the region and the interest of the general public.

Collaboration with partners, including Northern and Southern Ireland, Scotland, England as well as Wales and adjacent National Parks has continued. This has led to benefits from sharing best practices, for example in marketing and campaigning, and has created a unified voice for dark sky conservation. This will provide valuable input to national initiatives such as the new UK Government's Dark Skies All Party Parliamentary Group.

This report contains updates on the following areas:

- Overview and Governance
- Public Engagement
- Marketing of our IDSR status
- Collaboration
- Lighting Improvements

We are, as always, grateful for the IDA's support and would be happy to answer any additional questions that you have. Contact details may be found at the end of this report.

All best wishes,



CLlr. Gareth Ratcliffe
Chairman Brecon Beacons
National Park Authority



CLlr. William Powell
Chairman Brecon Beacons International
Dark Sky Reserve Board

The Brecon Beacons IDSR status was awarded to the Brecon Beacons National Park (BBNP) in 2013 at which time it was only the fifth IDSR in the world.

Map of the IDSR showing the core zone and key buffer zones

BBNP Visitor Centre
Libanus

#15

#14

#16

#1

#2

#3

#4

#5

#12

#11

#10

#9

#8

#6/7

BBNP Visitor Centre
Craig y nos

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The Brecon Beacons National Park Authority (NPA) is the governing body of the National Park as a whole, and are a member of the partnership, the Brecon Beacons IDSR Board which, has the following objectives -

- To manage the IDSR to protect and improve the quality of the night sky of the Brecon Beacons National Park for the benefit of residents, visitors and wildlife.
- Ensure the commitments made to the International Dark-Sky Association (IDA) as part of the IDSR Application are met.
- Continue to spread the anti light pollution message in the Brecon Beacons area in particular, and in Wales in general.
- Retain the IDSR status through on going re-evaluations by the IDA.

- The Brecon Beacons NPA
- The Brecon Beacons Park Society (Friends of the BBNP)
- Local Universities/Schools
- Abergavenny Astronomical Society
- Usk Astronomical Society
- Local Government

There are 33,000 residents within the Park/IDSR boundaries and in 2019, 5.67 million visitors days were spent in the park, an increase of 0.7% over 2018.

In the 2019 reporting period over 6235 were directly involved in stargazing events. These numbers have been drastically impacted by the Covid-19 pandemic in 2020 with only approximately 1920 participants this year (1180 in the observatory plus a further 18 public events with around 740 participants in total, in addition there were around 60 participants in virtual events, see the Public Engagement and Collaboration sections below for details).

There has been a focus on increasing the number of visitors staying overnight in the park and of course dark skies is a major asset helping to achieving that objective. In 2019 there were 4.31 million visitors, a slight decrease on the previous year but 0.44 million visitors chose to stay overnight, an increase of 6.2% on the previous year and an increase of 9.4% on total staying visitor days *i.e.* more visitors are staying over and staying for longer. This is directly supporting 4,273 full time jobs in the tourist industry – an increase of 3.7% on 2018. The financial impact for the local economy is very substantial at £326 million, this is an increase of 4.7% on the previous period. This good progress will have been severely impacted in the peak summer season of 2020 by the global pandemic.

Public engagement

We have been very active in Public Engagement both prior to and during the arrival of the Covid-19 pandemic in Wales and the rest of the UK.

Early in the reporting period public engagement and outreach activities continued as normal. There was a star party in collaboration with CADW (the Welsh Government's historic environment service) at Tretower Court with 19 attendees in September and a Moon-gazing event at Llangorse Lake in October with 21 attendees.



First Image from the Brecon Beacons IDSR Observatory: The Andromeda Galaxy and Satellites

In the period up to March there were the 1180 participants at dark sky events at the Brecon Beacons Observatory. This is typical of numbers at this time of year, but unfortunately due to the necessary government Covid 19 prohibitions on gatherings of people and restrictions on access to the Park/IDSR, it has not been possible to hold any further stargazing events at the observatory. This required cancellation of most of the programme of events planned for the year including a two day stargazing session at a large music festival (25,000 visitors), a themed weekend at a CADW site, two large annual star parties at Cwmdru and a further 25 public events. In total only 17 events with (around 720 attendees in total) could take place.

It is hoped that following potential easing of restrictions that some limited events can restart in the late Autumn. Risk assessments have been prepared to ensure the safety of attendees and two events are being planned at the time of the writing of this report.

Although direct engagement activities have not been possible for 6 months of the spring and summer, normally the busiest months for tourism, work has continued apace preparing businesses in the park with training programmes and also support materials.

A bi-lingual podcast-style do-it-yourself stargazing session was developed for a group of young people that would normally have had a live session with an astronomer. This appears to work quite well and has potential for use in more normal times to allow visitors to have a commentary of the night sky on-demand. A series of podcasts for use through the whole year is now in preparation.

In order to increase public engagements a number of promotional / marketing activities have been completed -

The Brecon Beacons National Park website area that deals with the dark sky has been extensively revised and updated. It gives information on the best sites for visitors to go to for star gazing and some basic tips on observing, this is receiving around 13,000 hits per annum.

<https://www.breconbeacons.org/things-to-do/activities/stargazing>

The 10 best observing sites have also now been added to the tourist map, along with the best places to observe sunsets.

<https://www.visitwales.com/destinations/mid-wales/powys/5-top-spots-stargazing-around-brecon>

Parc Cenedlaethol Bannau Brycheiniog Brecon Beacons National Park



★ Lleoliadau Awyr Dywyll

1. Cronfa Ddwr Wryg
SN 835285 NS1 56.58 W03.41.55
2. Cronfa Ddwr Crai
SN 886210 NS1 54.52 W03.35.12
3. Cronfa Ddwr Crai
SN 886210 NS1 54.52 W03.35.12
4. Hay Bluff
SO 288278 NS1 56.41 W03.02.11
5. Hay Bluff
SO 239373 N 52.01.43 W03.06.34
6. Canolfan Ymwelywyr y Parc Cenedlaethol (Canolfan Ffynyd)
SN 978264 NS1 56.02 W 03.28.40
7. Pen Rhw Ddu
SN 730192 NS1 51.13 W03.50.31
8. Carreg Cennen
SN 668193 NS1 51.12 W03.56.02
9. Parc Gwledig Craig y Nos a Chastell Craig y Nos
SN 840161 NS1 50.16 W03.40.29
10. Mynydd Pen y Ffâ
SO 268167 NS1 50.30 W03.03.34
11. Llyn Llano
SO 122720 NS1 56.07 W03.16.13

★ Dark Skies Locations

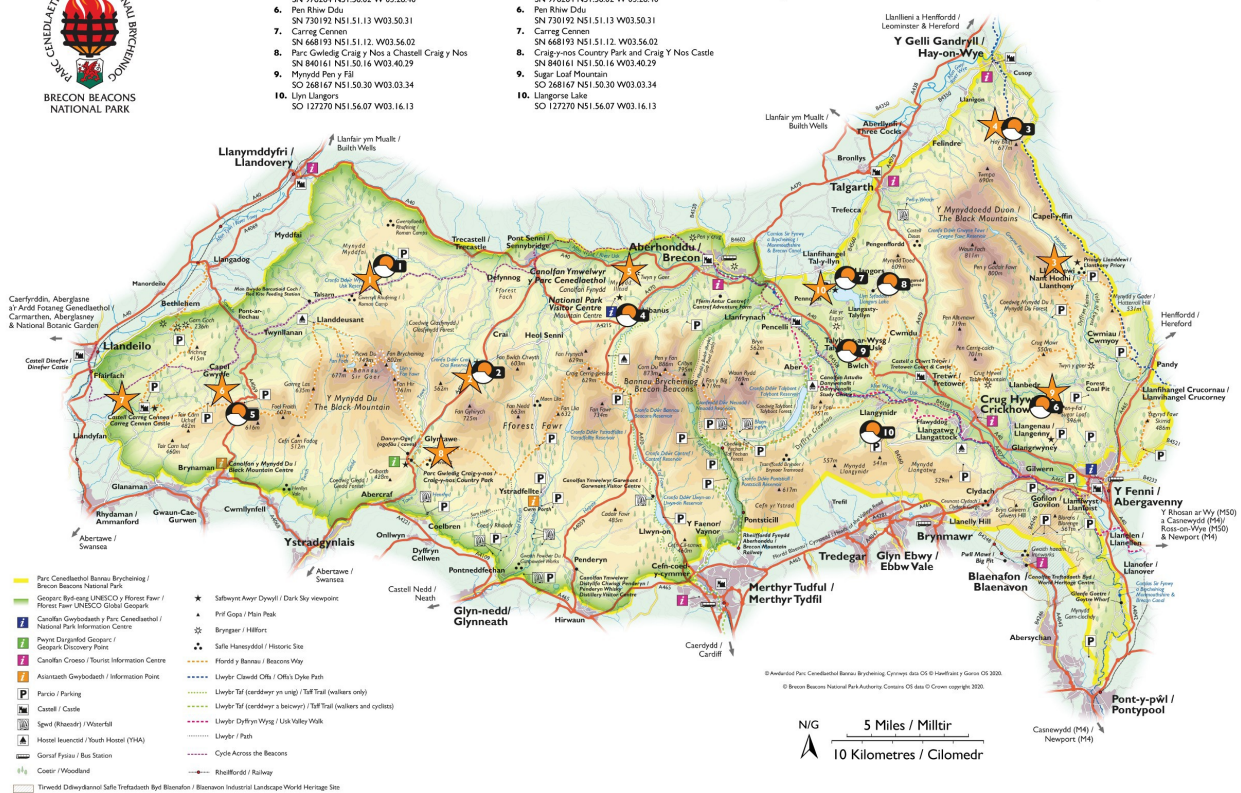
1. Uak Reservoir
SN 835285 NS1 56.58 W03.41.55
2. Crai Reservoir
SN 886210 NS1 54.52 W03.35.12
3. Llanthony Priory
SO 288278 NS1 56.41 W03.02.11
4. Hay Bluff
SO 239373 N 52.01.43 W03.06.34
5. National Park Visitor Centre (Mountain Centre)
SN 978264 NS1 56.02 W 03.28.40
6. Pen Rhw Ddu
SN 730192 NS1 51.13 W03.50.31
7. Carreg Cennen
SN 668193 NS1 51.12 W03.56.02
8. Craig-y-nos Country Park and Craig Y Nos Castle
SN 840161 NS1 50.16 W03.40.29
9. Sugar Loaf Mountain
SO 268167 NS1 50.30 W03.03.34
10. Llangorse Lake
SO 122720 NS1 56.07 W03.16.13

☉ Lleoliadau Machlud Haul

1. Cronfa Ddwr Wryg SN 835285
2. Cronfa Ddwr Crai SN 886210
3. Hay Bluff SO 239373 Maes Parcio Stone Castle
4. Canolfan Ymwelywyr y Parc Cenedlaethol SN 978264
5. Pen Rhw Ddu SN 730 190 Maes Parcio'r dyffryn
6. Mynydd Pen y Ffâ SO 268167
7. Llyn Llano SO 122720
8. Cocker Hill SO 160283 Cilan ger golygfan Mynydd Llano
9. Cilan Blwch SO 132224
10. Golygfan Blaen Onneu SO 156170

☉ Sunset Locations

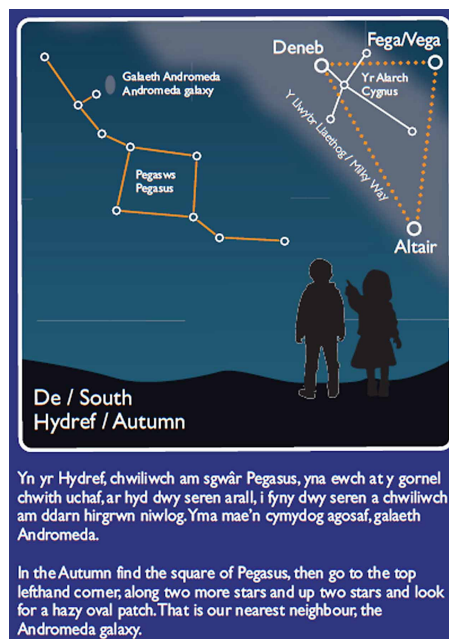
1. Uak Reservoir SN 835285
2. Crai Reservoir SN 886210
3. Hay Bluff SO 239373 Stone Castle Car Park
4. National Park Visitor Centre SN 978264
5. Pen Rhw Ddu SN 730192 Look out Car Park
6. Sugar Loaf Mountain SO 268167
7. Llangorse Lake SO 122720
8. Cocker Hill SO 160283 Lay by Mynydd Llano viewpoint
9. Blwch llyby SO 132224
10. Blaen Onneu Viewpoint SO 156170



The new bi-lingual revised tourist map with the best stargazing and sunset sites marked

Stargazing introductory leaflets have also been revised by including new star charts and updating the text. These will be distributed to tourist venues in the park to help visitors familiarise themselves with the night sky. The Elan Valley Dark Sky Park and Cambrian Mountains are to use the same format for their areas.

An example of simple star chart from the stargazing tourist guide





Cover of the new fully revised stargazing guide

A bilingual (Welsh and English) sign has been erected at the dark sky site of Llangorse Lake explaining some of the nocturnal attractions and extending the “Cambrian Way” theme (as described in the Collaboration section of this report). If successful, this may be a prototype for further similar signs.

Finally on Public Engagement - we are very pleased to be able to inform you that Martin Griffiths, a current and founder member of the IDSR Board, former University lecturer in Astronomy, public speaker, author, and “astronomy youth champion” has been awarded the Dark Sky Advocate Award by the Astronomical League. The award is given for raising awareness of the problems of light pollution and working positively to confront and prevent further spread. It particularly recognises Martin's work with various non-governmental organisations, local government councils and other administrative bodies across Wales over the last decade.

Llyn Syfaddan – nos a dydd

Dewch i'r llyn yn ystod y dydd a chewch wledd o olygfeydd rhyfeddol o fydd natur. Dewch ar ôl iddi dywyllu i brofi agwedd arall ar Llyn Syfaddan gyda'r awyr yn gyfuriog o sêr a lluo o wyfynod ac ystlumod ar yr adain.

Beth sy'n digwydd yn y nos?

Y gwyllt ac ar ôl iddi nosi yw'r adeg orau i weld un o greaduriaid hwyrol prinnaf y DU: yr ystlum pedol lleiaf. Ar nosweithiau o haf, efallai y gwelwch nhw'n hedfan o gwmpas y llyn yn hela prifetach. Wrth chwilio am fwyd, maen nhw'n cael hof fach mewn mannau chwydo yn y fan hon. Fel pob ystlum yn y DU maen nhw'n cael eu gwarchod dan y gyfraith.

Llyn Syfaddan yw'r lle i weld pob math o wyfynod hefyd! Mae hyn am fod y lartiau'n bwydo ar blanhigion y dŵr a glân y llyn. Wrth iddi nosi gallwch fod yn ddigon ffodus i weld gwrywod gwyn y chweirwyrn rhithiol (Ghost moth) yn hofio'n ym aros am gymar. Mae'r cleawfyn hardd (beautiful china-mark) yn hedfan o gwmpas y llyn am fod ei lartia'n bwydo ar ddrynllys a bydd lartia'r gwellowfyn sidan (Silky wainscot) yn bwyta trychfilod eraill yn yr heog.



Y pedol pedol hafi! Lesser horseshoe bats



Y cleawfyn hardd! China-mark moth

Nocturnal happenings

Dusk and after dark is the time to see one of the UK's rarest nocturnal creatures here: Lesser horseshoe bats. On warm summer evenings you may see them flitting around the lake hunting for small insects. Whilst they forage they also take short breaks by hanging in night roosts here. Like all UK bats they are legally protected.

Llangorse Lake is also the place to come to see a variety of moths! This is because the larvae feed on water and lakeside plants. At dusk you might be lucky enough to see white ghost moth moths hovering waiting for a female. The beautiful china-mark flutters around the lake because its larvae feed on pondweed and silky wainscot larvae eat other insects in the reedbeds.

Gwerfodolwyr sy'n gollu am y tolliau hyn bydd eidd rhoddi, swath yu mor fad, yn helpu i gadw tolliau hyn ar agor. RHF Etkens: 1178226

These toilets are run by volunteers. Your donation, however small will help to keep this facility open. Charity No: 1178226



Llangorse Lake – night and day

Visit the lake during the day and you will be rewarded with some remarkable wildlife sights. Come here after dark and you'll experience the other side of Llangorse Lake: a star bedecked sky and plentiful moths and bats flitting around.



Sêr y nos yn gwenu!

Rydych chi'n sefyll yn un o'r mannau gorau yn y Parc Cenedlaethol ar gyfer yllu ar awyr ryfeddol y nos.

Heb ddim ond binocsylars, gallwch weld dros 3000 o sêr, y Lwybr Llaethog, cysserau pwsig, cawodydd o sêr gwib a nifytau (nebulae) llachar ar noson glir.

A ninnau'n Warchodfa Awyr Dywyll Ryngwladol, rydym ni'n lleihau llygredd golau er mwyn gwarchod creaduriaid y nos sydd angen nosweithiau tywyll i hela a mudo.

Starry, starry night!

You are standing in one of the best places in the National Park for gazing at our amazing night sky.

Armed only with binoculars, you can see over 3000 stars, the Milky Way, major constellations, meteor showers and bright nebulae on a clear night.

As an International Dark Sky Reserve, we are reducing light pollution in order to protect nocturnal creatures that need dark nights to hunt and migrate.

Additional Public Engagement activities are described in the Collaboration section of this Report.

Marketing

As well as the marketing elements of the activities reported in the Collaboration and Public Engagement sections of this report the Brecon Beacons Dark Sky Reserve has been promoted to and mentioned favourably in a number of journals, magazine and websites through the year.

As examples these include:

BBC's "Sky at Night"

<https://www.skyatnightmagazine.com/advice/stargazing-brecon-beacons/>

Wales online

<https://www.walesonline.co.uk/news/wales-news/snowdon-brecon-beacons-dark-sky-17510072>

Country life magazine

<https://www.countrylife.co.uk/news/britains-starry-skies-153478>

Facebook

<https://www.facebook.com/pages/category/Sports---Recreation/Brecon-Beacons-Observatory-1633513230212627/>

The observatory that has been established at the Visitor Centre has a Facebook presence to attract tourists:

<https://www.facebook.com/Brecon-Beacons-Observatory-1633513230212627>

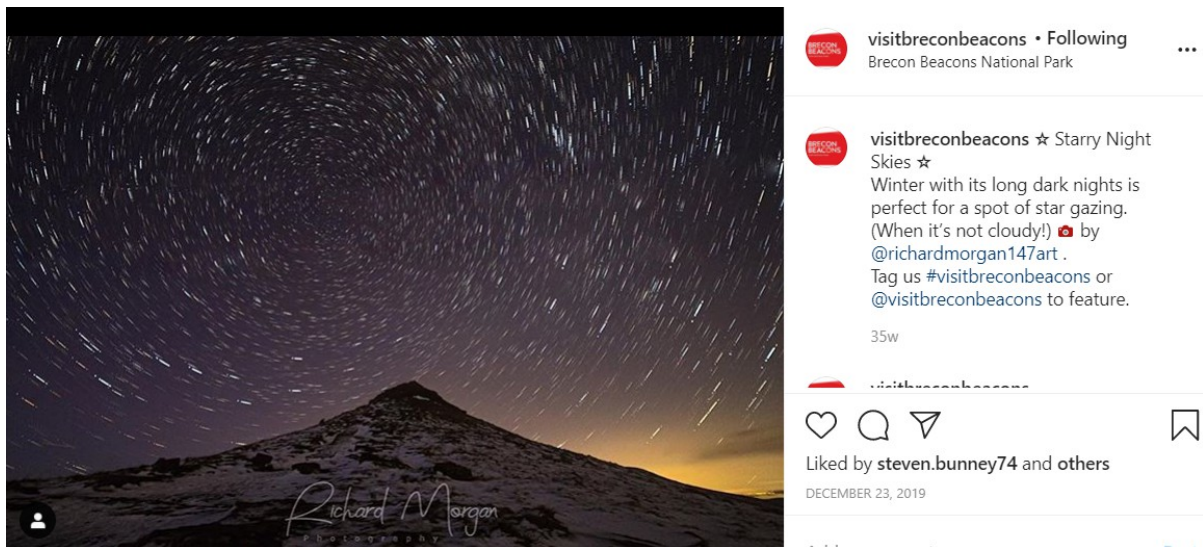
Extensive use is made of social media to publicise the dark sky attractions:

@visitbreconbeacons – Instagram – followers 13k
Sept 19-Aug 2020 – no of Dark Skies related posts: 5
Reach: 26,029

@visitbreconbeacons – Facebook – followers 13k
Sept 19-Aug 2020 – no of Dark Skies related posts: 14
Reach: 38,869

@fforestfawrgeopark – Instagram – followers 1900
Sept 19-Aug 2020 – no of Dark Skies related posts: 7
Reach: 8,742

@fforestfawrgeopark – Facebook – followers 700+
Sept 19-Aug 2020 – no of Dark Skies related posts: 25
Reach: 10,564



Typical example of a social media post

Collaboration

The award of the IDSR status to the Brecon Beacons National Park was the catalyst for the growth of the Dark Sky movement in Wales and we have been extremely active in improving the protection of our Dark Skies since (and indeed prior) to gaining the status.

An important new collaboration has been started between the Brecon Beacons National Park and a number of neighbouring parks, areas and organisations including the Cambrian Mountains (a wilderness area in mid Wales), the Elan Valley Trust (an International Dark Sky Park), Welsh Water (national water supplier and owner of a large area of the BBNP/IDSR), Brecon Beacons Tourism (local tourism business association) and Powys County Council (Local Government body with extensive overlap of the Park/IDSR).

It has been identified that many visitors to these areas only stay for the day and the dark skies,

nocturnal wildlife and scenic sunsets are important local assets to encourage overnight stays.

A promotional programme is being developed for the areas which includes for example three promotional videos for the Brecon Beacons National park and three for the Cambrian Mountains, plus an additional general video.

The objective is to enable more people to experience and learn to enjoy dark skies, the mysteries of the wider universe, the constellations and their heritage and the Milky Way in all its splendour.

The project is funded by Welsh Government Rural Communities – Rural Development Programme 2014-2020, which is funded by the European Agricultural Fund for Rural Development and Welsh Government. Powys County Council are also contributing funding towards this project. The Park/IDSR's allocation of the funding is £57,000. This is the first time the Brecon Beacons and Cambrian mountains have collaborated in this way.

The Cambrian Way, a tourist route running coast to coast and the length of Wales, passes through the heart of the Brecon Beacons National Park/ IDSR and alongside the Elan Valley International Dark Sky Park and Cambrian Mountains, so the destinations are linked both physically and culturally. The route passes through some of the darkest designated skies in the United Kingdom. Visitors following the route will have exceptional opportunities to experience the nocturnal beauty of the region and be encouraged to stay that bit longer.

Two target audiences have been identified:

- **Pre-family Explorers.**

Looking for adventure, escapism and authenticity this market will be offered unique experiences timed for sunset and beyond. Promotional materials will reflect sunsets in spectacular locations, wildlife watching as the nocturnal world wakes up, star gazing under very dark skies - opportunities to see a meteor shower, the Milky Way, constellations and planets and learning how to take dark sky photographs. In essence they will be presented with an authentic experience of discovery.

- **Active Family Explorers.**

Discovering and exploring, experiences to build memories as a family are important for this market. Our wildlife at night can offer precious experiences such as bat detection walks, otter watch and the sounds of owls who all become active at night. Families would enjoy becoming wildlife detectives for a night and all of this would be conveyed in video and filmed from a ground level.

A key part of developing the area is played by the hospitality businesses. Another Dark Sky Ambassador training course was delivered in February 2020 and was attended by 20 businesses from the Brecon Beacons National Park. This brings the total number of Dark Sky Ambassador business to 65

Normally part of the course is an evening stargazing with an astronomer. Unfortunately that was not possible this year owing to restrictions imposed by Covid 19 pandemic so a series of virtual sky tours was developed using planetarium software. These were run in June, July, and August.

The concept was found to work well and it was also used with a group of 18 businesses from the South Wales Outdoor Activity Providers Group (SWOAP) in June 2020 as well as various other

societies and organisations.

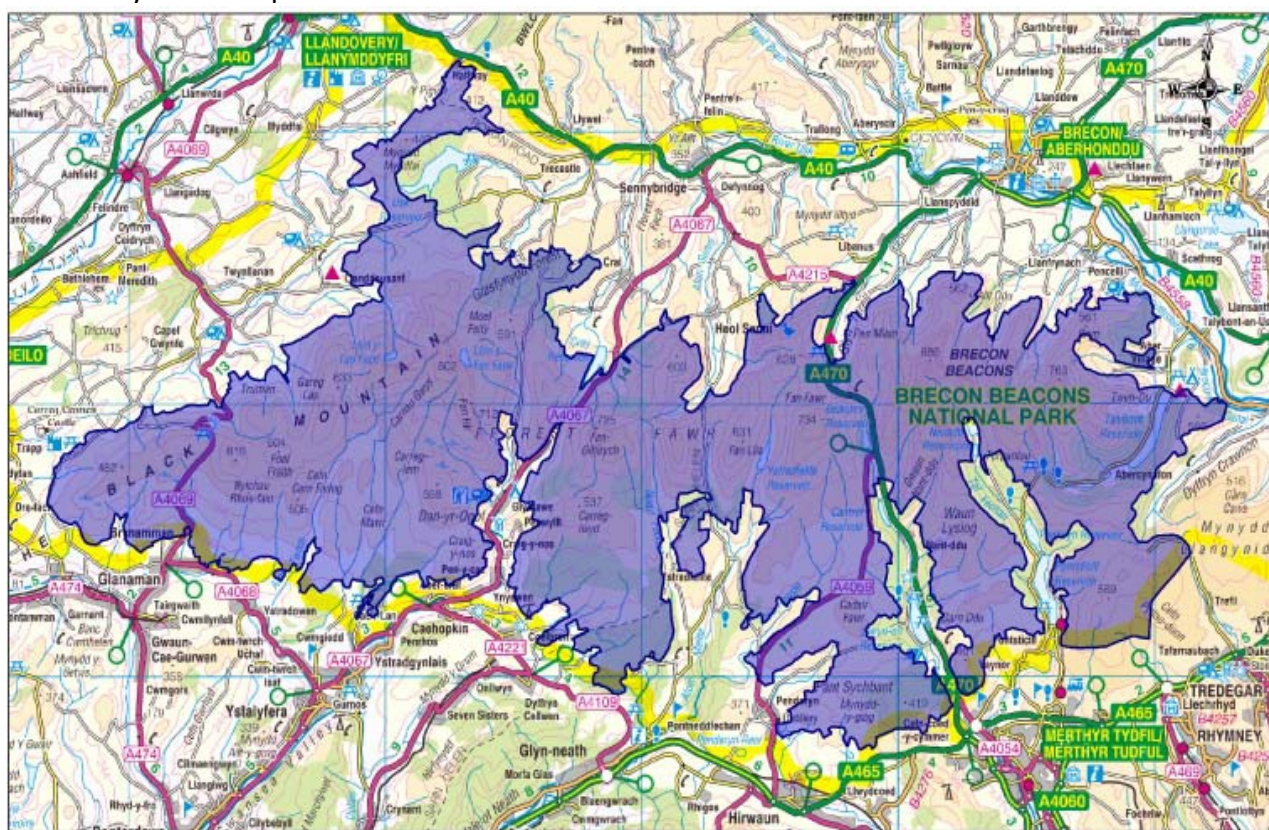
The UK Government in Westminster has recently formed an All Party Parliamentary Group for Dark Skies and the IDSR Board are in contact and subscribe to its work.

<https://appgdarks skies.co.uk/>

Lighting Improvements

The governing body of the National Park (the NPA) is also the Planning Authority for all developments within the National Park/IDSR boundaries. An ordinance, *The Local Planning Guide on Lighting*, has been in place for several years to provide guidance to the Authority's professional planners in their assessment of development proposals in terms of external lighting. All potential building developments and many building modifications must satisfy these rules in order to gain permission to proceed within the National Park/IDSR. The Authority determined 270 planning applications during this reporting period. All applications were determined in accordance with policy 12 *Light Pollution* and utilising the above mentioned local planning guide on lighting, considered compliant. We are therefore confident that no new developments within the IDSR boundaries have detracted from the quality of the night sky of the Reserve.

However individual households or businesses do not necessarily need re-apply for planning permission to simply change an external lighting unit (or for that matter to adjust an existing one). Although education on the advantages of appropriate lighting has been carried out we feel that some refreshment may be needed as an informal assessment of the lighting units in the Core Zone found only 86% compliance.



Brecon Beacons IDSR Core Zone

We had planned to carry out a full survey early in 2020 to assess this shortfall in compliance, and to formulate an action plan to address this issue. However, it has not been possible to execute our plan so far due to the restriction imposed by the Welsh and UK governments in their efforts to control the Covid-19 pandemic. We will implement our plan as soon as it is allowable to do so.

During the current period of restrictions on access and on personal interaction we are working on updating our guidance on external lighting to householders and businesses (taking on board the IDA's "Dark Skies Start at Home" initiative). As soon as is allowed this will be distributed as widely as possible to the public and businesses through media channels and physical delivery of hardcopy (including through our 65 Dark Sky Ambassador businesses).

In last year's report we noted a rise in adverse lighting on the edge of the IDSR. The External Buffer Zone to our IDSR is outside of, and surrounds, the BBNP/IDSR itself and is typically 5 miles in width. It provides protection from light pollution from areas where development is controlled by adjacent Local Government Planning Authorities. The exact width of the zone is dependant on the degree of threat to the Reserve's dark skies. It will vary according to the nature and intensity of lighting external to the Park and indeed will change over time to reflect circumstances.

Neither the National Park Authority nor the IDSR has direct control over lighting decisions in these areas so it is important that good working relationships are maintained with local government Councillors and their lighting managers. This is being done through person to person meetings with Lighting Managers and Councillors.

The composition of the National Park Authority is such that 12 of its 18 members are also local government Councillors for the counties that overlap with, or are adjacent to, the BBNP/IDSR. Every effort is made to keep these Councillors informed of the problem of light pollution so that they can act as advocates within their own local councils.

The current Chair of the IDSR Board is also a Councillor for Powys County Council (Powys is the county with the largest boundary with the IDSR and a former Member of the National Park Authority.

The Night Sky Quality Survey (NSQS) ideally would have taken place in the early Spring to allow direct year on year comparison. Unfortunately this has not been possible this year due to Covid 19 restrictions. As an impact mitigation action we intend to carry out the NSQS as soon as is allowable in the autumn, which although not ideal, will at least give us a point in the graph for 2020. Such measurements that have been taken in the Park earlier in the year indicate that the levels of light pollution are remaining reasonably constant.



Comet C/2020 F3 (NEOWISE) from the Brecon Beacons in late July 2020

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