

Assessing the Impacts of Human Disturbance on Gull Roost Sites: A Study in England, Scotland, and Wales with a Focus on Bewl Water and the Potential Effects of Proposed Increased Recreational Use



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1. Introduction

In early May 2023 I was contacted by local resident Nick Dent and asked to carry out a research study on behalf of Wadhurst Parish Council into the potential ecological impacts of the proposed development of tourist and recreational facilities at Bewl Water on the Kent/East Sussex border (as detailed in planning applications WD/2021/2924/F, WD/2021/0628/F and WD/2021/2925/F); specifically relating to the possibility of increased human disturbance to the winter gull roost on the reservoir.

At 323 hectares, Bewl Water is the largest inland water body in south-east England and, as well as being a highly important wildlife refuge for wildfowl and other waterbirds during the day - at all times of year - from October to March it also hosts one of the largest overnight gull roosts in the south-east of England (Bance 2003, SOS/Thomas 2014).

Surprisingly little is known about the wintering behaviour and movements of gulls, but evidence suggests that some species exhibit high winter-site fidelity (Clark 2014). Large inland water bodies are popular roost sites, which can lead to conflict issues when such sites are also used for recreation, water supply, or are situated close to airports (Clark 2014, Deacon 2019). Roost sites are evidently chosen based on their size and proximity to where the birds have spent the day (i.e., food sources – landfill sites, etc). How many years a site has been used by roosting gulls is also a determining factor in terms of the continued use of the site (Clark 2014).

Reliable food sources and roost sites during the winter months have been shown to increase the breeding success of female gulls (Ankney and MacInnes 1978 per Clark 2014). As gulls frequent the same wintering sites (for foraging and roosting) each year, any major change in the source of food or disturbance at roost sites could lead to gulls moving to other areas and, ultimately, reduced breeding success in subsequent years (Clark 2014).

Perhaps the most significant thing to note about the gull roost at Bewl Water is the numbers of Common Gull *Larus canus* which frequently surpass 20,000 individuals. While other large inland water bodies in both East and West Sussex support important roosts of Black-headed Gull *Chroicocephalus ridibundus* and large gull species such as Herring Gull *Larus argentatus* and Lesser Black-backed Gull *Larus fuscus*, nowhere else hosts numbers of Common Gull close to those seen at Bewl. In fact, it is considered to be the largest Common Gull roost in Britain, with congregations sometimes amounting to over 10% of the national wintering population – e.g., 76,020 in January 2011 (Holt *et al* 2012). For context, both Black-headed Gull and Common Gull are on the Amber list of Birds of Conservation Concern 5 (Stanbury *et al* 2021). On occasion, such as in February 2016, the total number of roosting gulls (of all species present) at Bewl Water has surpassed 100,000 individuals (Cowser & Mallalieu 2023).

To date there are no Sites of Special Scientific Interest (SSSI) designated solely on the basis of their value as a Common Gull roost (though Loch of Skene in Aberdeenshire partly received its SSSI designation for this reason). Given the large numbers regularly recorded, Bewl Water must be considered a leading candidate for such a designation. Indeed, any site regularly supporting 1% or more of the British population of any bird species – either breeding or wintering – can be selected for SSSI notification (Drewitt *et al* 2023).

For context, some maximum gull counts from recent winters at Bewl Water are as follows:

12th January 2005: 69,000 Black-headed Gull

10th February 2005: 40,200 Common Gull

15th January 2011: 76,020 Common Gull

15th February 2014: 91,350 Common Gull

31st December 2021: 52,470 Black-headed Gull, 21,500 Common Gull

2nd January 2022: 27,500 Black-headed Gull, 28,840 Common Gull.

That Bewl Water is the preferred choice of roost site for the majority of wintering gulls in the region can be evidenced by comparing recent maxima from other similar sites in East and West Sussex and Kent (see Appendix, section 8, figures 1 and 2 for maps of these sites in terms of their proximity to one another):

Ardingly Reservoir, West Sussex (51.04770, -0.10336, 74 hectares): 28th January 2022, 3,400 Black-headed Gull; 2nd January 2021, 3,131 Black-headed Gull.

Arlington Reservoir, East Sussex (50.84584, 0.17706, 49 hectares): 29th November 2015, 7,390 Common Gull; 26th November 2021, 5,000 Black-headed Gull; 12th January 2020, 5,000 Black-headed Gull.

Barcombe Reservoir, East Sussex (50.91685, 0.04802, 16 hectares): 19th February 2021, 1,500 Black-headed Gull.

Bough Beech Reservoir, Kent (51.21923, 0.14169, 42 hectares): 18th February 2023, 5,000 Black-headed Gull; 9th January 2001, 1,000 Common Gull & 1,000 Lesser Black-backed Gull.

Darwell Reservoir, East Sussex (50.96403, 0.43900, 63 hectares): 13th February 2000, 1,400 Black-headed Gull.

Weir Wood Reservoir, East Sussex (51.09507, -0.01016, 113 hectares): 14th December 2015, 4,500 Black-headed Gull; 14th December 2020, 3,930 Black-headed Gull.

Acknowledging the national and potentially international importance of Bewl Water for roosting gulls, the purpose of this report is to explore other similar large inland water bodies which also host significant gull roosts and to assess the impacts that increased recreational disturbance have had on these sites, where it is applicable. Using this information, it will then be possible to make more of an educated judgement on the potential effects of further development at Bewl Water.

Thanks must go to all the county recorders and birders who responded to correspondence about their respective local roost sites, in particular: Carl Baggott, Ian Broadbent, Steve Chastell, Mick Colquhoun, David Eberlin, Malcolm Freeman, Jon Green, Dave Harris, Mark Hawkes, Bob Hazell, Jon Heath, Rupert J Higgins, Chris Hill, Chris Hind, Tom Lowe, Robin Mace, Mark Mallalieu, John Martin, Peter Nash, John Newnham, Steve Nuttall, Malcolm Phillips, Richard Pittam, Nick Pomiankowski, Keith Rainford, Craig Reed, Simon Roddis, David Walker, Steve White and Barry Wright.

Thanks also for the cooperation of the various sailing club managers and other relevant correspondents who assisted with queries relating to specific restrictions and enforcements on respective reservoirs and other water bodies, where applicable: Dave Baldwin (Island Barn Reservoir Sailing Club), Bartley Sailing Club, Broglake Windsurf & SUP, David Eberlin (Notts County Sailing Club), Mark Hillary (Welsh Water), Sarah Peel (Carsington Sports & Leisure) and Will Ranson (Chelmarsh Sailing Club).

2. Abstract

The winter gull roost at Bewl Water frequently attracts congregations exceeding 20,000 birds and, on occasion, over 100,000 gulls may be present (Cowser & Mallalieu 2023). To some extent, the number of roosting gulls is dependent on the weather, with rough conditions at sea more likely to bring larger numbers of gulls inland to roost at Bewl (Bance 2003). Nonetheless, regular gatherings of 20,000 waterbirds puts the site in the category of other similar sites covered by Criterion 5 of the Ramsar Convention (Ramsar Convention Secretariat 2013), which designates wetland sites as being of national or international importance for their value to waterbirds and other wildlife.

In addition, the numbers in particular of Black-headed Gull and Common Gull have both been recorded exceeding 20,000 individuals in recent winters, which adds weight to the site qualifying as a Site of Special Scientific Interest (Cowser & Mallalieu 2023), given that it is regularly supporting more than 1% of the wintering population of both species.

Continuing work started by the Sussex Ornithological Society (SOS) Ecology Officer, Richard Cowser, and with advice from the SOS Scientific Committee Chairman, Mark Mallalieu, it was proposed that a desk-based review of some other major gull roost sites in the UK be undertaken – focusing in particular on large, inland water bodies, similar to Bewl Water – to build a clearer picture of the effects of human disturbance on populations of gulls and other waterbirds using the sites, where applicable.

The aim of the study is to produce a greater understanding of the importance and potential vulnerability of roost sites such as Bewl Water - especially if there are no suitable alternative sites nearby in the event of disturbance leading to temporary or permanent abandonment of the roost site – and any suitable measures that may be employed to limit any potential disturbance events.

A combination of responses from county bird recorders and British Trust for Ornithology (BTO) surveyors, correspondences with sailing club representatives and other data gleaned from eBird and Google Earth were used to establish the respective value of 25 major gull roost sites in England, Scotland and Wales, and identify the levels of disturbance at each location, and any mitigation measures in place.

With a few exceptions, the research shows that well-managed daytime recreational usage of water bodies can be successfully balanced alongside the needs of wildlife, but that unexpected crepuscular or nocturnal disturbances (though not often recorded) can indeed lead to negative impacts on gull roosts. This is particularly problematic where there are no suitable alternative roost sites available within relatively close proximity (as is the case with Bewl Water).

It is clear there is a need to minimise any proposed further levels of disturbance to birdlife at Bewl Water, particularly in light of the proposed development of the existing tourist and recreational facilities on the northern shoreline.

3. Methods

A list of notable gull roost sites was sourced from the British Trust for Ornithology report *Winter gulls in the UK: population estimates from the 2003/04-2005/06 Winter Gull Roost Survey* (Banks *et al* 2007) - along with other sites which have risen to prominence since the publication of that report - through various internet searches and correspondences with county bird recorders and BTO Wetland Bird Survey counters.

Then, a list of county bird recorders for the relevant regions was compiled (from the [BTO website](#)) and each county recorder was contacted with the same set of questions:

- Does site X still host a significant gull roost?
- If so, is there any impact from human disturbance?
- If yes, has the level of disturbance increased and does it have any impact on the gull roost or waterbird populations in general?
- Are there any restrictions in place at site X to minimise disturbance to gulls and other waterbirds?

In some instances, where county recorders felt insufficiently informed to provide accurate answers, these questions were forwarded to local birders and BTO surveyors, some of whom contributed to the 2007 winter gull report.

Further research included comparing other gull roost sites on Google Earth, specifically looking at the size of each site, relative to Bewl Water, and the proximate location of each roost site relative to its nearest alternative site. Annotated maps of some of these site comparisons can be found in the Appendix (section 8) of this report. Counts of roosting gull numbers were sourced either from the relevant county recorders or via [eBird](#).

In addition, where it was stated by correspondents that restrictions were in place on the given water body to limit watersports and other recreational activity (for example, compulsory cessation of sailing at dusk), the relevant sailing clubs or other authorities were contacted to provide confirmation and more specific details of any measures in place to enforce this. A total of 6 out of 13 such clubs and authorities responded with further information on specific restrictions.

4. Results

All but two of the original correspondents (19 out of 21) replied promptly and all provided some degree of information on the level and nature of disturbance at the relevant sites. In some cases, the original questions were forwarded to other correspondents (for example, from county recorders to WeBS counters), bringing the total up to 26 out of 28 correspondents contacted. The following summaries of 25 sites have been compiled from the answers provided by the various correspondents, as well as from other sources (as indicated by citations). Sites are listed in descending order of the size of the water body (where this is known).

4.1 Gull roost site summaries

Rutland Water, Leicestershire (52.64885, -0.67782, 1254 hectares) – This is a significant site for roosting gulls, with occasional counts of over 10,000 Common Gull and 5,000 Black-headed Gull (e.g., 7th March 2017 and 1st January 2023) and total counts sometimes numbering over 50,000 gulls (e.g., January 2022). The main roost is on the main water between the dam and the peninsula. There has been no noticeable increase in disturbance despite fishing boats sometimes being active in the area towards the end of the day as they return to Normanton Harbour. The lack of any significant impact to the roost is thought to be due to the well-established and routine nature of disturbance events, to which the birds have become accustomed (C Baggott, pers. comm. 6th June 2023).

Water sports activities stop at 3pm between December and March. A significant list of byelaws can be found on the [Anglian Water Parks website](#) detailing the various restrictions in place, including

which areas of the water are off limits. It is also clearly stated that all groups must have left the site by the advertised car park closing times.

Grafham Water, Cambridgeshire (52.29866, -0.31109, 627 hectares) – At least 50,000 gulls roost, sometimes up to 100,000 – mostly Black-headed Gull. The site is very large and the roost tends to be in the widest areas. There has been no observed disturbance from bank-side activities – fishing, walking, etc (M Hawkes pers. comm. 19th June 2023). Limited disturbance is caused from sailing activity as this only takes place during the day, with a loud klaxon alerting sailors to the impending closure of the water. In addition, sailing activity is restricted in certain areas, shown by a map on the [sailing club website](#) (see Appendix, figure 6).

A small number of fly-fishing boats return to harbour in the evenings causing some gulls to fly and relocate. Birds seem to be used to it and don't depart the reservoir entirely. Restrictions are in place (along with a line of buoys) to prevent fishing boats accessing the creeks at the western end of the reservoir, along with seasonal restrictions (<https://mntfa.co.uk/grafham-guide>). Gull numbers have generally reduced in recent years, thought to be mainly due to reduced food availability nearby, in the form of the closure and capping of landfill sites. Black-headed Gull and Common Gull numbers are thought to have declined 30-50% in recent years, larger gull species perhaps by as much as 70% (M Hawkes pers. comm 19th and 21st June 2023).

Chew Valley Lake, Avon (51.33483, -2.61828, 485 hectares) – Up to 50,000 gulls routinely roost here, mostly Black-headed Gull and Common Gull. No thorough surveys have been carried out but disturbance effects here are thought to be low due to water sports being restricted to daytime only and zoning of the lake allowing gulls and other waterbirds areas of refuge at busy times, although the gulls' preferred roost site is within the sailing area, meaning boats have on occasion been observed putting up the entire roost. Generally, the birds will settle again within a few minutes of a disturbance event (R Higgins, pers. comm. 2nd June 2023). The [Chew Valley Sailing website](#) states that sailing is only permitted on weekends until an hour before sunset (Mar-Sep) or half an hour before sunset in winter and Wednesdays from 10-4pm. Weekday evening sailing is restricted to the summer months only.

Haweswater Reservoir, Cumbria (54.51752, -2.80534, 390 hectares) – This huge water body (close to 1000 acres) has no tourist or recreational facilities at all. It is also rather inaccessible in terms of roads and distant from large towns and cities and offers very limited parking which is primarily used by hill walkers. The only public footpaths are distant from the water and not well used. (C Hind, pers. comm, 16th June 2023). In the unlikely event of human disturbance to the gull roost here, there are also other very large lakes in the vicinity, including Ullswater and Windermere (8km and 17km away).

Chasewater, Staffordshire (52.66407, -1.94168, 360 hectares) – This site has been the preferred roost site for gulls for at least 60 years, due to its proximity to nearby landfill sites in Cannock and Little Wryley, with Black-headed Gull usually the most numerous species (e.g., 15,000 on 25th November 2014). The lake is also used for powerboating, sailing and water ski-ing. For safety reasons these water sports activities are supposed to stop when light levels drop (signalled by a bright automatic floodlight switching on), but sometimes boats remain on the water past this time. Gulls have been observed actively avoiding roosting here if there is still active boat disturbance at dusk, and instead travel to Belvide or Blithfield Reservoirs (Evans 2004).

Blithfield Reservoir (52.81403, -1.91567, 320 hectares) and **Belvide Reservoir** (52.68891, -2.20334, 74 hectares), **Staffordshire** – Sailing takes place at Blithfield but only on weekends and spring and summer evenings. Both these reservoirs are used as alternative roost sites in the event of disturbance at Chasewater, which is generally the preferred roost site. There has been no observed disturbance of the gulls at Blithfield due to water sports activity (N Pomiankowski, pers. comm, 19th June 2023). Though Belvide has no water sports activity, occasional disturbance events have been observed by a passing fishing boat or from shooting on nearby fields, the latter being more significant due to its unpredictability. Gull numbers have generally been in decline here since the closure of landfill sites at Telford (S Nuttall, pers. comm. 29th June 2023).

Carsington Water, Derbyshire (53.05896, -1.63015, 300 hectares) – The roost at Carsington regularly attracts up to - and sometimes in excess of - 10,000 gulls in winter, largely Lesser Black-backed Gull. This is a popular site with walkers as well as sailing and fishing, but the peak of activity is in the summer months and is finished by late afternoon, so there is no noticeable impact on the gull roost. Additionally, the gulls tend to roost quite a distance away from the shoreline, though some will gather on the shore prior to roosting, but do so in undisturbed areas. The only noticeable factor affecting numbers of gulls is cold weather, when the size of the roost can drop dramatically (S Roddis, pers. comm. 5th June 2023).

All angling and water sports activities at Carsington are strictly controlled by zoning of the water, with the whole northern section of the reservoir off limits and protected as a nature reserve. All water sports activities are restricted to the hours between 8am and 6pm (S Peel, pers. comm. 28th June 2023). Maps of the zones for boating and angling are on the [Carsington Sports & Leisure website](#) (see Appendix, section 8, figures 7 and 8).

Queen Mary Reservoir, Surrey (51.41531, -0.45991, 283 hectares) – Sailing and daytime dredging do take place here, but these have not led to any noticeable impact on the gull roost as there is no nocturnal disturbance. A general reduction in gull numbers in recent years has been attributed to the closure of local landfill sites (S Chastell, pers. comm. 31st May 2023).

A list of byelaws and a Code of Conduct document can be found on the [Queen Mary Sailing Club website](#) detailing the various restrictions in place, including which areas of the water are off limits.

Draycote Water, Warwickshire (52.32482, -1.32531, 243 hectares) – The roost at Draycote sometimes attracts over 30,000 gulls, mostly Black-headed Gull (e.g., 32,000 on 1st February 2020). There is daytime disturbance to wildfowl and other waterbirds from fishing and watersports. Sailing and other activities are restricted to daylight hours, so all boats tend to be back in before most of the gulls have gathered for roost, though some minor disturbance sometimes occurs as the boats return if gulls are already flying in. It is generally considered that disturbance events would be more significant were it not for these restrictions (B Hazell, pers. comm. 6th June 2023).

Eyebrook Reservoir, Leicestershire (52.54978, -0.74025, 201 hectares) – This site doesn't hold as many wintering gulls as it used to, for reasons unknown. There is very little recreational disturbance except for angling but this doesn't take place in the winter months (March-November only), so has never impacted the gull roost at all (C Baggott, pers. comm. 21st June/[Fly Fish Eyebrook website](#)).

Loch of Skene, Aberdeenshire (57.15771, -2.35795, 144 hectares) – This site has been designated as a Site of Special Scientific Interest, in part due to the large numbers of roosting Common Gull in the

winter, which sometimes exceed 10,000 birds (e.g., 26th December 2013 – [SOC Online Scottish Bird Report](#)). The loch also attracts thousands of roosting Pink-footed Geese as well as significant numbers of breeding and wintering Goldeneye, and Ospreys nest at the far western end. Sailing takes place between 1st March and 30th June, and there has also been an increase in use of the water by kayakers and windsurfers, partly due to the site's proximity to Aberdeen (SNH 2011). This has increased general pressure on the wildlife value of the site (I Broadbent, pers. comm. 2nd June 2023) but there have been no specific observations of disturbance to the gull roost.

Queen Elizabeth II Reservoir ((51.39364, -0.39055, 128 hectares) and other **Walton-on-Thames Reservoirs, Surrey** – There are no recreational issues at QEII but there has been a development of a large solar panel installation which, despite the efforts of the management company to deter gulls and other birds, has proved beneficial as the birds use the panels as roosting perches. **Knight and Bessborough Reservoirs** (51.40041, -0.39258, 64 hectares) sometimes support a small gull roost though most depart to roost elsewhere, the site is private and there is no disturbance (D Harris, pers. comm. 30th May 2023). **Island Barn Reservoir** (51.39097, -0.36500, 50 hectares) hosts sailing but still supports a large gull roost. The advantage of the Walton reservoir complex is there are always other options available to gulls if they are disturbed from roost (D Harris, pers. comm. 30th May 2023) (See Appendix, section 8, figure 5).

Sailing only takes place during daylight hours, especially in the winter months when members are less inclined to spend longer on the water – though there are no specific restrictions in place (D Baldwin, pers. comm. 26th June 2023).

Brogborough Lake, Bedfordshire (52.04877, -0.56955, 90 hectares) – This site has been popular for fishing for a long time, but this doesn't appear to present any disturbance issues for birds. A public footpath allows access to two sides of the site, but it is not easy to access and daytime disturbance from paddle boarders and wild swimmers in the summer doesn't cause any issues to wildlife (P Nash, pers. comm. 2nd June 2023). [Broglake: Brogborough Watersports](#) confirmed via email on 23rd June 2023 that, while windsurfing, sailing, wingfoiling and paddle boarding are permitted all year round, all users must be off the water by dusk.

Llys-y-Frân Reservoir, Pembrokeshire (51.88571, -4.85492, 86 hectares) – Although historically supporting a large number of roosting gulls, especially Lesser Black-backed Gull (e.g., 5,000 on 29th September 2016), the reservoir has seen a dramatic increase in water sports and other activities in recent years, though these generally only take place on summer weekends and during the daytime so there has been no apparent negative impact on the winter gull roost (J Green, pers. comm. 2nd June 2023).

Hoveringham Sailing Lake (53.01849, -0.93931, 56.6 hectares) and **Bellmoor Lake (Idle Valley Nature Reserve)** (53.37420, -0.93956, 17.5 hectares), **Nottinghamshire** – Roost numbers have steadily reduced at both these sites, largely due to the closure of local landfill sites, but there have been no serious issues with disturbance despite sailing on one of the lakes. In the occasional event of disturbance due to sailing or nearby shooting, the gulls tend simply to relocate to one of the other nearby lakes, usually the **Railway Lake** (53.01908, -0.96912, 71.6 hectares) (K Rainford, pers. comm. 1st and 22nd June 2023).

Sailing activity is only permitted from dawn to dusk, February to September, and on Wednesdays and Sundays at other times of year ([Notts Sailing Club website](#)). Members of the sailing club (the only

people legally permitted to access the water) are obligated to be off the water at dusk, with activity monitored using a webcam (D Eberlin, pers. comm. 26th June).

Bartley Reservoir, West Midlands (52.42789, -1.99515, 46 hectares) – Though relatively small, this site sometimes supports upwards of 15,000 gulls (C Thomson, Twitter, 3rd October 2019). Sailing takes place on Wednesday afternoons and weekends in winter, with boats off the water by 4pm at the latest. The terms of the lease agreement prevent sailing after sunset. There has been no observed disturbance caused to the gulls and other waterbirds as a result of sailing activity (Bartley Sailing Club, pers. comm. 27th June 2023).

The Mere, Ellesmere, Shropshire (52.90867, -2.88338, 46 hectares) – This site generally holds a larger gull roost than Chelmarsh (57km to the south-east), with counts of over 5,000 Black-headed Gull and Lesser Black-backed Gull recorded in recent years. Disturbance has increased here in the form of daytime water sports activity but there has been no discernible impact on the gull numbers (J Martin, pers. comm. 6th June 2023/T Lowe, pers. comm. 8th and 16th June 2023).

Shropshire Council issues annual licences for boating and canoeing on the lake, the application form for which states as follows:

“The peak times for water birds and roosting gulls at the mere is between October and March when we ask members to keep well way from exclusion zones, especially the northern one, as getting to within 30-50 metres of this area can flush out the birds. Giving the margins an extra wide berth would also be appreciated in trying to reduce disturbance to the wildlife and to be off the water by 15:00 during these months when the birds return to roost.” ([Ellesmere Boating Membership application form](#)).

Dungeness, Kent – The **Lade Sands** (50.95076, 0.96696) roost is the one most affected by disturbance but, being a coastal site, the gulls have the option to simply fly out onto the sea. This can also be affected by the tides. **Burrowes Pit** (50.93026, 0.94375, 43.7 hectares) offers a more sheltered site for the roost and is relatively undisturbed (D Walker, pers. comm. 1st June 2023).

Bough Beech Reservoir, Kent (42 hectares) – This site attracts many thousands of Black-headed Gull in the winter (e.g., 5,000 on 18th February 2023). Sailing is permitted any day in the winter (1st October-30th April). A nature conservancy area towards the northern end of the reservoir is marked by poles and access to this area by boats is forbidden, as listed in the [Bough Beech Sailing Club instructions](#).

Chelmarsh Reservoir, Shropshire (52.48576, -2.39501, 40 hectares) – Numbers of roosting large gulls (Herring, Lesser Black-backed, etc) have steadily dropped in the last ten years, partly due to the closure of nearby landfill sites (such as Telford) but also alongside a marked increase in daytime use of the reservoir by small boats, paddle boarders and other water sports activities. Recreational activity has slightly reduced recently, with just one evening a week now scheduled for sailing. Black-headed Gull numbers have remained stable in recent years. In short, there is no clear correlation between recreational activity and reduced use of the reservoir by gulls (J Martin, pers. comm. 6th June 2023/T Lowe, pers. comm. 8th and 16th June 2023). Sailing and other water sports activity is more limited in the winter and members are usually off the water well before dusk (W Ranson, pers. comm. 27th June 2023).

Upper Bittell Reservoir, Worcestershire (52.37519, -1.97227, 35 hectares) – This site holds a significant pre-roost (and sometimes roost) gathering, despite active sailing and fishing clubs also using the reservoir (C Reed, pers. comm. 12th June 2023). Upper and Lower Bittell reservoirs have been jointly designated as an SSSI for their value for passage and wintering waders and wildfowl. Sailing racing takes place all year round on Sundays and on Wednesday evenings and Saturday afternoons in the summer months ([Barnt Green Sailing Club](#)).

4.2 Overview of sites

Site name	Size (ha)	Used for recreation	Overnight activity	Observed disturbance to gulls	Restrictions in place
Rutland Water	1254	Yes	No	No	Yes
Grafham Water	627	Yes	No	No	Yes
Chew Valley Lake	485	Yes	No	No	Yes
Haweswater Reservoir	390	No	No	No	n/a
Chasewater	360	Yes	No	Yes	Yes
Blithfield Reservoir	320	Yes	No	No	Yes
Carsington Water	300	Yes	No	No	Yes
Queen Mary Reservoir	283	Yes	No	No	Yes
Draycote Water	243	Yes	No	Yes	Yes
Eyebrook Reservoir	201	Yes	No	No	Yes
Loch of Skene	144	Yes	No	n/a	n/a
QEII Reservoir	128	No	No	No	n/a
Brogborough Lake	90	Yes	No	No	No
Llys-y-Fran Reservoir	86	Yes	No	No	Yes
Belvide Reservoir	74	No	No	No	n/a
Knight & Bessborough	64	No	No	No	n/a
Hoveringham Sailing Lake	56.6	No	No	No	n/a
Island Barn Reservoir	50	Yes	No	No	No
Bartley Reservoir	46	Yes	No	No	No
The Mere	46	Yes	No	No	Yes
Burrowes Pit	43.7	No	No	No	n/a
Bough Beech Reservoir	42	Yes	No	n/a	Yes
Chelmarsh Reservoir	40	Yes	No	No	No
Upper Bittell Reservoir	35	Yes	No	No	Yes
Bellmoor Lake	17.5	No	No	No	n/a

Table 1 - Comparison of gull roost sites, their respective sizes and occurrence of disturbance to gull roosts (if any).

5. Discussion

Although in some instances the available data and other information provided by correspondents were not sufficient to prove or disprove the extent to which increased recreational disturbance negatively impacts the use of specific water bodies as gull roost sites, where clear comparisons were able to be made with other similar sites, it is evident that increased use for recreational purposes, particularly in the evenings and overnight, can lead to partial – or in some cases total – abandonment of a site by roosting gulls and other wild birds.

Conversely, at sites where strict rules are in place with the purpose of stopping any evening and overnight disturbance – where they are adhered to - there are deemed to be little to no discernible impacts on the gull roost and other wildlife usage of the site. Indeed, where recreational usage is sensitively and appropriately managed, the daytime activities on the water body can successfully take place with little to no impact on the waterbirds using the sites – especially those (such as gulls) which are only present at night. Where any such restrictions and mitigations were ignored or flouted to any degree, for example at Chasewater in Staffordshire, clear disturbance events were observed, with gulls leaving the site altogether to roost at another nearby secondary roost site. More isolated sites – Haweswater Reservoir in Cumbria, for example - with no disturbance whatsoever encountered no such issues with gulls departing their chosen roost sites.

Although available examples are limited, it can be seen from some responses from correspondents contacted for the purposes of this study that roost sites where overnight recreational activity is not prohibited/restricted tend more often to be abandoned in favour of less disturbed sites within the relatively immediate vicinity of the preferred site, where these are available.

In the case of Chasewater in Staffordshire, Hoveringham Lakes in Nottinghamshire or Walton Reservoirs in Surrey, these second choice roost sites entail just a 2-15km diversionary flight for gulls (see Appendix, section 8, figures 3, 4 and 5) but in the case of Bewl Water there are no suitable alternative sites within such commutable distance that routinely attract anywhere near the numbers of gulls (see Appendix, section 8, figures 1 and 2) besides the sea, which is not a preferred roost site in inclement weather (Bance 2003). Thus, any temporary or permanent disruption to the roost at Bewl threatens the long-term persistence of the wintering gull population in this region.

5.1 Specific relevance to Bewl Water

What is apparent from this initial research is that nowhere else in the UK is a similar large water body to Bewl Water currently experiencing the level of potential disturbance proposed by the development of increased recreational facilities, especially overnight accommodation onsite. The nature of disturbance events being caused at other sites researched in this report are largely from daytime and evening water sports such as sailing and paddle boarding, or angling boats returning to harbour – most of which are limited in their activities in some way. As such, it is not possible to know the exact level of disturbance that may be caused by such development at Bewl Water but, given its size, and what has been learnt from the research carried out for this report, the likelihood is high of an increased level of disturbance to the gull roost in the event of new and unfamiliar disturbance events taking place on or near the water or shoreline, within audible proximity of the area in which the gulls are roosting. In other words, the very fact that it will be something that the gulls are not used to will increase the likelihood of it leading to disturbance.

There is certainly scope for further research to take place on this, particularly looking at the relationship between closures of landfill sites and changes in roost site choices by gulls, as this proved to be a recurring theme at many sites where the quantity or overall occurrence of gulls

attending a winter roost had noticeably reduced. Nonetheless, the evidence gleaned from correspondence carried out during this study does indeed suggest that roost sites are vulnerable to excessive human recreational disturbance, and that this should especially be considered an issue where there are no suitable alternative roost sites available near to the preferred roost site, as is the case at Bewl Water.

6. Conclusion and Recommendations

When considering the potential impacts of the proposed further development of the tourist infrastructure at Bewl Water, the aim of this study was to explore a range of other similarly significant gull roost sites in the UK and assess whether any faced comparable threats to their ongoing survival, and to what extent any restrictions and mitigation measures have been put in place to protect the roosting gulls and other wildlife.

The development of landfill sites and large reservoirs – often in close proximity to one another - and other extensive areas of open water inland (disused gravel pits, for example) in the 20th Century presented the perfect opportunities for feeding and roosting sites for gulls (Gosler *et al* 1995), especially as coastal areas became increasingly developed and depleted in terms of food availability. As discussed earlier in this study, roost sites seem primarily to be chosen based on their proximity to feeding areas as well as their respective size and levels of disturbance. Gulls prefer larger bodies of water where they can roost a safe distance from the shore, as well as offering them plenty of space to perform social displays prior to roosting (Hickling 1967). What all the sites included in this report have in common (including Bewl Water) is such an open area of water, largely safe from shoreline disturbance events, in order to roost undisturbed during winter nights.

Were disturbance events to increase for any reason at Bewl Water, it is clear that the likelihood of gulls temporarily or permanently abandoning the reservoir as a roost site would be a more probable outcome. With sometimes tens of thousands of both amber-listed Common Gull and Black-headed Gull gathering here in the winter months, this sort of site abandonment would have potentially internationally negative ramifications when it comes to the populations of both these species.

Sudden and unexpected noise events – as opposed to steady background noise such as from traffic, or routine maintenance operations, for example – are the most likely to cause gulls to take flight from feeding or roost sites (Hickling 1957) and, if allowed to continue unrestricted through the night during the winter months, have the very real potential to cause total abandonment of a roost site (Hockin *et al* 1991, Gosler *et al* 1995). Indeed, where gull activity is deemed to be a threat to human health or safety – on airport building rooftops, for example – concerted attempts to cause gulls to abandon such roost sites can be as simple as walking on the rooftop with a bright light several times in consecutive nights (Deacon 2019). This kind of sustained yet relatively low-level disturbance could unintentionally be seen as a likely consequence of further development along the shoreline of any major gull roost site, especially when one considers the various noise and lighting impacts presented by the introduction of overnight accommodation on the site.

Of particular concern must be the proximity of the proposed development to the central area of the reservoir favoured by the gull roost. As has been discussed earlier in this report, gulls choose sites where they can safely gather in open water away from any potential disturbance at or near the water's edge. As highlighted by Richard Cowser in his letter to the Wealden District Council Senior Planning Officer, dated 27th September 2022, the proposed development of the existing Boat House Bistro and other buildings on the northern shoreline at Bewl Water will inevitably increase the

potential for noise and lighting disturbance both during and after the construction process, within just 300-400m of the favoured gull roost area (M Phillips, pers. comm. 28th June 2023).

In the event of any proposed further development of tourist and recreational infrastructure at Bewl Water or any similar site – and the likely increase in human disturbance that would occur as a result – it would be prudent, at the very least, to install rigorous measures to minimise or prevent any such disturbance events. This could include further zoning of areas of the reservoir and surrounding landscape, no-go areas, soundproof screening and strict curfews on noise levels and general activity close to the shoreline, perhaps enforced by on-site security staff (though evidently there have already been issues controlling the behaviour of existing summertime visitors to the site).

Ideally though, any development that could allow or promote increased disturbance on the shoreline should be discouraged entirely.

7. References

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8. Appendix

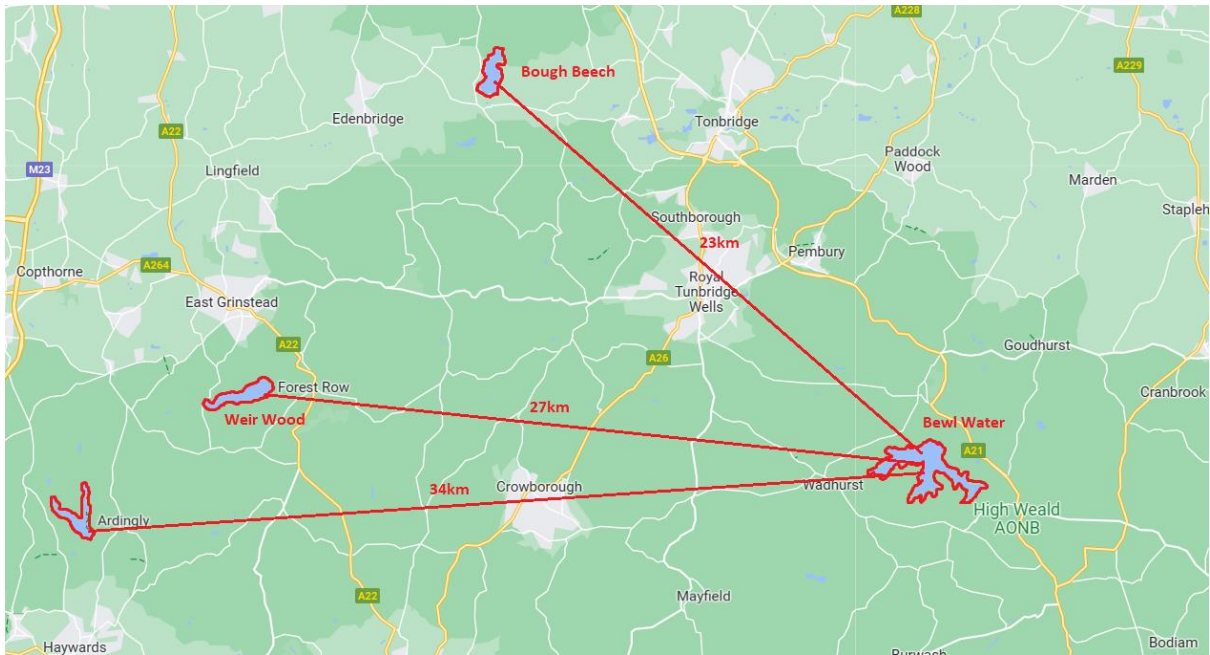


Figure 1 - Bewl Water in the context of the wider East Sussex/Kent landscape. There are no other large water bodies within 20km of the site which regularly host large gull roosts.

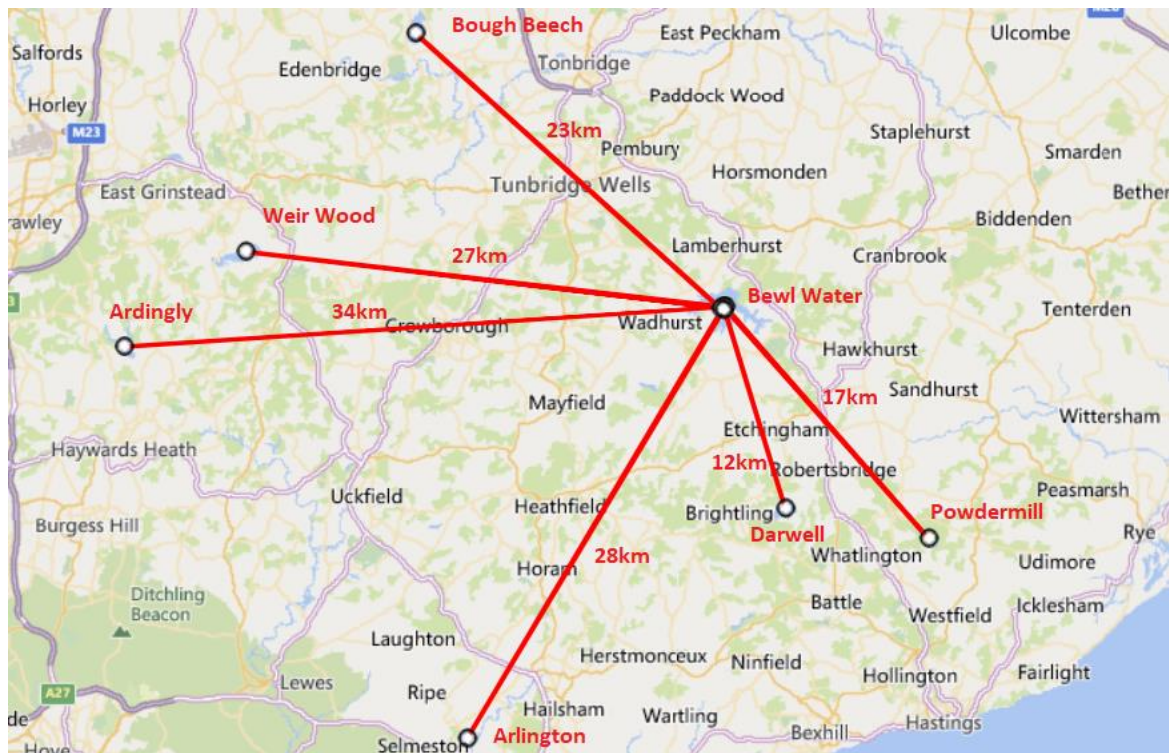


Figure 2 - Wider scale map showing all large inland water bodies within 35km of Bewl Water, the nearest being Darwell and Powdermill Reservoirs in East Sussex, for which there are no records of any regular significant winter gull roosts.



Figure 3 - The Cannock Chase group of roost sites in Staffordshire, in comparison to Bewl Water (and to the same scale – 1:33333). These sites are all just over 15km away from one another, allowing for gulls to choose alternative roost sites, if disturbed from Chasewater, their primary choice of roost site.

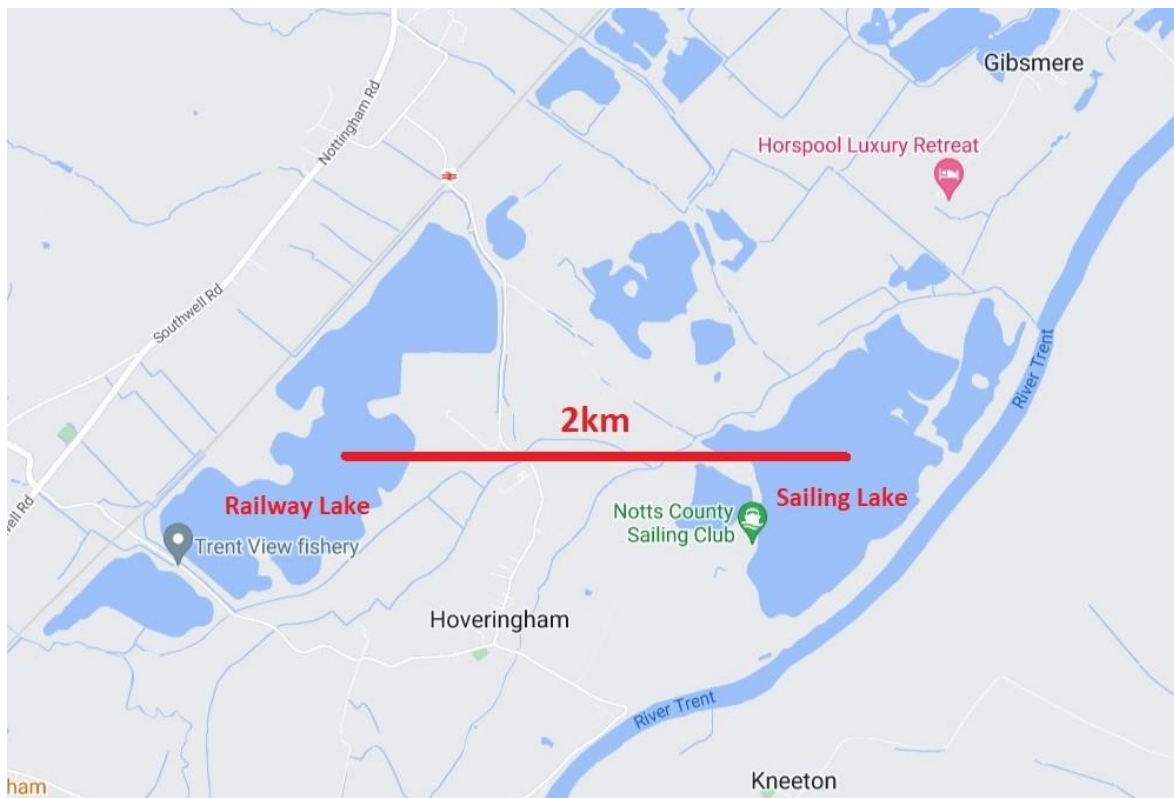


Figure 4 - Hoveringham Sailing Lake and Railway Lake in Nottinghamshire, between which roosting gulls regularly commute in the event of disturbance.

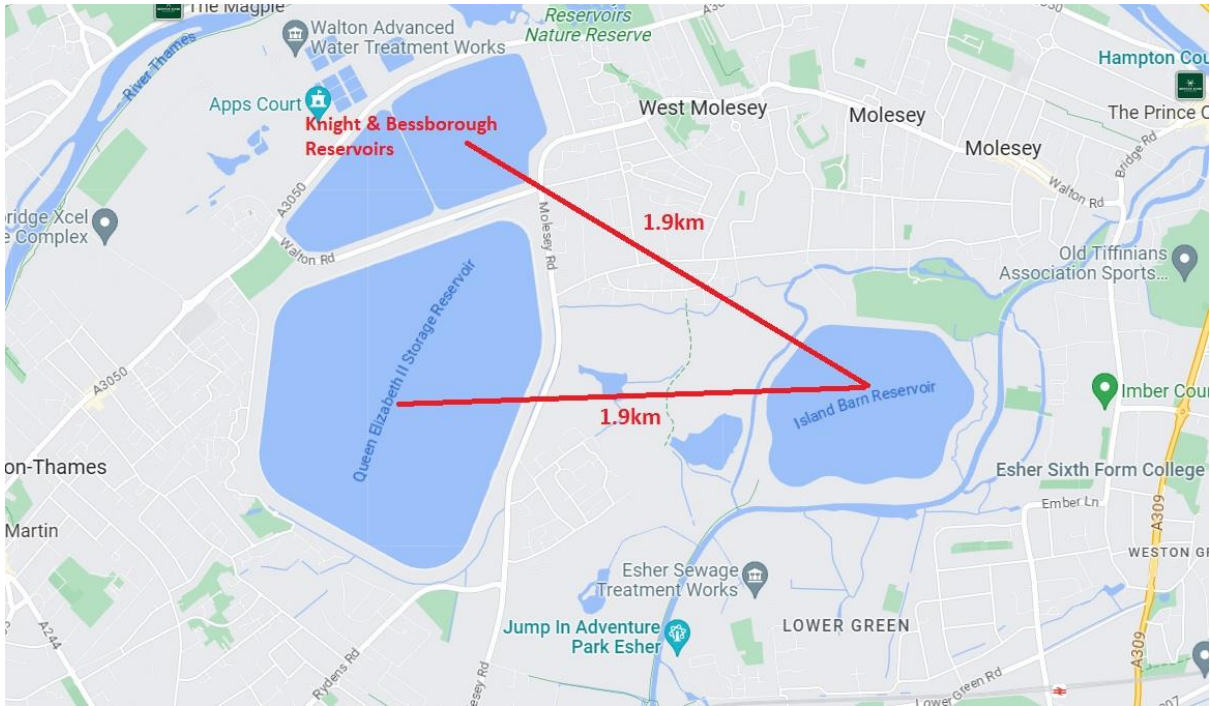


Figure 5 - Map of the Walton-on-Thames reservoirs complex in Surrey, showing proximity of alternative roost sites in the event of disturbance.

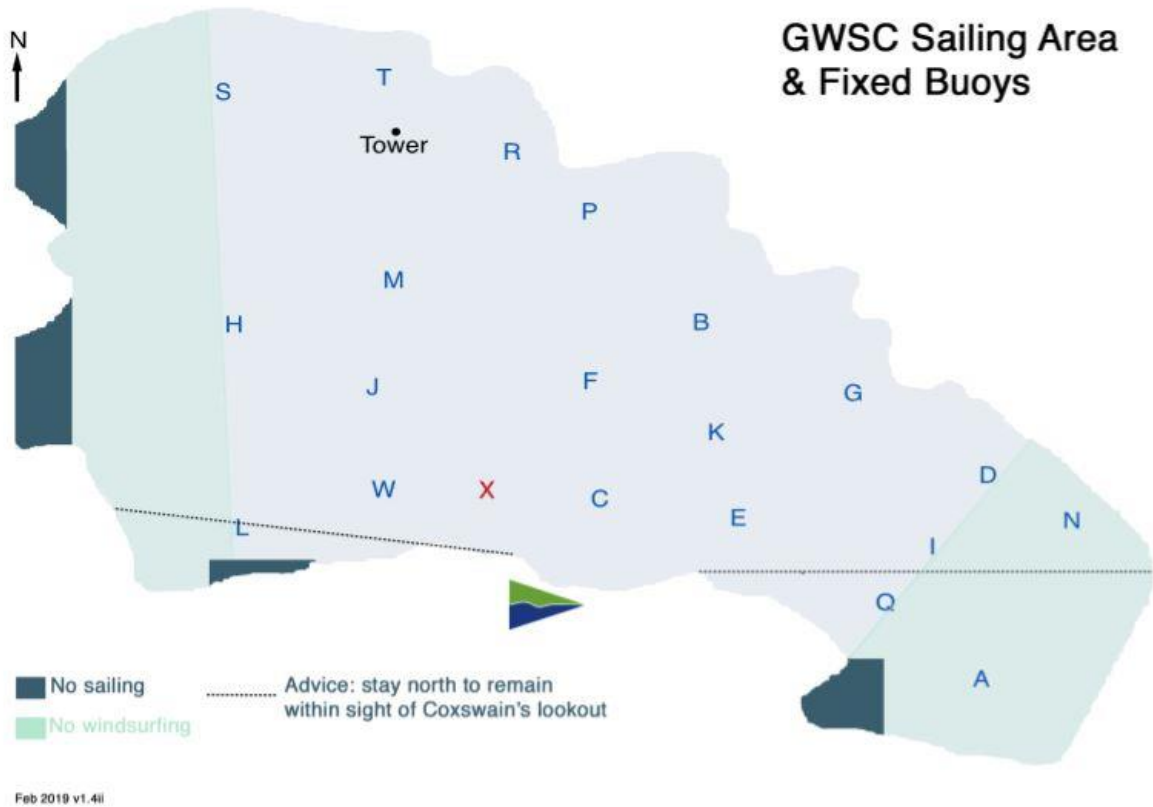


Figure 6 - Restricted areas for sailing on Grafham Water, Cambridgeshire (from <https://www.grafham.org/on-the-water/safety-on-the-water.html>)

Carsington Trout fishery

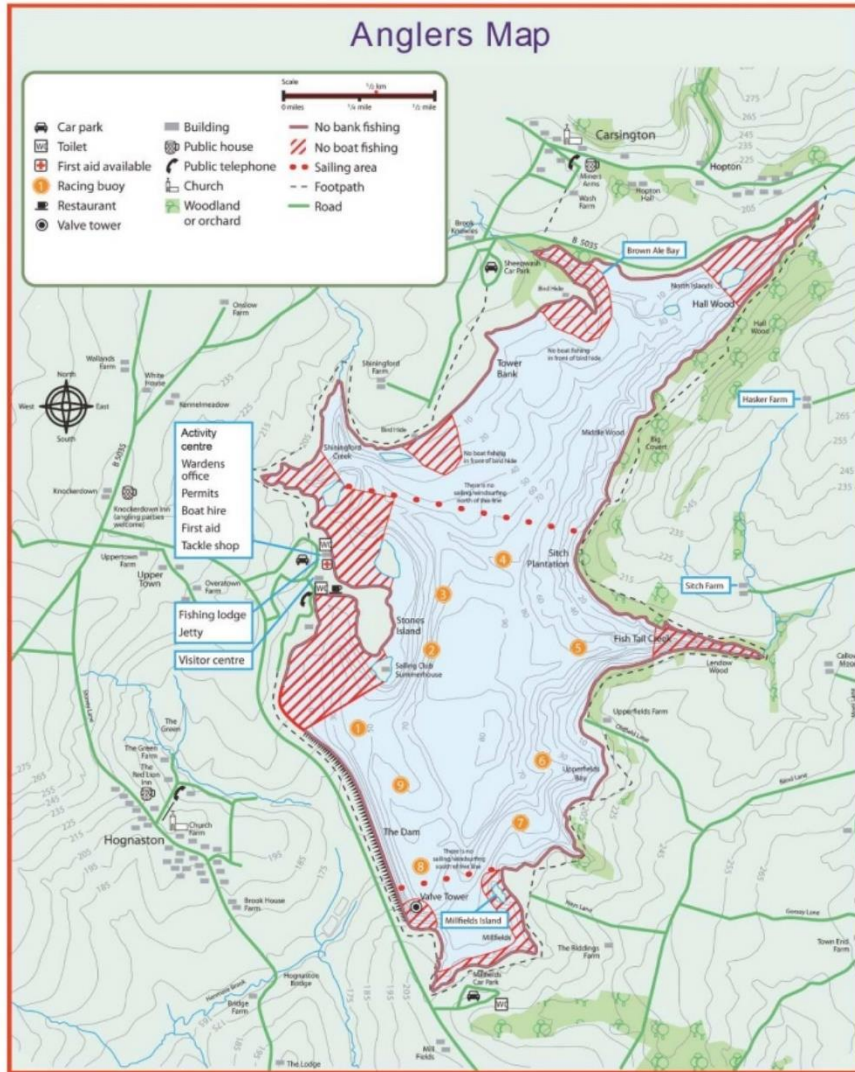


Figure 7 - Map of Carsington Water showing zoned areas for angling (<http://carsingtonwater.com/docs/AnglersMapv2.pdf>)



Figure 8 - Map of Carsington Water showing zoning for sailing and other water sports activities (<http://www.carsingtonwater.com/launch>)