

BVLOS Drones for Environmental Monitoring: South West Local Engagement Case Study

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**UNIVERSITY OF
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1. Executive Summary

Proposed BVLOS drones operations for environmental monitoring in Somerset were the catalyst for local community and public engagement in the area. This report synthesises data from five community engagement meetings, four key stakeholder interviews and national- and regional-level survey data to provide a multilayered overview of attitudes to BVLOS environmental drones in the Somerset.

Strong support for environmental monitoring drones was identified, with the following applications seen as particularly beneficial:

- ✚ Monitoring of public land use e.g. impacts of anti-social usages
- ✚ Supporting land management practices e.g. wildfire management
- ✚ Real-time flood response data collection and coordination
- ✚ Long-term monitoring of flood-prone areas

However **open and transparent communication** of where, when and why BVLOS drones are being used is integral to ensuring public support. Likewise **mechanisms for ongoing local engagement and oversight** were flagged as key to ensuring publics had a stake in these systems. Three key recommendations emerge:

- ✚ **Do not assume that support for BVLOS environmental monitoring drones translates to blanket support for all use cases:** Support for environmental monitoring use case is generally high, and publics are willing to accept some negative impacts to realise positive benefits associated with the use, but this comes with caveats.
 - ✚ **Clear, transparent and ongoing communication will be required to minimise public push back and maximise buy-in:** publics want to understand what is happening in their local area. They will recognise and appreciate the positive benefits from these technologies if they are kept in the loop before, during and after environmental drone operations and mechanisms are in place to address public issues or concerns.
 - ✚ **Continued engagement with local communities and key stakeholder groups will be required to ensure operations are fit for purpose:** local communities and stakeholders have relevant knowledge of local issues and concerns which should be valued in the design and implementation of emerging drone systems.
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2. Introduction and Policy Context

In United Kingdom, BVLOS drone technology is poised to be introduced for a broad range of use cases. The Civil Aviation Authority's 2025 BVLOS Roadmap (CAP3182) sets out targets for routine beyond visual line of sight (BVLOS) drone operations in UK airspace by 2028. Key government priority use cases included “the NHS, emergency services, infrastructure surveying and commercial delivery operations”. Alongside these stated uses, “environmental surveying” or monitoring is another key use case envisioned for emerging BVLOS drones in the UK.¹

Internationally, trials of environmental monitoring BVLOS drones have been undertaken, including in Canada² and New Zealand,³ and elsewhere BVLOS drones are already being employed for environmental monitoring tasks, including supporting scientific research in the Antarctic⁴. Given its significantly higher population density than these locations, integrating BVLOS drones in the UK presents a different set of challenges. The Department for Transport's Future of Flight Action Plan,

adopting a framing prevalent in the broader industry and not-for-profit drone sector, positions BVLOS drone use via a ‘drones for good’ narrative, foregrounding potential public benefit BVLOS drones can offer, in terms of their contribution to “essential public services, including NHS transport and medical deliveries, search and rescue, [...]and new tools for the Police to tackle crime” as well as “monitoring the environment”.⁵

Key to the successful integration of BVLOS drones is realising the benefits of drones in ways that recognise and respond to public hopes and concerns from the outset. The need for robust and public engagement then is built into the existing direction of travel for policy, which recognises that without public trust, push-back against these technologies could limit public buy-in for beneficial uses, undermining the broader economic case for commercial and public sector BVLOS integration in the UK. Thus, robust evidence of public perceptions and attitudes is required to deliver on these policy commitments in a timely manner. This is particularly the case at the local level. Unlike incumbent aviation technologies, if the full benefits of emerging drone technologies are to be realised, they will need to operate in closer proximity to diverse local communities, with potentially more obvious and direct impacts on them. It is therefore imperative that local engagement happens

¹ Civil Aviation Authority, *Future of Flight: BVLOS Roadmap*, CAP3182 (London: Civil Aviation Authority, 2025), p.3, available at <https://www.caa.co.uk/our-work/publications/documents/content/cap3182>

² van der Sluijs, J. et al.. 2023. Beyond visual-line-of-sight (BVLOS) drone operations for environmental and infrastructure monitoring: a case study in northwestern Canada. *Drone Systems and Applications*. 11: 1-15. <https://doi.org/10.1139/dsa-2023-0012>

³ Hartley, R. J. a. L., Henderson, I. L., & Jackson, C. L. (2022). BVLOS Unmanned Aircraft Operations in Forest Environments. *Drones*, 6(7), 167. <https://doi.org/10.3390/drones6070167>

⁴ Jordan, T (et al.) 2025. Successful deployment of a large uncrewed aerial vehicle for multidisciplinary science from Rothera Research Station, Antarctica: 2024 season overview and lessons learned. *Antarctic Science*, 37 (4). 291 -308. 10.1017/S0954102025000136

⁵ Department for Transport, *Future of Flight Action Plan* (London: Department for Transport, March 2024), p.7, available at <https://www.gov.uk/government/publications/future-of-flight-action-plan>. Note: This document was published under the 2022-2024 Sunak Conservative government.

early, so local issues can be better understood and local concerns mitigated in the design and planning phase of implementation.

This report thus sets out the findings from dedicated local engagement around potential BVLOS drone use for environmental monitoring in Somerset. To gather views, we conducted five online consultation and engagement meetings with members of the public and four interviews with key stakeholders between January-March 2026 [total participant numbers = 26].⁶

Participants were drawn from two sub-regions within Somerset – The Quantocks and The Levels – proposed locations for future use of BVLOS environmental monitoring drones.

Prior University of Birmingham research, conducted as part of the UKRI Future Flight Challenge, has established a baseline picture of UK public attitudes toward drone use, showing broadly positive attitudes toward socially beneficial applications including environmental monitoring, strong support for public, community and independent engagement and oversight, and consistent concerns around privacy, impacts on wildlife and local environments (e.g. visual pollution and noise). This programme included a deliberative public dialogue in which members of the public developed 14 principles they wanted to see underpin the rollout of drone technologies.⁷

These principles were subsequently tested in a nationally representative survey of 3,279 UK adults and found broad endorsement across all 14 principles, with support ranging from 67% to 85%.⁸ This report synthesises survey data collected in the South West and at the UK-national level as part of this earlier programme with data collected via local engagement to provide a robust and multilayered overview of

attitudes to the proposed use of BVLOS environmental monitoring drones in Somerset.

⁶ 21 members of the public participated across the five consultation and engagement meetings. Five stakeholders participated across the four stakeholder interviews.

⁷ Thinks Insight & Strategy, *Framework for Future Flight in the UK: Principles from a Deliberative Public Dialogue* (London: Thinks Insight & Strategy/UKRI, July 2024), available at <https://futureflightsocial.ac.uk/research/public-dialogue-principles/>

⁸ Fern Elsdon-Baker, Rebecca Hughes, Will Mason-Wilkes and Adam Green, *Navigating Future Flight: Societal Principles for Drones and Advanced Air Mobility in the UK* (Birmingham: University of Birmingham, 2025), available at <https://futureflightsocial.ac.uk/research/title-23/>

3. Key Findings

Across both the Levels and Quantocks case study regions, strong support emerged for the use of drones for environmental monitoring, as well as other public service uses such as emergency response. However, open and transparent communication around BVLOS drone operations was a prerequisite for establishing and maintaining public buy-in. Despite high levels of support, there remained concerns around potential negative impacts on local inhabitants and environments, though mitigations for these were also suggested.

3.1 General Support for Environmental Monitoring Use Case

Rather than seeing these technologies as disruptive, some participants suggested that, if integrated appropriately, by carrying out important environmental monitoring functions BVLOS drones could help to protect and preserve valued local environments. This aligns with survey data collected in the region, which shows that in the South West, 84% of respondents consider “supporting UK-based environmental conservation and monitoring” as a benefit of BVLOS drone use.⁹ Though support

was generally strong in each of our qualitative sub-regional samples, specific benefits were unique to each. In the **Quantocks** case study region, participants recognised benefits from uses such as:

- ✚ Monitoring land use to track the impacts of, and potentially dissuade, anti-social usages including off-road motorsport, mountain biking, and activities linked to trail hunting
- ✚ Tracking the movements and wellbeing of local wildlife e.g. Exmoor ponies, red deer as well as grazing livestock
- ✚ Supporting land management practices such as ‘swaling’ (controlled burning of vegetation to prevent wildfires)

In the **Levels** case study region, an area increasingly prone to extensive and disruptive flooding events, there was unsurprisingly support for using drones for monitoring flooding and its impacts. Participants recognised the following benefits drones could provide in relation to flooding:

- ✚ ‘Real-time’ situational awareness from drones during and in the immediate aftermath of flooding, to aid in emergency response where there was immediate risk to life or property
- ✚ Mapping the extent of flooding to support e.g. coordination of road closures or distribution of resources to affected areas
- ✚ Longer term monitoring of land use to detect areas prone to or at risk of flooding e.g. by identifying obstructions in rivers or other drainage channels

⁹ University of Birmingham/YouGov winter survey 2024/25. Q. A number of potential benefits of non-passenger carrying drones have been suggested. For each of the potential benefits listed below, please tell us whether, in your view, you think it will be a major benefit, minor benefit or not a benefit of non-passenger carrying drones. [All figures, unless otherwise stated, are from YouGov Plc. Total national sample size was 3588 adults. South-West regional sample size was 305 adults. Fieldwork was undertaken between 17th December 2024 - 10th January 2025. The survey was carried out online. The figures have been weighted and are representative of all UK adults (aged 18+)].

Particularly in relation to flooding, participants highlighted that data collected by drones would need to be communicated to or made accessible to publics to realise some of these benefits e.g. to better facilitate distribution of resources or coordination of traffic. Public respondents discussed the benefits of using different platforms for sharing this data, whether via council websites, direct text messages or public and social media outlets. No clear consensus was reached on the best method to communicate, with a mixture of different channels suggested as being most likely to reach a broad and diverse local audience.

Across both sub-regions participants saw a range of other potential beneficial uses of BVLOS drones. Supporting emergency service response was often mentioned as a particularly beneficial use case, aligning with survey data collected at the national level and in the South West, where 94% consider drones “providing support to emergency services” as beneficial.¹⁰ Alongside this, other benefits noted during sub-regional qualitative data collection included:

- ✚ Asset monitoring or inspection e.g. assessing state of repair/accessibility of roads or footpaths
- ✚ Supporting other government agencies or organisations to deliver services e.g. Met Office, Environment Agency, National Highways
- ✚ Aiding Search and Rescue efforts

3.2 Open Communication, Transparency of Usage and Ongoing Engagement

Across both case study regions, there was a strongly indicated desire for local government to be transparent about when, where and how BVLOS drones were being used, and by whom. This included clear communication before, during and after drones were in operation. As well as this, participants desired ongoing engagement with local communities and other key stakeholders (e.g. conservation/wildlife groups, land stewards, local businesses, schools) to communicate about operations and disseminate information, assess impacts and collect and act on community feedback.

Before operations, participants wanted to receive notification, either via electronic communication or through signage in local areas informing them of when drones would be operating and to what purpose.

During operations, participants suggested drones should have clear and visible markings labelling them as being operated by the council (or a council approved operator with requisite approvals/licensing) and for a specific purpose (e.g. environmental monitoring). Other suggestions included digital platforms, either provided by the council or externally and similar in operation to current flight trackers, where participants could use their smartphone or other digital device to identify drones and operators operating in their area.

After operations, participants wanted feedback on how and why the drones had been used and what benefits they had delivered to

¹⁰ University of Birmingham/YouGov winter survey 2024/25. Q. A number of potential benefits of non-passenger carrying drones have been suggested. For each of the potential benefits listed below, please tell us whether, in your view, you think it will be a major benefit, minor benefit or not a benefit of non-passenger carrying drones. South-West regional sample size n=305

the local community. Examples included how drones had been used to monitor areas potentially prone to flooding and what actions that had led local authorities to take. Given the perceived costs associated with introducing these technologies, other participants wanted clear communication of the 'return on investment', either in terms of savings from the prevention/reduction of flooding impacts, reduction in person hours spent on monitoring, or carbon-reduction or other sustainability benefits from using drones rather than e.g. motor vehicles. There was no consensus on when and how frequently this should be given. Some wanted to receive this information annually, while others wanted it more frequently.

A desire for transparency also extended to clear communication on how any data that was collected was being used and stored, as well as being made accessible to local residents (with appropriate safeguards around privacy etc. in place). Participants also wanted mechanisms in place to facilitate continued feedback from communities on the use of BVLOS drones in their areas, so concerns could be flagged and operations altered accordingly. In this way participants recognised a key role for local communities in the continued governance and oversight of these technologies after their initial introduction.

4. Caveats & Concerns

While there was support for environmental monitoring drones, this support came with several caveats and a variety of associated concerns were expressed. Concerns about privacy, as well as noise and visual pollution, impacts on wildlife and implications for workers were all raised. Alongside this, publics and key stakeholders raised concerns linked to special interests they held.

4.1 Privacy, Noise & Visual Pollution and Wildlife Impacts

Potential impacts on privacy were a serious concern. Participants stressed that they wouldn't want drones operating in close proximity to private residences or locations such as schools or other 'built-up' areas where footage that impinged on personal privacy would be more likely to be captured. In a similar vein, 85% of our survey respondents in the South West were concerned about "invasions of privacy (e.g. from low-flying air vehicles, in-air video-recording)" (compared to 79% of wider UK respondents).¹¹ In our qualitative research some participants suggested that potential drone operations would directly impact their day-to-day life and decision-making, for example meaning they would avoid areas where drones were in use. Other participants, however, were less concerned. These participants noted that if

drones were operating at higher altitudes that meant it was difficult to notice they were in operation, then they would be able go on with their day-to-day activities unperturbed.

In terms of noise and visual pollution, concerns centred on the impacts in rural areas with dense and diverse bird and wildlife populations (Levels), or areas of outstanding natural beauty (Quantocks). It was feared that drone use could detract from these area's appeal and negatively impact both local people's and visitor's experiences. Despite recognising potential benefits to wildlife (e.g. Exmoor ponies, red deer) through monitoring via BVLOS drones, some participants were concerned drones may also have potentially detrimental impacts on local wildlife, particularly birds. The Levels was highlighted as a place where many migratory birds nest in large numbers, and participants in the Quantocks raised the prospect of potentially detrimental interactions between drones and birds of prey.

These concerns align with our earlier survey data in the region, which shows 79% of respondents in the South West were concerned about "the potential for skies to become crowded with aircraft" (a slight increase on the wider UK population, where 75% are concerned with this).¹² Likewise, in the South West "increased noise pollution" from drones was a concern of 67% of respondents (compared with 62% of UK-wide respondents).¹³ This slight regional uptick in concern in the survey data potentially reflects concerns raised in the engagement sessions with the specific impacts of drones on rural environments. Likewise, potential impacts on "on animals, such as birds or agricultural animals" was a concern of 85% of respondents in the South West (vs. 80%

¹¹ University of Birmingham/YouGov winter survey 2024/25. Q. *Moving on... A number of potential drawbacks of non-passenger carrying drones have been suggested. For each of the potential drawbacks listed below, please tell us how concerned or unconcerned you are about it in relation to the development of non-passenger carrying drones. National Sample n=3588 South-West regional sample size n=305*

¹² Ibid

¹³ Ibid

UK)¹⁴, again, potentially reflecting the specific nature of the region and perceptions of the value of its comparative diversity of animal life.

However, our qualitative research participants felt that they were willing to accept compromises on these points in relation to BVLOS drone use for environmental monitoring, as well as other specific public service uses such as medical or emergency uses. Participants suggested a range of mitigations for potential negative impacts, including flying drones for environmental monitoring on pre-specified and agreed days and times and via set routes which avoided areas where wildlife was abundant e.g. nature reserves, densely populated areas as well as those areas used for leisure, or which are tourism 'hot spots'. Participants felt this would allow residents and visitors who valued privacy to plan their time and leisure activities accordingly, as well as reducing impacts on wildlife.

4.2 Replacement Rather than Addition

Beyond these specific concerns, participants expressed a broader negatively coded perception around the potential for drones to replace human workers (e.g. park rangers) in environments where their presence was seen as beneficial. Some felt that a drone could not (and should never) replace a person being present in an environment, and observing and assessing things on the ground. It is telling that many participants assumed that drones would act as a replacement, rather than supplementing current staff and operating as an extra resource, viewing their proposed introduction through a cost savings framing. Evidencing how BVLOS drones can supplement current working arrangements rather than supplant current workers will be another key

aspect to ensuring broad public buy-in for the introduction of these technologies.

4.3 Stakeholder Groups' Concerns

Some participants and stakeholders we engaged with had specific concerns that were expressed in relation to a special interest they held. These included general aviation pilots, farming representatives, those with an interest in local tourism, as well as local councillors.

¹⁴ Ibid

General Aviation

General aviation pilots we spoke to had concerns around safely integrating larger BVLOS drone flights into airspace they currently use. This was particularly the case for small aircraft pilots who had concerns around communication and coordination between uncrewed aerial vehicles and pilots of small/micro aircraft that do not routinely, and are not legally required to, carry transponders or other 'electronic conspicuity' equipment. This aligns with data from our public survey, which shows that "mid-air collisions with other aircraft" are a concern for 81% of respondents in the South West (compared with 76% UK-wide respondents).¹⁵

Parish Councillors

The parish councillors we spoke to were generally positive about the potential of drones for environmental monitoring. As with our public participants, however, they stressed the importance of clear and transparent communication in terms of the 'when' and 'why' of drone use. Parish councillors recognised this would be important to ensure the support of their parishioners for drone use in the areas they represented.

Local Tourism Representatives

As with local residents, those involved in tourism in the region were concerned that drone operations may reduce the appeal for visitors to the area, and the knock-on impacts for the local tourism industry. However, stakeholders we spoke to involved with tourism in the area were also residents themselves, and recognised the potential benefits e.g. in terms of supporting flood monitoring and response, so took a nuanced view of the potential introduction of these technologies, seeing both positive and negative potential impacts.

Farming Representatives

Farming representatives raised concerns, including:

Liability if a drone crashes on agricultural land and it causes damage to buildings/equipment or injury to livestock/workers

These concerns are reflected in our public survey data, with 83% of respondents in the South West concerned about drones colliding with the ground or buildings, and as mentioned above 85% of respondents in the South West concerned about invasions of privacy. At the same time, farming representatives acknowledged that many farmers are already utilising drone technology to support agricultural work so understood and value its potential application. Questions though remained around integrating these new technologies and doing so without increasing risks for farming businesses.

In many of the cases described above, there was significant overlap with concerns expressed by public participants, e.g. around safety of remotely piloted larger BVLOS drone operations at scale (as discussed by GA pilots) and the implications of collisions or monitoring of private land use (as raised by Farming Representatives). This suggests that, though framed in discussion in reference to a special interest or group, many of these concerns were not limited to those groups but had broader societal relevance.

¹⁵ Ibid

5. Summary and Recommendations

This report highlights generally high levels of support for potential BVLOS environmental drones across our case study region. However, if these technologies are to be introduced, clear and transparent communication of the where, when and why of BVLOS drone use will be vital to maintaining this support. Likewise, ongoing engagement will be required to ensure local communities have mechanisms for flagging concerns and to feel they have a say in the oversight of these technologies in their local area.

Three key recommendations emerge from the data presented here:

 **Do not assume that support for BVLOS environmental monitoring drones translates to blanket support for all use cases:** Support for environmental use case is generally high, and publics are willing to accept some negative impacts to realise positive benefits associated with the use, but this comes with caveats. Concerns around privacy, noise and visual pollution and impacts on wildlife and workers will be exacerbated with the introduction of other, less popular use cases e.g. commercial delivery/logistics and their integration with BVLOS environmental drones, leading to potential push-back against all operations.

 **Clear, transparent and ongoing communication will be required to minimise public push back and maximise buy-in:** publics want to understand what is happening in their local area. They will recognise and appreciate the positive benefits from these technologies if they are kept in the loop on where, when and why BVLOS drones are being operated and what benefits they bring. Local publics also desire clear and effective mechanisms to feed-into the ongoing decision making around these technologies and their local operation.

 **Continued engagement with local communities and key stakeholder groups will be required to ensure operations are fit for purpose:** local communities and stakeholders have knowledge of specific issues BVLOS drones can resolve (e.g. anti-social land use, areas prone to flooding) as well as specific areas where drone use is less welcome (e.g. areas used for leisure). Local authorities should proactively seek out this local knowledge and expertise and factor it into planning and ongoing operation of drones in local areas.

Future Flight Social Insight.

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