Inform Report

Making drones work in local government

Current landscape

October 2019

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Executive summary

Introduction

This report is designed to provide an overview of the use of drone technology in local government to inform those involved in planning and procuring drone technology or services.

It sets out the findings of an independent review detailing how local authorities are using drones and in what capacity, lessons learnt so far by the early adopters and considerations for adopting the use of drone technology. By 'drone technology', we mean any unmanned aerial vehicle (UAV) and technology-related product or service.

Why should local government be using drones?

Drones can provide a highly efficient and effective mechanism to improve services, reduce costs and health and safety risks at local authorities. Evidence from early adopting UK authorities, other organisations and international local government bodies shows that drones can be introduced quickly and effectively to provide immediate benefits. Some examples from the study include:

› Land surveying – image and video capture to gain a better perspective of sites and the use of sophisticated photogrammetry software to produce orthomosaics for surveying of potential development sites

› Building/structures inspections - thermal surveys of roof structures and bridge inspections

› Transport management - from tracking congestion to planning and maintaining roads and monitoring the progress of large development schemes

› Emergency planning – monitoring areas that have been subject to flooding

› Coastal management – creating a detailed orthomosaic enabling highly accurate rates of erosion to be calculated. Drones have also been used to assess the severity and impact of coastal landslides.

› Greenspace management – prioritise maintenance of parks and open spaces. Drones have also been used for monitoring of habitat and wildlife in locations that would otherwise be difficult and dangerous to access

› Enforcement – collecting evidence to assist with enforcement action. This included assessing damage to a site caused by travellers and aerial photographs of a property to be used as evidence in a court action

› Communications/public relations – showcasing regeneration projects and recording one off commemorative events

Whilst the benefits are real, so are the risks of a poorly implemented strategy. Our review found a number of examples where local authorities are likely to be breaking the law. For example, officers who do not have the CAA Permission for Commercial Operations (PfCO) providing drone services in congested areas using recreational flying public liability insurance. In other examples, policies are based on out of date legislation or authorities have issued unenforceable restrictions on drone flying based on a misunderstanding of legislation. In a section below we have developed a Drone Adoption Maturity Model to help organisations understand what work needs to be carried out to introduce and improve drone services.

Key findings

1. Drones can provide immediate benefits and cost savings across a wide number of services at local authorities

2. Only 4% of local authorities have a policy and/or strategy to benefit from drone/UAV based services*

3. A number of local authorities have used drones in a way which may break the law and a number have policies based on legislation which has been superseded and is out of date

4. 17% of local authorities have a lead officer with responsibility for policy and strategy relating to the Council's use of drones/UAVs*

5. 36% of local authorities have procured external drone/UAV services*

6. 6% of local authorities have been granted CAA Permission for Commercial Operations (PfCO)**

Based upon 348 responses to a Freedom of Information Request
** *https://bit.ly/1oFjQk7*

Background and context

Drone technology is becoming ever more sophisticated at a price point making it readily available within the work environment. At a time when local government continues to face unprecedented budget challenges, drone technology provides authorities with an opportunity to innovate and deliver services more efficiently, improve productivity and increase safety of service delivery.

Drones provide the opportunity to gather large amounts of data efficiently and accurately with a unique ability to access previously hard to reach places. The capability of drone technology extends far beyond the ability to capture images and videos. The value of drones lies in the sophisticated models that can be produced from the images and videos that are captured during a flight. The post-processing of images and videos is known as photogrammetry. There is a rapidly developing market for photogrammetry solutions that enable images and videos to be processed into 2D and 3D models that are accurate to within centimetres. Activities that previously took days to complete or were impossible due to access can now be completed in hours.

PwC recently published a report titled "Skies Without Limits" which estimated that by 2030, drone technology would deliver £16bn savings to the UK economy. £1.1bn of these savings are within the public sector.

Local authorities provide more than 800 services to residents, communities and businesses. Many of these present a unique opportunity to use drone technology in different scenarios across the organisation. Examples of how drones can be used and how benefits and returns on investment can be maximised are explored later in the paper.

Approach taken

To develop a breadth of perspective, the material in the report draws from a wide literature review, interviews with local authorities and responses from a Freedom of Information request issued to all UK-based local authorities. The report is based upon the following research sources:

> 348 responses to the FOI request received and analysed

> Seven local authorities that have been granted CAA Permission for Commercial Operation of drones

> Two local authorities in Australia and New Zealand that have established in-house drone operations

> DJI, the leading worldwide manufacturer of drones with greater than 80% market share; and

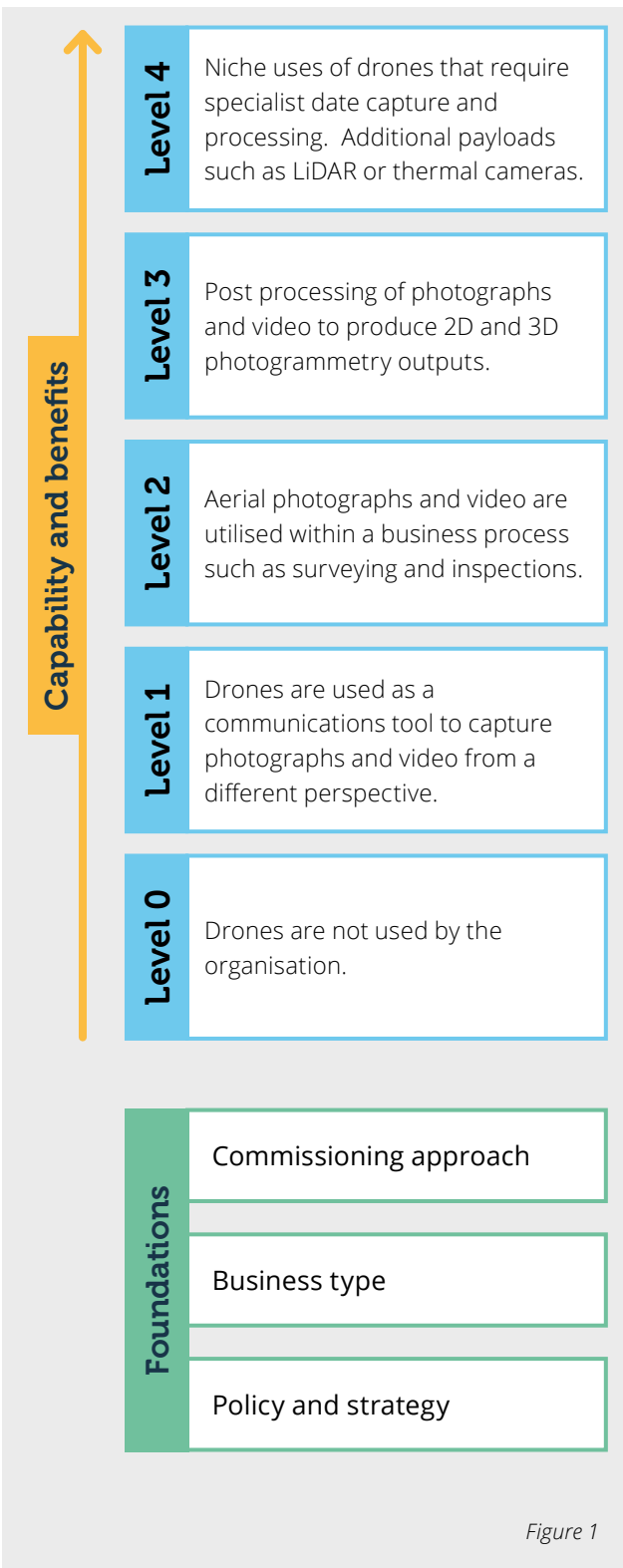> Relevant legislation, regulation and best practice

Drone adoption maturity model

The drone adoption maturity model has been developed as a framework to assess the maturity level of drone technology within an organisation.

Underpinning the model is a set of foundational activities to provide the structure and governance required to maximise the benefits from drone technology:

> Policy and strategy – the new policies as well as changes to existing policies and the approach for integrating drone operations into the business

> Business case - a well-balanced business case presenting the uses, costs, benefits and operating model

> Commissioning approach – drone operations can range from fully in-house to fully outsourced and hybrid models of everything in between

The maturity model provides an indication of the types of technology and capability required at level. As organisations progress through the maturity levels, the investment in more sophisticated technology and additional expertise delivers increased productivity improvements and cost savings.

Capability and benefits

Level 4 — Niche uses of drones that require specialist date capture and processing. Additional payloads such as LiDAR or thermal cameras.

Level 3 — Post processing of photographs and video to produce 2D and 3D photogrammetry outputs.

Level 2 — Aerial photographs and video are utilised within a business process such as surveying and inspections.

Level 1 — Drones are used as a communications tool to capture photographs and video from a different perspective.

Level 0 — Drones are not used by the organisation.

Foundations

Commissioning approach

Business type

Policy and strategy

Figure 1

Adoption of drones in local government

At the time of publication there are currently 25 local authorities (6%) across the UK that have been granted CAA Permission for Commercial Operation of drones. This suggests that local government is in the early stages of the innovation lifecycle, with innovators and early adopters exploring the benefits that can be derived from drone technology.

As a comparison, other countries have a much higher number of in-house drone services within local government. For example, based upon research published by the New Zealand Association of Local Government Information Management (ALGIM) in 2018, 78% of local authorities in New Zealand owned at least one drone.

To obtain a better insight into the current policy and strategy relating to drones and the use of drone technology, a freedom of information (FOI) request was sent to all UK local authorities.

The FOI asked the following questions:

> Does the Council have a policy and/or strategy to benefit from drone/UAV based services?

> Please can you confirm the name and role of the lead officer with responsibility for policy and strategy relating to the Council's use of drones/UAVs?

> Has the Council ever procured any external drone/UAV services?

> If so, please can you confirm the scope of the services and details of the 3rd parties who provided the services?

Responses to the FOI request amounted to 348. The results are analysed in this section of the report.

Analysis of FOI responses

Question 1: Does the Council have a policy and/or strategy to benefit from drone/UAV based services

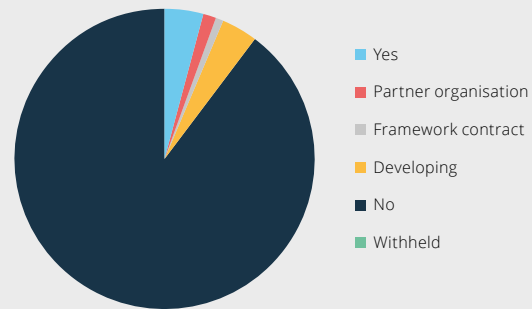**Policy and strategy to benefit from drone**

Figure 2

Key to figure 2

> Yes – there is a policy and/or strategy in place

> Partner organisation – a partner organisation has a policy and/or strategy in place that the local authority utilises. This is either a Fire and Rescue Service or a Housing Association

> Framework contract – there is a framework contract in place to access drone technology services

> Developing – the local authority is in the process of developing a policy and/or strategy

> No – there isn't a policy and/or strategy in place

> Withheld – the information was withheld in the FOI response

Local government is in the early stages of adopting drone technology and many councils are in the initial phase of understanding the capabilities of drones and how it can be used within the organisation. This is reflected in the fact that the majority of councils don't currently have a policy and/or strategy to benefit from drone technology. It is encouraging that 13 authorities stated they are in the process of developing a policy and/or strategy.

In response to the question on policy, there are a number of common themes that emerged:
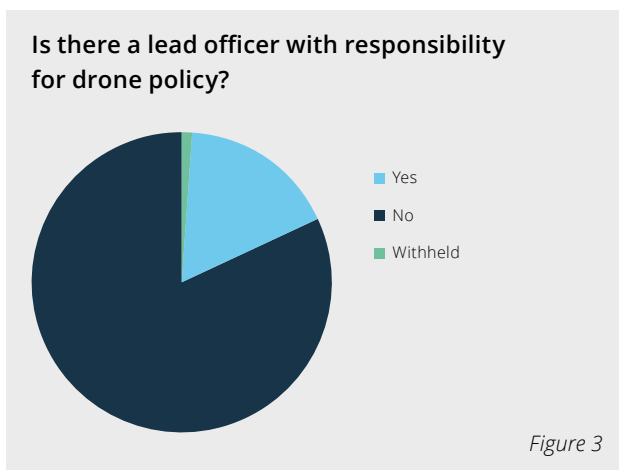
1. Where there is drone policy and/or strategy, in most cases it had been developed by the directorate using drones and specifically focused on its particular requirements rather than taking a perspective across the entire authority

2. A considerable number of authorities responded stating that whilst there wasn't a policy and/or strategy to benefit from the use of drone services, there was a policy for the general public use of drones on authority owned land. Councils have tended to adopt a blanket ban approach to the use of drones on council owned land

3. Many authorities referenced their existing CCTV policy or plans to incorporate drones within the existing CCTV policy which suggests a limited vision for the potential use of drone technology within the organisation

As authorities continue to gain a greater understanding of the capabilities and benefits of drones, it is anticipated that there will be an increase in the number of authorities that put in place a dedicated policy and strategy to benefit from drone technology. Policy and strategy relating to drones should also encompass and reference wider aspects of policy and legislation such as data privacy, health and safety and insurance.

There is an opportunity to develop and to share best practice guidelines for drone policy and strategy drawing upon the knowledge of industry experts and the experiences of the early adopters of drones in local government. To maximise the benefits of drone technology, we would recommend that authorities implement a policy and strategy that promotes and facilitates:

1. Safe recreational use of drones

2. Growth of the commercial drone sector

3. Cost savings and productivity improvements within the authority

Question 2: Please can you confirm the name and role of the lead officer with responsibility for policy and strategy relating to the Council's use of drones/UAVs?

Is there a lead officer with responsibility for drone policy?

- Yes
- No
- Withheld

Figure 3

The responses to this question are consistent with the responses to Question 1. If there isn't a policy and/or strategy in place, councils haven't had the need to identify an officer with lead responsibility for drones within the organisation.

Where there is a lead officer identified, the range of job titles and the directorate where they work is diverse. The most common roles being associated with communications, built environment or policy and governance. In most circumstances, it would appear that the lead role has been adopted by an officer engaged in an initial drone project.

For authorities that have been granted CAA approval for commercial drone operations, there is a CAA defined role referred to as the "Accountable Manager". The Accountable Manager is responsible for all policies and procedures documented in the CAA approved Operations Manual that defines how the drone operation will be managed.

Question 4: Has the Council ever procured any external drone/UAV services?

Commisioned 3rd party drone services

- Yes
- No
- Withheld
- Not held

Figure 4
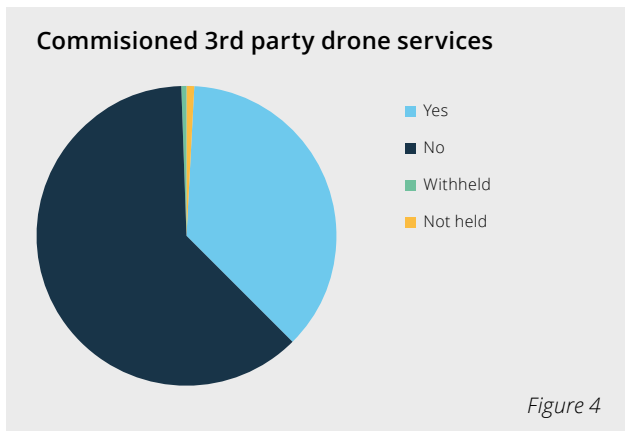
Question 4: If so, please can you confirm the scope of the services and details of the 3rd parties who provided the services?

Out of the 348 responses, 127 authorities (36%) have commissioned drone services from external providers. The depth of responses to this question ranged from one-word answers through to detailed statements of work. Based upon the answers, it has been possible to group the types of services commissioned into the following high-level categories:
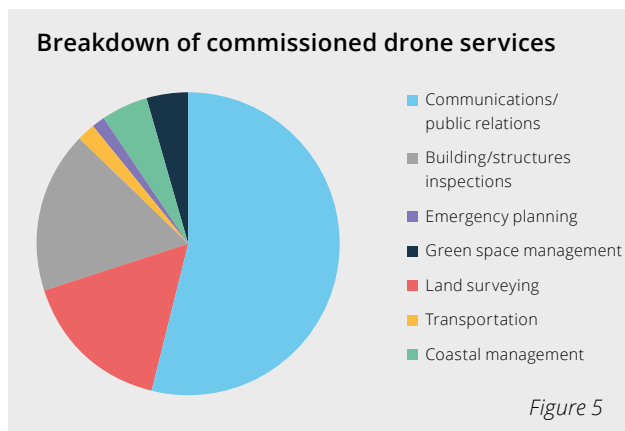
- Communications/public relations – capturing aerial photographs and video for use in print or online communications or promotional material. Examples of this include showcasing regeneration projects and recording one off commemorative events

- Land surveying – this ranges from using raw image and video capture to gain a better perspective of sites through to the use of sophisticated photogrammetry software to stitch together hundreds of images to produce a single high-quality image known as an orthomosaic. Examples of this include surveying of potential development sites and cemeteries

- Building/structures inspections – providing evidence for a known maintenance issue or as part of a planned building condition survey. The aerial footage has been used to provide additional information

during tender processes to enable more accurate pricing of bids. Examples of this include thermal surveys of roof structures and bridge inspections

- Transportation - capturing aerial photographs and video to support different aspects of transportation planning and management. Examples of this include validating the sequencing of newly installed traffic lights and monitoring the progress of road widening schemes

- Emergency planning – capturing aerial photographs and video to assess potential or arising emergencies in the district. An example of this is monitoring areas that have been subject to flooding

- Coastal management - capturing aerial photographs and video to monitor the progress of coastal erosion. Using photogrammetry software, the images can be stitched together to create a detailed orthomosaic enabling highly accurate rates of erosion to be calculated. Drones have also been used to assess the severity and impact of coastal landslides.

- Greenspace management - capturing aerial photographs and video to prioritise maintenance of parks and open spaces. Drones have also been used for monitoring of habitat and wildlife in locations that would otherwise be difficult and dangerous to access

- Enforcement – collecting evidence to assist with enforcement action. This included assessing damage to a site caused by travellers and aerial photographs of a property to be used as evidence in a court action

Figure 5 shows a breakdown by category of the types of services commissioned from external drone operators. More than 50% of the services commissioned are for photography and video to enhance internal and external communication. Based upon the drone use maturity model, this would be considered the entry level use of drones and is the most common way for councils to take the first step to explore the potential benefits of using drone technology.

Councils can derive greater benefits from drones by moving beyond just using them for aerial photographs and video footage.

Breakdown of commissioned drone services

- Communications/ public relations
- Building/structures inspections
- Emergency planning
- Green space management
- Land surveying
- Transportation
- Coastal management

Figure 5

The market for drone services is still in its infancy with approximately 5000 commercial operators currently registered with the CAA. As with any new type of market experiencing rapid growth, there is considerable fragmentation and varying quality of skills and experience. Whilst a small number of local authorities have implemented frameworks for procuring drone services, most commissioning appears to be competitive spot purchasing to meet the needs of a specific project requirement.

There are a number of considerations when commissioning drone services to ensure that the provider is safe and complies with the relevant regulations. It is important to confirm the drone operator has been granted CAA Permission for Commercial Operations (PfCO) and carries the required level of public liability insurance.

Additional observations

1. Some authorities reported that members of staff were using their own drones to deliver "not for profit" drone services to the council. These officers did not have the CAA Permission for Commercial Operations (PfCO) and were operating under the cover of recreational public liability insurance. Whilst complete details of these scenarios haven't been made available, it is highly likely that this type of operation would be illegal. Without a PfCO drones

cannot be operated within 150m of structures, roads or people. In addition, the recreational public liability insurance would preclude this type of flying and would therefore not be valid if an incident occurred.

2. A number of authorities provided copies or links to polices relating to the use of drones for members of the public. The regulation and legislation for drones is rapidly evolving with the latest set of significant changes taking effect from March 2019. The majority of polices had not kept up to date with the changes in legislation and some were as old as 2015.

3. In response to question 1 regarding the council's strategy and policy to benefit from drones, one council responded that they were a no drone zone due to the proximity of a neighbouring airport. Whilst the legislation introduced in March 2019 has made it illegal to fly recreationally within the proximity of airfields, it is possible with the right permissions in place for a CAA approved commercial operator to fly drones. Local authorities within the proximity of airfields can still benefit from drones with additional planning to ensure safe operations.

4. The majority of councils that have implemented policies for the use of drones by members of the public. Many include a blanket ban on take-off and landing from authority owned land and also banned overflying of council owned property and land. As the landowner, the council can refuse permission for drones to take off and land on their land. However, the CAA is responsible for controlling airspace and councils cannot prevent drones from overflying their property and land if the remote pilots are complying with CAA regulations.

5. Banning take-off and landing of drones from council owned land including parks and open spaces severely restricts the places were recreational drone pilots can fly. This type of blanket ban is likely to result in illegal flying in dangerous locations and potentially hinder the innovation that could be derived through drone technology. Is there a way for local authorities to implement policies that enable drones and wider public to co-exist safely?

Local authorities with CAA approval

The CAA publish a register[1] of all organisations that have been granted Permission for Commercial Operations (PfCO). At the time of writing the report there are 25 local authorities registered as CAA approved commercial operators.

Figure 6 shows that the greatest adoption of drones is within district and unitary authorities. Figure 7 provides a geographical view of local authorities with an in-house drone operation:

1. Aberdeenshire Council

2. Barnsley Metropolitan Borough Council

3. Broxbourne Borough Council

4. Bournemouth Borough Council

5. Brent London Borough Council

6. Dover District Council

7. Durham County Council

8. Epping Forest District Council

9. Essex County Council

10. Hampshire County Council

11. Harlow Council

12. Havant Borough Council

13. Neath Port Talbot County Borough Council

14. North West Leicestershire District Council

15. Newry Mourne And Down District Council

16. Rhondda Cynon Taf County Borough Council

17. Sandwell Metropolitan Borough Council

18. South Gloucestershire Council

19. Sunderland City Council

20. Telford And Wrekin Council

21. Tendring District Council

22. Thurrock Council

23. Torridge District Council

24. Vale of Glamorgan Council

25. Wealden District Council

As local authorities continue to gain a greater understanding of the capabilities and benefits from implementing drone technology, it is likely there will be a significant increase in the number of local authorities that develop a strategy and business case for establishing an in-house drone service.

Breakdown of CAA approved local authorities
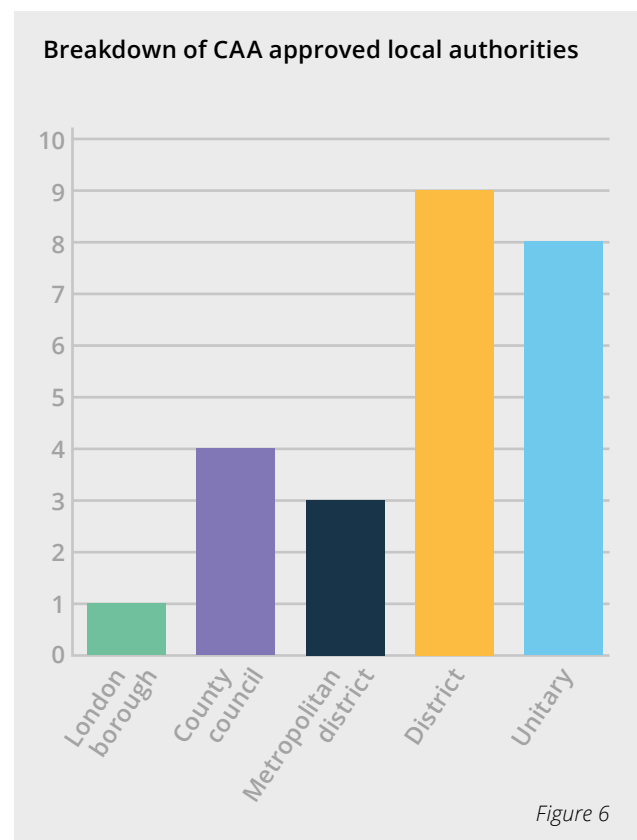
Figure 6

Figure 7

Experiences from the early adopters

To develop a more in depth understanding of the use of drones within these early adopters, we have conducted stakeholder interviews with officers responsible for establishing and running the service.

The research has identified three drivers as the initial reason for embarking on the journey of obtaining the CAA Permission for Commercial Operations:

1. Defined requirement – a project or service had a specific problem that they were trying to address and establishing an in-house drone service was the most cost-effective way to meet the requirement

2. Communications and public relations – in a world of increasing dependence on social media, local authorities need a way to maintain an equal presence to promote products and services. An in-house drone service added to the toolset and capability for communications and public relations teams

3. Research potential opportunities – there was an expectation that drones could deliver benefits to the organisation and the local authority obtained the CAA approval to evaluate the potential uses of drones

Technology

Drones

DJI is the market leading supplier of drones with a share estimated at over 75% of all drones bought around the world. The next two most dominant players in the market are Parrot and Yuneec.

All CAA approved local authorities that contributed to the research had purchased DJI drones. The models of drones spanned the DJI range and included:

› Phantom 3 Pro

› Phantom 4 Pro+

› Mavic Pro

› Mavic Pro Dual

› Mavic Air

› Matrice 210

Whilst the base technology in all drones is similar, each model has different features and capability. The requirements should be understood and clearly defined before purchasing a drone to ensure it has the necessary features to meet the requirements. Figure 8 details examples of specific purchasing decision to meet the defined requirements.

Phantom 4 Pro+

The controller for this drone has a built-in screen meaning there isn't the need to purchase a separate Apple iPad or Android tablet for controlling the drone. This was a requirement to simplify the ongoing IT support and maintenance for the drone technology.

Mavic Air

This drone was purchased to carry out building inspections of council housing stock. As the drone would be flying in residential areas, minimising noise was a key consideration. The Mavic Air is the lightest DJI drone weighing 430g which enables it to operate considerably quieter than the larger drones.

The DJI Matrice 210

This is an expensive and sophisticated drone capable of carrying a variety of payloads such as thermal cameras and LiDAR. The Matrice 210 is also one of small number of drones that has an upward facing camera. The authority intends to use the drone for inspecting bridges and structures and the upward facing camera was an essential requirement.

Figure 8

Software

DJI provide apps for its range of drones free of charge via Google Play and Apple App Store. The apps integrate with the handheld controller units to enable the configuration of the drone and camera settings and also manage flight parameters.

There are a number of third-party apps available that provide sophisticated flight planning tools to programme automated flights. Theses apps are normally used when accurate and consistent image capture is required by photogrammetry projects to enable the production of 2D and 3D models.

When drones are used for photogrammetry projects, hundreds or thousands of images will be captured depending on the size of the area being surveyed. There are specialist photogrammetry

solutions for processing large quantities of images to produce 2D and 3D models. These solutions can be run locally on high specification computers or the processing can be managed in the cloud.

One local authority has invested in the market leading photogrammetry solution Pix4D and are in the early stages of understanding the capabilities and benefits it can deliver.

Two authorities are investigating the capabilities of Autocad Recap for photogrammetry projects. This is part of the suite of Autodesk products already owned by the council.

Extending the use of drones beyond basic photograph and video capture requires further investment in tools and training or partnerships with organisations that can process the data and produce photogrammetry outputs.

Case Studies

Given the breadth of services provided by local authorities, the potential use of drones is extensive.

This section contains a sample of case studies from local authorities that have been granted CAA Permission for Commercial Operations.

Case study 01: Light pollution

The local authority was embarking on a programme to upgrade street lighting and upgrading from incandescent to LED bulbs. One of the objectives of the programme was to significantly reduce light pollution. The project required the capture of before and after images to demonstrate the reduction. Drones were identified as the most effective way of collecting the evidence. The incandescent lights were overflown by the drone and then the flight repeated once the new LED streetlights had been installed. The before and after images were then compared to evidence the reduction in light pollution.

The authority obtained quotes from 3rd party drone operators. Based upon the quotes received, the local authority calculated that it would be more cost effective to purchase a drone and train members of staff to fly and capture the required evidence. The local authority successfully completed the project and now has an asset and trained staff that are being actively deployed on other projects to realise cost savings. The cost of establishing the in-house operation was 20% of the cost of procuring an external drone operator for the project.

Case study 02: Enforcement

The Environmental Protection team identified the opportunity to use drones to collect evidence for enforcement that they otherwise would be able to obtain because of access restrictions. The ability to use drones to collect the evidence also reduced the risk to officers by eliminating the need to physically go onto sites in potentially confrontational situation. Due to the nature of the cases and the ongoing enquires, the specific details of the cases couldn't be disclosed.

Case study 03: Traffic analysis

The local authority had identified an opportunity to apply for Department for Transport funding to carry out modifications to a road junction to alleviate congestion. A key component of the application was evidencing the severity of the existing congestion. Alongside traditional traffic count data, drone footage provided compelling visual evidence of the severity of the congestion. The council believed that the drone footage was instrumental in securing the multi-million pound funding.

Case study 04: Roof repairs

The local authority maintains a housing stock of over 3000 properties including many buildings over two stories in height. Inspections of these buildings frequently require either scaffolding or cherry pickers to be hired. A recently reburnished roof developed issues which were covered under warranty. The contractor required the local authority to evidence the issues for the warranty claim which would traditionally require scaffolding.

A member of staff who was a hobbyist drone pilot suggested drones would be a more cost effective and safer way of carry out these types of inspections. A business case was developed and a project initiated to establish the in-house drone service. More than 30 inspections have subsequently been carried out using drones including a school which would have cost thousands of pounds if scaffolding had been required. This one use alone covered the investment in setting up the drone service.

Case study 05: Historic features

During the very hot and dry summer of 2018, residents reported sightings of unusual shapes showing through the scorched grass and vegetation in a council park. Whilst visible from the ground, overflying a drone to capture images provided a much better perspective and greater clarity. The shapes were identified as a Victorian path and a concrete ring that had been used during WW2 to anchor a barrage balloon. Using the drone enabled the historic sites to be captured and recorded.

Case study 06: Regeneration programmes

The local authority has commissioned multiple large-scale regeneration programmes which are being managed and delivered by external contractors. The number and scale of the sites means it is difficult and time consuming to monitor development progress. Drones are used on a regular basis to overfly the regeneration areas and record status of the development at that point in time.

The images can be displayed on a timeline to manage progress and are also used to create communications material promoting the regeneration programmes.

"We are also working with manufacturers to introduce new technologies which will help in making sure drones are used in accordance with the law. This includes geo-fencing, where a drone can be automatically prevented from flying within protected areas through in-built software, and electronic conspicuity, as laid out in the Government's Aviation Strategy Green Paper, which will allow the automatic identification of all airspace users including drones."

Baroness Sugg, Aviation Minister
Taking flight: the future of drones in the UK - Government Response

Lessons learnt

Planning the Project

There is a big difference between recreational use of drones and running a CAA approved commercial operation. One authority commented that they "didn't know what they didn't know", another described frustration that everything had to be worked out from first principles using Google. Establishing a successful drone service requires planning and resource allocation like any other IT enabled business change project. In particular, councils reported that creating the Operations Manual to submit to the CAA took longer than originally anticipated. Using external support can accelerate timescales and facilitate knowledge transfer.

Insurance

Commercial use of drones requires that the operator to have appropriate public liability insurance in place for each flight. Drone insurance is required to comply with EC 785/2004. It is unlikely that the council's existing public liability insurance will be EC 785/2004 compliant and, therefore, additional insurance for drone operations will be required. Some councils sourced the insurance through their existing broker, but reported lengthy negotiations due to the specialist nature of the insurance. Other councils approached niche providers who can arrange immediate cover via online portals or apps. Insurance cover can be unlimited or arranged on demand with a pay as you fly policy.

Volume of Data

One of the key benefits of drones is the quality of the photographs and videos that they are capable of capturing. To achieve this quality, the cameras produce large data files to store the high-resolution images or video. Typical examples of file sizes are:

> 1 minute of 30 frames per second 4k video – 500Mb

> 25mb for a photograph in RAW format – 25Mb

Drones can quickly generate large volumes of data and videos will create large individual files. Data storage and archiving requirements need to be considered so that management of large files doesn't impact other network users. Also, high end desktops with specialist multimedia production tools will be required for manipulating larger files.

It is recommended to determine the quality of the outputs required and then use appropriate formats to minimise data volumes without compromising on quality.

Privacy

Councils carried out privacy impact assessments to understand the potential privacy risks associated with operating drones with particular concerns about collateral intrusion. Commercial drone operations are conducted within very strict CAA regulations which specify separation distances limiting how close the drone can fly to people, buildings and objects. As well ensuring safe operations, the separation distances effectively manage privacy by ensuring drones remain 50m away from people or buildings. Authorities have also implemented additional procedures to minimise data such as ensuring the memory card is erased before any flight so there is no historic data stored in the event of the drone being lost.

Public Perception

The common theme is that operating drones attracts a lot of attention from the public. Commercial operators are required to wear appropriate personal protective equipment which includes a high visibility jacket and so tend to attract attention especially if the high visibility jacket is branded. The feedback about public perception from the authorities delivering an in-house drone operation has been divided quite evenly. Half have stated that the public have been interested and engaged in the positive use of drones. Whilst the other half has been met with public concerns about privacy and suspicion that the drones are being used for surveillance activities. Local authorities are well placed to take a leading role in promoting safe and responsible use of drones and share examples of where drones have been used to deliver positive outcomes and benefits.

Managing Demand

As awareness of the in-house drone capability spreads by word of mouth or through active promotion, councils reported significant interest and demand for the service. None of the councils have created a dedicated drone team with additional resource capacity. The drone services are being delivered within the existing headcount and demand prioritised alongside existing workloads. Councils are exploring creative ways to increase capacity including apprenticeships for drone pilots.

Managing Compliance

Operating drones on a commercial basis requires operating procedures to be followed and logs to be maintained. These are defined in the Operations Manual submitted to the CAA as part of the process of being granted Permission for Commercial Operations (PfCO). Councils have implemented robust processes to ensure effective oversight including management sign off for maintenance and flight logs and internal audit reviews.

How can local government benefit from drones?

We are at the very early stages of using drones within local government with significant untapped potential to deliver cost savings and productivity improvements through the effective use of drone technology.

This final section outlines a structured approach to help councils develop a strategy and plan to maximise the benefit of drones.

Step 1: Understand the Potential

To maximise the benefits of drone technology requires councils to understand the full potential beyond using drones for videos and photography. We would recommend that councils nominate a lead responsible officer for drones and develop a strategy to enable the council to maximise the benefits of drone technology.

We intend to publish a follow-on paper collating more in depth case studies from councils within the UK and further afield and also experiences from other relevant sectors such as utilities.

Step 2: Discover

Implementing drones is the same as any other IT enabled business change project and requires planning and preparation for successful delivery. Having gained an understanding of the potential, we would then recommend a structured approach for implementing drones within the council which included:

› Governance – establishing project governance with clearly defined roles and responsibilities

› Strategy – the approach for integrating drone operations into the business

› Policy – new policies as well as changes to existing policies such as health and safety, data privacy and insurance liability

› Operating model – drone operations can range from fully in-house to fully outsourced and hybrid models of everything in between. There may also opportunities to collaborate with neighbouring authorities to develop and deploy a shared drone service

› Business case - a well-balanced business case presenting the uses, costs, benefits, operating model and how the regulatory and safety risks associated with drones will be mitigated

› Deployment plan – a project plan for all the activities and deliverables that need to be completed ready for the first flight

Step 3: Validate

We recommend piloting a couple of uses to start with to ensure that policies and procedures work in the real world. Whilst piloting, it is beneficial to partner with an external provider as this facilitates knowledge transfer

and enables the council to focus on getting the business change right rather than worrying about obtaining in-house Permission for Commercial Operations (PfCO). An external provider would conduct the planning, risk assessments and piloting of the initial flights.

Most importantly, these initial flights should be used to validate that the images or video captured can be processed to deliver the outputs and reports required by the business. This provides an opportunity to evaluate the different data processing solutions before committing to a platform or outsourced data processing provider.

Step 4: Scale

Scaling drone operations across directorates or introducing multiple uses requires coordination and project management. The following are key considerations when planning to scale operations:

› Governance – ensuring accountability and compliance with the external regulations and in-house policies

› Technology – selecting the right drones and software solutions to deliver the required outputs for the business

› Procurement – sourcing the right products and finding the right partners to work with

› Training – flight training as well as any industry or technology specific requirements

› Operational procedures – required to manage safe flights and demonstrate compliance to the CAA

› Change management - create enthusiasm and capitalise on any innovation that may lead to other potential uses

› Benefits realisation – establish an approach to demonstrating the return on investment delivered by the drone operations

Conclusions

The introduction of drone services, whilst quick and cost-effective must still be carried out in a structured way. Local authorities need to consider the following questions to help develop a strategy and plan:

1. Is there a lead officer with responsibility for drone technology policy, risk and strategy?

2. Is there a policy and strategy to enable the organisation to benefit from using drone technology?

3. Has the organisation identified opportunities to deliver cost savings and productivity improvements using drone technology?

4. Has the organisation considered any privacy and other risks and how these are best managed?

5. Does the organisation have the in-house expertise and capacity to accelerate the adoption of drone technology?

6. Does the organisation have a commissioning model for drone technology products and services?

A word from the Socitm President

Given the innovation and imagination of our public sector digital leaders, the UK is at the forefront when it comes to drones.

We know that they offer huge potential to the public sector, but we also need to balance the benefits of this emerging technology with concerns about data protection, aviation safety and diminishing budgets.

As demonstrated by case studies in this report, drones are already being used to great effect. Our emergency and search and rescue services use them to help keep people safe and they've been used for purposes including traffic analysis and assessing roof repair requirements.

Drones have the potential to drive more efficient ways of working, to monitor environmental change, to deliver medicines, and to assist infrastructure inspections and construction.

However, as this report shows, we need to research thoroughly how we use them best and – more importantly – how we remain focussed on improving service delivery in the face of public concern and scepticism.

Sandra Taylor, Socitm President

About Agilio

We are passionate about the opportunity for drones to transform the way organisations do business. We believe we've only just begun to see their potential. We work with clients in the public and private sector from large corporates to small businesses all seeking a competitive advantage by using drone technology within their organisation.

We are committed to help clients identify opportunities, implement them effectively and realise the benefits of using drones through our range of consulting and flying services. Agilio has been granted the CAA Permission for Commercial Operations (PfCO).

We also have more than 25 years' management and IT consulting experience working for clients in the public and private sectors. We know how to manage and deliver successful projects that embed the use of drone technology within your business. Whether you are exploring ideas or looking to scale up drone operations, we can provide expert advice and support.

www.agilio.co.uk

About ARPAS

ARPAS-UK is the Association of Remotely Piloted Aircraft Systems. It is a not for profit trade association and professional body which supports and acts on behalf of the remotely piloted aircraft (RPAS) community, from start-up businesses to larger established operations. ARPAS-UK members continue to break new ground in markets where RPAS (sometimes referred to as UAVs or drones) are delivering significant benefits.

On behalf of its members, ARPAS-UK works closely with industry regulators, in particular CAA (Civil Aviation Authority), as well as UK Government departments to influence and ensure that the regulatory framework for the safe and professional operation of remotely piloted aircraft is fit for purpose and encourages best practice.

The Association also works with other key stakeholders in the development of national and international RPAS strategies and standards, to the benefit of its members.

The Association works in the public interest, and advocates professionalism within its membership through compliance with an agreed Code of Conduct and the holding of appropriate permissions. The Association takes progressive stances on national issues to embed the RPAS profession in all end-user industries, to enable it to continue to grow in reputation and influence.

www.arpas.uk

About this report

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Have your say

We always welcome feedback and discussion on the contents of our publications.

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