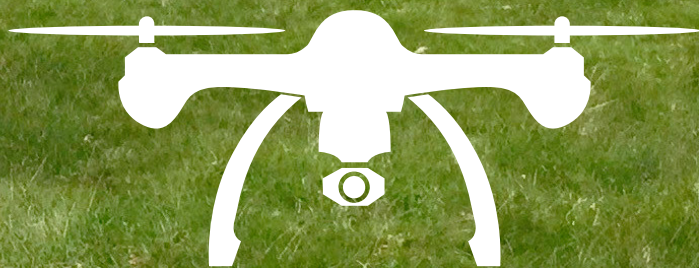




Drones in policing





About us

About CoPaCC

CoPaCC was established shortly after the first PCC elections in November 2012 to monitor policing governance in England and Wales. CoPaCC now has a portfolio of services, working together to help organisations meet their governance and management challenges and opportunities.

These include:

- **Policy and delivery** CoPaCC's national overview across policing, criminal justice and blue light provides us with an unrivalled insight into what works
- **Communications and social media** CoPaCC publishes PolicingInsight.com, the UK's foremost online magazine focusing on governance, management and politics in policing and criminal justice
- **Information and insight** CoPaCC produces thematic reports and expert events covering key issues of policy and practice in the policing and criminal justice sectors
- **Monitoring standards** CoPaCC monitors standards in policing governance, assessing OPCC performance and awarding quality marks in key areas of accountability

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Introduction

Drones in policing

Forces are still in the early stages of investigating how best to deploy and use drones, yet even now it is obvious that the potential of this technology is huge, writes **Bernard Rix**



Bernard Rix
Chief Executive of CoPaCC

Since its establishment in late 2012, CoPaCC has published a number of Thematic reports focusing on key topics in policing. Amongst our most recent Thematics, we have examined the work of Police and Crime Commissioners (PCCs); provided early insight on the likely implications of Brexit for policing and security; and taken a detailed look at police and fire collaboration, with a particular focus on the provision in the Policing and Crime Act 2017 for PCCs taking on fire governance.

The latest CoPaCC Thematic takes a detailed look at the use of drones in the UK for policing. Drones are still in the early stages of adoption with many forces only trialling one or two off-the-shelf drones. However, the potential for this new addition to the police toolbox is huge. Despite the current technical limitations, there is already a long list of policing applications including scenes of crime, missing persons, public order and rural crime to name a few.

In May 2017, we asked UK police forces via a Freedom of Information (FoI) request, whether they used drones, the number in use, how they are used and what costs have been incurred. Where the FoI response was declined or the response was incomplete, we supplemented the FoI responses with desk research on police force websites and via media articles. The resulting data is an interesting insight into overt use of drones by UK police forces who understandably declined to respond with data on covert use.

In addition to an analysis of the survey information, the report also includes an interview with NPCC lead on drones ACC Steve Barry discussing the national strategy and we speak to NPAS Assistant Operations Director Russell Woolford about what role the organisation is likely to play in the development of drones across the UK policing landscape.

The report provides further insight with articles looking at the training of staff and the management of compliance with stringent safety and operational

'The potential for this new addition to the police toolbox is huge'

standards. Case studies looking at drone operations by five UK forces including the Devon and Cornwall/ Dorset and West Mercia/Warwickshire partnerships show the varied approaches and reasons for drone operations being trialled.

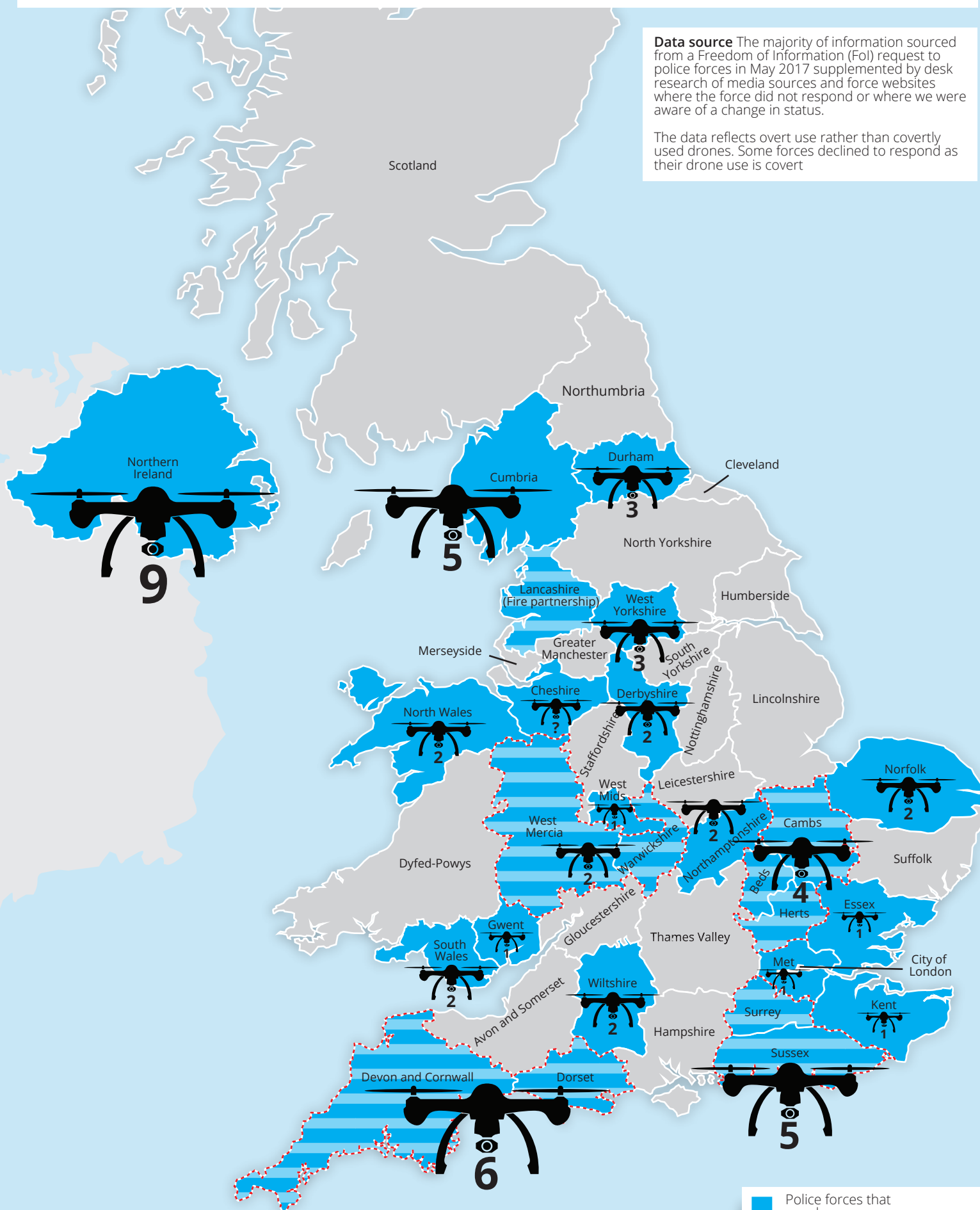
CoPaCC Associate, Policing Insight expert contributor and former ACC at GMP Ian Wiggett provides independent analysis of the potential for drones in policing and highlighting some of the challenges.❖

Bernard Rix is CoPaCC's Chief Executive and Publisher of Policing Insight. Prior to establishing CoPaCC in 2012, he worked for over 20 years as a management consultant. During this time, he led over fifty high profile and sensitive assignments, providing specialist independent advice to police forces, criminal justice agencies, government departments and the private sector across the UK, Europe and Middle East.

POLICE DRONE USE IN THE UNITED KINGDOM

Data source The majority of information sourced from a Freedom of Information (Fol) request to police forces in May 2017 supplemented by desk research of media sources and force websites where the force did not respond or where we were aware of a change in status.

The data reflects overt use rather than covertly used drones. Some forces declined to respond as their drone use is covert



Number indicates quantity of drones available to the force

- Police forces that use drones
- Police forces in a partnership to share drones use and costs
- Police force that do not use drones, did not respond or declined to respond to the Fol



Survey analysis

Grounded: Are forces making the best use of their drones?

Many forces are just beginning to explore the potential and possibilities of police drone operations. **Tina Orr-Munro** surveys the extent of current capabilities and investigates how they are being deployed



Tina Orr-Munro
Associate editor, Policing Insight

Unmanned aerial vehicles (UAV) or drones have been part of the policing landscape for some time now. Off-the-shelf drones can be bought for less than £1,000 which, given the cost of deploying a police helicopter, makes them a highly attractive proposition for many police forces. Whilst

'While some forces regularly deploy their drone, others have barely used the device'

they are no replacement for helicopters, they are able to fly at lower levels and access difficult areas off-limits to helicopters, making them an ideal, cost-effective tool for a range of police functions. To try and gauge the current situation regarding the overt use of drone technology in England and Wales, *Policing Insight* submitted a request under the Freedom of Information Act 2000. We then supplemented this information with data gathered from other media sources, including forces' own websites.

Overall, the results reveal many forces are using drones in a wide variety of, and often innovative, ways. Drones are a much cheaper alternative

to helicopters, especially as forces are opting to buy off-the-shelf varieties, but there are still cost implications. Our results show while costs are low, they vary considerably from force to force, depending on the device and quantity purchased. There is also considerable variation in the cost of training pilots even though they receive the same training. However, the most surprising conclusion to come from the data is that while some forces regularly deploy their drone, others have barely used the device. The feedback is that many forces are just beginning their journey into drone usage and it is a case of 'watch this space'.

Usage

Our questions covered the following areas:

- Number of drones a force has

25 UK police forces using overt drones

- The type of drone procured
- The number of times it has been deployed
- The circumstances under which it has been deployed
- The number of pilots trained to use the drone
- The cost of training the pilots
- The total cost of acquiring the drones

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Survey analysis

Continued from previous page ➡

Thirty-seven of the 43 forces in England and Wales responded to our FOI request. It should be noted their answers refer to the overt use of drones only, not their covert use. Understandably, forces neither confirmed nor denied their covert use of drones.

Nine of the thirty-seven forces declined to answer any of our questions for reasons of national security. However, twenty-one forces responded by confirming they are using drones for overt use at the very least. Additional research reveals a further three forces, including Sussex and Surrey, who are leading on drones, also use UAVs.

PSNI, an early adopter of drones, brings the total up to 25 forces in the UK who are using drones for non-covert operations. Five forces told us they were not using them at all, including two metropolitan forces.

Of these five forces, one force told us they had stopped using their drone after it developed a fault last year. Police Scotland also told us they don't currently own any drones and had no plans to purchase any.

Collaboration

From what they tell us, a number of forces are

'One force deployed a drone just five times in 18 months... Given its £6,000 price tag, this equates to £1,200 per flight'

working in partnership with each other. This includes Bedfordshire, Cambridgeshire and Hertfordshire. Devon and Cornwall and Dorset are also working in partnership, as are Norfolk and Suffolk.

Northumbria use partner's drones, but did not identify who those partners are. In Lancashire, following a £10,000 contribution from POCA funds towards Lancashire's Fire and Rescue Service, the Constabulary is able to call on the support of its drone.

Quantity

Twenty-five forces are using UAVs for overt operations. Between them they operate a total 54 drones, although this is a fast-moving picture with ongoing procurement and so likely to be an underestimate of the true figure.

Outside of the English and Welsh forces, PSNI has the largest fleet of nine drones, according to a 2014 FOI. Unsurprisingly, rural forces appear to be making the most of the technology. Cumbria has five drones whilst Devon and Cornwall Police which has been at the forefront of trialling the drones in

9 The most drones used by a police force

partnership with Dorset Police have now gone to six drones. However, most forces had just one or two drones.

A range of commercial drones are in use. We identified five different makes. The most popular is the DJI range which includes the Inspire 1, Phantom 4 and S1000 range and is used by six forces. Other makes and models include Veho Muvi, the 3dr Solo, the Aeon Sky ranger and the Yuneec Tornado.

The amount of money forces spent on drones varies, depending on the make. Not all forces were able to break down the costs. One force said it was part of the force's budget and had not been separately costed.

However, on average, a UAV costs a force around £2,500 per unit although one force appeared to spend £4,000 on one drone whereas another spent just £1,500 each on its two drones. At £320,000, Surrey and Sussex, the lead partners on police drones, have spent the most on developing their drone capability in England and Wales. However, by 2014, PSNI had already spent £1.5m.

Elsewhere, forces have spent between £15,099 and £27,000 on equipment and training their pilots. Once forces have bought in the kit, their costs appear to plummet.

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Survey analysis

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Deployment

How often a force deployed its drone or drones varied considerably from force to force from once every few months to up to eight times in a three-week period. One force deployed a drone just five times in 18 months even though it has three operational drones. Given its overall £6,000 price tag, this equates to £1,200 per flight. At the other end of the scale, another force which owns one drone has deployed it 50 times, costing an average of £172 per flight.

Overall, the circumstances the drones are deployed under are similar from force to force. Most forces use them to look for missing persons and vulnerable people. They are also used for aerial crime scene photography including damage, theft, wildlife, sexual offences, road traffic collisions, poaching and missing persons. One force uses them to assist its operational contingency planning and reconnaissance of buildings or locations suspected of being used by criminal gangs. The same force uses them when the police helicopter is unavailable or unable to fly due to poor weather.

Another force uses drones to film demonstrations and public disorder, as well as festivals, sports events which are pre-planned and live image capture.

One force said it was using its UAV to foster community links "by engaging with them through the use of this new approach to conducting policing operations and promoting responsible use of UAVs".

Training

The number of pilots trained to fly a drone differ considerably from force to force. Some forces just have one or two pilots whereas other forces have many more. North Wales is planning to have 15 trained pilots. These will be a mix of police officers and staff who, when qualified, will hold a Civil Aviation

Authority licence. Bedfordshire and Cambridgeshire have 17 pilots between them. The make up of the pilot teams varies with one force training an officer and five specials to fly its drones.

£545 to £2,000
Range in cost paid by forces
to train a single operator

Pilots complete a CAA-approved course which licenses them to fly a UAV commercially. The cost of training a pilot, where forces responded, varies markedly from force to force. Fees ranged from £545 per person in one force to £1,750 per person in another. One force paid £2,000 for one individual to be trained as a pilot.

In conclusion, forces are ploughing their own field in terms of whether or not to introduce drones, the type of drone required and how often it is deployed as well as the associated costs. This could lead to inconsistencies between forces in terms of procurement and deployment. The National Police Chiefs Council says it's aware that forces are working on their own strategies on how best to deploy them based on threat and risk assessments in their area which is, as always, a decision for individual chiefs. However, at national level, the NPCC is working with the CAA and other agencies to understand what kind of support drones can provide and ensuring they are governed properly.

The Police Federation of England and Wales believes the drones are not a replacement for officers, a concern that has been raised in the past. However, they want to see a proper evaluation of the technology to ensure value for money. It is a valid point. Compared with helicopters, the savings using a drone are considerable, but given the few number of times some forces are using them and the variation in training costs, are they offering as much value as they could be? ❖

£64k
Cost of most
expensive
police drone



A national strategy

Gary Mason talks with National Police Chiefs' Council lead Steve Barry about current and future plans for drone use, the legislative to be overcome, and the problems surrounding governance



Gary Mason
Policing Insight contributor

To what extent are police forces in England and Wales using drones and are they becoming a reliable and efficient alternative to expensive helicopter deployment during routine search operations? If the answer to the last part of that question is yes, does the police service need a national pool of drones and drone expertise housed within the National Police Air Service (NPAS) based in West Yorkshire?

Sussex ACC Steve Barry, leads on Drones for the National Police Chiefs Council (NPCC). His role involves working with other agencies to formulate a national strategy on a more proactive use of drones in policing and deal with the growing threat posed by unlicensed use of drones by other parties.

He was been in the role for three years and the bulk of that time has been occupied with heading up a strategic group with key partners to discuss how they can deliver those twin goals.

Safe drone use

"What we are also very mindful of is that the government have been very keen to promote the public sector use of drones and to create a safe environment for the commercial use of drones," he says.

The strategic group has representatives from the Department for Transport, the Civil Aviation Authority (CAA) the Centre for the Protection of National Infrastructure (CPNI) the fire and ambulance services who both use drones, CAST – the Home Office science organisation - and key police forces such as the Met.

Police use of drones is still developing on a force by force basis and while ACC Barry's Strategic Group provides some useful guidelines this piecemeal approach is likely to continue for the foreseeable future. But he says he has "a good handle" on the number and type of drones being deployed

'The force was the first to use a drone operationally to patrol Gatwick Airport – a security role that is still carried out today'

operationally around the country because his own force, Sussex, was an early adopter of the technology and has taken a national lead.

The force was the first to use a drone operationally to patrol Gatwick Airport some years ago – a security role that has been effective he says and is still

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Strategy

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carried out today. He says that while drone use in the police service has grown quite slowly around half of all forces have either got drones and are using them or are actively considering procurement.

He says that despite the rapid commercialisation of drones for the consumer market a fully equipped police drone is still an expensive item costing around £50,000 which is why the take up of drones by individual forces has not been as fast as some commentators have predicted.

Most forces are using the drones for search operations or crime scene and road collision investigation. The latter is a newer area for drone use but has been really productive because when there is a major accident on a motorway there is huge pressure to re-open the road as quickly as possible. Drones can take aerial imagery of the crash scene and by combining this with highly detailed laser scans can produce very sophisticated maps that help inform both the crash investigators' and coroners' task.

Overburdened with equipment

There has also been a national trial of using drones for firearms operations but this exposed some limitations partly because the armed teams were trained to operate the drones themselves which overburdened them given the amount of equipment they already carry.

Firearms operations can be so fast moving that in some of the trials officers didn't have time to get the drones out of their vehicle. Sussex have currently lent one of their drones to the Metropolitan Police - who have more call outs than any other force for firearms use - and the operational possibilities will be assessed.

Sussex says its trials have also shown that drones can perform an invaluable role in siege scenarios giving siege commanders highly detailed video pictures of the inside of buildings, room layout and location of hostages and suspects.

Other learning around drones is that because of their limited range forces will need more than

one, particularly if the equipment fails. "I am not convinced that we are at the point yet where we can wholly rely on drones," says ACC Barry. "If I was in command of a really risky job my preference would be to have a helicopter. The need to have more than one drone also means they need to be cheaper."

He also says there is still a problem getting

'The Civil Aviation Authority requires all drone operators to have a nationally accredited training certification'

reliable downlink technology from drones to force control rooms but this is an ongoing issue which is being addressed.

Having gathered the knowledge from being an early adopter and with ACC Barry's strategic role with the NPCC, Sussex now runs a police operators' group nationally and tends to be tied in to each force which is already using a drone or is considering procuring one. "Some of the learning we share with forces is that you really need to be clear what purpose you are trying to achieve by using a drone and you need to tailor what you buy to exactly fulfill that need," he says.

"For example if you are going to use a drone for search operations - whether that be for people or evidence - you really need a drone that can be deployed 24 hours a day in all weathers. Most of the drones that people buy at the cheaper end of the market are not able to do this."

There are also training requirements and the Civil Aviation Authority requires all drone operators to have a nationally accredited training certification under their belts. Some forces are now starting to get their own NQE (national qualified entity) status in drones operation having trained their own staff and are able to share that knowledge with other forces.

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Strategy

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ACC Barry says one of his priorities is to try and get the National Police Air Service (NPAS) to take more responsibility for these type of issues as he says the service is a natural home for this kind of governance.

"They are best placed to co-ordinate training, some of the governance around use of drones, the technology, the protocols and the procurement issues," he says. To this end NPAS's strategic board are considering whether they would be willing or have the resources

'We deploy our drone to Beachy Head on a regular basis to try and identify whether there is a body that has gone over the cliff and alert the coast guard to help us recover it'

to do this. Currently, however, NPAS neither owns nor operates any drones of its own but ACC Barry does not think this is an insurmountable obstacle.

"On training for example, why couldn't NPAS be an NQE in its own right?" he says. "My personal view is that long term NPAS should have drones as well as part of a mixed capability of air resources. I think they are starting to ask themselves what functions that helicopters currently deliver could be delivered more cheaply through drones?"

Command structure

One of the obstacles to providing a national drone service regionally however is the structure of the organisation. NPAS has a small number of bases around the country that can provide helicopter coverage regionally and locally because of the range and speed of the aircraft.

The same would not be achievable with a national pool of drones so local procurement and deployment will still be necessary. ACC Barry cites

using drones to respond to regular reports of suicides at Beachy Head in his own force area as a good example of how the operational model could work.

"We deploy our drone to Beachy Head on a regular basis to try and identify whether there is a body that has gone over the cliff and alert the coast guard to help us recover it. If we didn't have a drone, we would have to ask NPAS to deploy one of its helicopters to help us do that task but using a drone is a much cheaper. You could ask whether NPAS should have its own drones to do that and the answer would probably be yes but the problem is that they don't have the infrastructure and operating model to do that at the moment."

Refocusing expensive air assets

He says this model of not using expensive helicopter resources for routine search tasks is now being taken up by forces who have drones leaving NPAS to concentrate on the high threat, risk enhanced operations.

As far as governance on the use of drones is concerned, the NPCC strategic group has produced two key documents the first of which is the NPCC Guidance of the police use of drones. This provides key guidelines for police forces when they want to buy and use a drone for the first time including for example liaising with the Civil Aviation Authority, making sure they have the right training and insurance requirements.

"The reason we needed this guidance is because there are some bear traps with the use of drones," says ACC Barry. "You can't just go and buy a drone off the shelf and start to fly it. A police force will come unstuck in terms of public scrutiny if it goes wrong."

The second document is a basic guide for police forces about how to respond to reports about the public misuse of drones. This includes, for example, tracing the operator of an illegal drone, the key evidentiary requirements and how to link into the CAA in terms of reporting.

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Strategy

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Responsibility for enforcement

There has also been some strategic work conducted on who “owns” the response to misuse of drones on an inter agency level. So, if you take the DfT, the CAA and the police, there had to be clear guidelines on who is responsible for each area of business. “There was some ambiguity before for example if a drone was flown over an airport and was posing a danger to safety who is responsible for the investigation into the incident,” says ACC Barry. “Quite clearly if there is a criminal investigation the police should be responsible but minor infringements of air navigation orders are a matter for the Civil Aviation Authority.”

'It was right that the police took a leading role because, apart from anything else, the CAA doesn't have the investigatory capacity to deal with it'

Roles and boundaries

There is a now a signed Memorandum of Understanding (MoU) between the CAA, DfT, the Home Office and the police that clearly sets these roles and boundaries out.

“The reason we had to do this is that there are so many more drones in use as well as the increased risk of the criminal use of drones that it was right that the police took a leading role because apart from anything else the CAA doesn't have the investigatory capacity to deal with it,” he adds.

For example within ACC Barry's own force a member of the public recently reported sighting a drone flying towards Lewes Prison carrying a weighted balloon underneath. Clearly that is a matter of police interest given that using drones to fly contraband and mobile phones into prison is now not uncommon. Also if there was major incident involving an illegally flown drone colliding with a

passenger aircraft near an airport – and there have been two near misses at Heathrow in the last two years – it would be the police who would take charge of the investigation.

According to ACC Barry there is an awareness within the government and the DfT that the legislation around the misuse of drones needs to be updated because the air navigation orders are quite weak and the Strategic Group are currently advising on new legislation.

Licensing

A major concern is the need for a proper licensing regime. The DfT are starting to realise that if you want to prosecute someone for drone misuse you need to amend regulations and increase legislative powers - similar to those that cover road traffic for example - in order to trace the owner.

Drones carry serial numbers and manufacturers' details but there is currently no way for the police to trace the owner or the operator if they need to. “What we need is a licensing regime which allows the police to identify who owns the drone or is operating it from a unique identification number – similar to a vehicle registration number plate,” says ACC Barry.

Future legislation

New legislation is currently going through parliament which could include an amendment to the air navigation orders but this is by no means certain. It could be a “matter of a few months” says ACC Barry but the timeframe will ultimately be decided by the government and the DfT.

Another issue is that there isn't a single form of words for incident reporting with the misuse of drones. FOI requests for statistics on this area of police work often come into individual forces but there is a scattergun approach to how they are collated.

ACC Barry and his strategic group is currently co-ordinating incident reporting standards and a method so that the police can search retrospectively force areas for reports of drone misuse. ❖



Interview

Where does NPAS fit in?

As individual forces explore the ways in which they can use drones in everyday policing, **Gary Mason** talks to Russell Woolford, Assistant Operations Director with the National Police Air Service (NPAS) about the role to be played by the organisation, which currently manages helicopter and fixed-wing aircraft fleet across England and Wales



Gary Mason
Policing Insight contributor

As a strategic national lead for police air support what role is NPAS likely to play in the development of drones across the UK policing landscape? Currently the organisation neither owns nor operates any drones as part of its national remit of providing helicopter and fixed wing air support to forces in England and Wales. Nonetheless, NPAS is acutely aware that drone use is becoming more frequent at a local force level and is a far cheaper alternative to the “big ticket item” air vehicles it already operates.

Russell Woolford, Assistant Operations Director with the National Police Air Service (NPAS) told Policing Insight that the organisation is certainly “pro-drones” in terms of use by all the emergency services because there is clearly an important role for them.

“But it is a complimentary role – I don’t think anyone is really thinking in terms of replacing what you can currently do with helicopters,” he adds. He says there is no plan or business case at the moment for NPAS to procure any drones or operate ones purchased by other organisations but it “would be foolish for us to discount it.”

But there is the wider issue of governance, certification and training of police drone use, which NPAS may definitely get involved in at some point in the future. As it stands NPAS’s remit for operations

is a collaboration agreement under section 22 of the Police Act. They provide air support for the 43 forces in England and Wales under that agreement and it includes “all aircraft.” NPAS’s strategic board has stated that drones are certainly categorised as aircraft but their operational use is a matter for local chief constables which basically means they can do what they want operationally with drones entirely separate from NPAS.

But a review of the Section 22 agreement was triggered last year and as a result of that forces have unanimously stated the view that NPAS, as a national

‘We have a good relationship with the the Civil Aviation Authority and the ability to buy on a bigger scale and set national standards’

aviation provider, could also provide governance, oversight and some guidance around training, procurement and technical standards for police drone operations.

“All the benefits of being a national organisation are relevant here,” says Woolford. “We have a good mature relationship with the certification authority, [the Civil Aviation Authority] we have existing

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Interview

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procurement work streams and we have the ability to buy on a bigger scale and to set national standards.”

He says for local forces this compliance is very difficult to do in the “drone world” which is evolving very rapidly but having a national body leading the way would mean forces could be operating drones to set standards agreed with the CAA that are understood by everybody but could still be operated at a local level.

Although forces have strongly stated this view of the need for oversight and governance it will clearly require extra resource commitment from NPAS. To that end the organisation recently applied for money from the Home Office Transformation Fund to pay for scoping work to examine what this national role

‘They are being used for the type of operation that in the past would have required a helicopter’

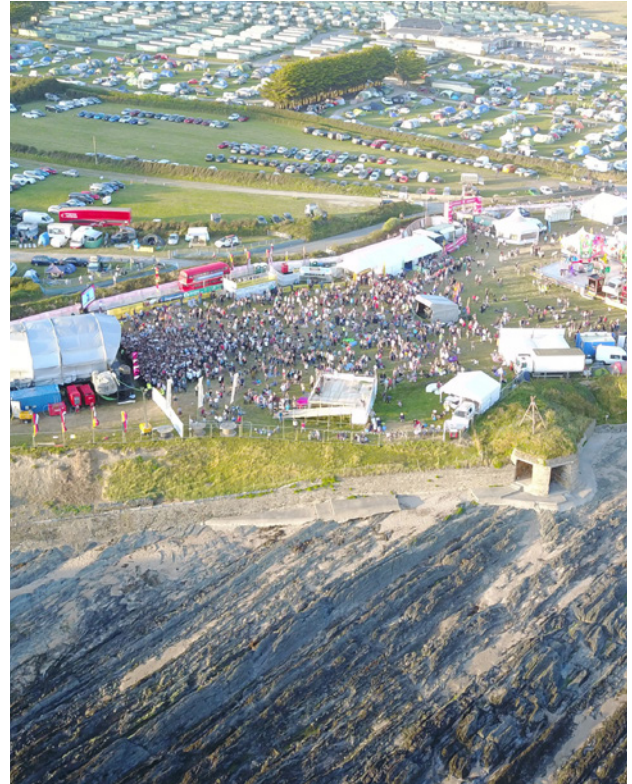
would entail. However, it was unsuccessful in its bid and things are at a stalemate.

The decision on funding has now got to go back to the NPAS strategic board to determine “what the next move is.”

Although NPAS has limited drones expertise currently it is “well sighted” on what is going on in the police drone market according to Woolford. He sits on the NPCC drones working group and says he is also kept informed of drone initiatives happening at local force level.

He has witnessed, for example, the fast development of drone camera technology and says that some of what is available now is as good as anything that is being operated on a police helicopter. But he says “the real impact factor” for any police force operating drones is battery life which, while improving all the time, is a real issue when flying a drone over critical national infrastructure.

The other limitation, he says, is weather-proofing. “Despite this they are being used for the type of



DEVON AND CORNWALL POLICE AND DORSET POLICE

Local forces are driving forward the adoption of drones for activities such as events policing

operation that in the past would have required a helicopter,” he says. This includes photographing a major traffic incident and taking screen grabs using a 4K camera that many drones are now equipped with. “The images are as good as we can produce taken from 200 feet,” he says.

Cost implications

Searching large open areas is also perfectly possible with drones rather than helicopters now, he adds. But the cost implications for routine operations involving drones in a reasonably large force should not be underestimated. “You probably will require more than one drone and numerous spare batteries and chargers and hand controllers. The costs do start to build up and generally with police forces trying to make business cases for drones the benefits are in what more they can bring rather than what they can replace.” ❖



Analysis

Sky force: Are drones the answer to police air support?

With many forces opting to buy unmanned aerial vehicles for air support, **Ian Wiggett**, a former ACC in Greater Manchester Police, examines their current usage and the implications for the National Police Air Support unit



Ian Wiggett
Policing Insight Analyst

With more and more forces opting to buy unmanned aerial vehicles or drones for air support, Ian Wiggett, a former ACC in Greater Manchester Police, examines their current usage and the implications for the National Police Air Support.

Drones are rarely out of the news these days. Whether it's some great footage on a nature programme, a military operation overseas or even smuggling into jails, we're fascinated by these amazing little aircraft that have become the latest must-have technology. Over half of forces in England and Wales have either acquired drones or are actively planning to. There is a lot of enthusiasm out there – but forces are still learning how drones may be used as they test different ways of deployment, try to keep up with technology and understand the boundaries of safe operation. The most common uses at present are for crime and collision scene photography and carrying out searches. A few are using them to support command and control at major operations while fire and rescue services are starting to deploy them routinely at major incidents – an interesting consideration for PCCs and their collaboration discussions.

There are strong advocates for drones in policing, but others are watching with caution. As Devon and Cornwall Police grabbed the headlines with an

announcement of a 24/7 drone service starting this summer, Cambridgeshire faced questions for using their drones just nine times in three months.

How will we come to view drones in a few years time? Will they have changed how operations are done? Or will they be a great idea that somehow never quite, er, 'took off'? As the number of drones grow, both hobby and commercial, will concerns about safety lead to increased regulation and restrictions? Will concerns about surveillance and privacy also lead to restrictions? And, as money is diverted into buying drones and training staff to use them, does the business case stand up? Is the money better spent on cops instead?

Costs

Technologically, unmanned aerial vehicles (aka UAVs, aka drones) are impressive. They have advanced greatly in recent years with improvements in IT and battery life. There is a wide range of UAVs available for commercial use, costing from around £1000 to over £40,000. The cheaper ones can fly for around 15-20 minutes before needing a battery change (less in strong winds), have limited payloads and need to avoid wet weather!

Extra money secures a larger and more robust craft that can fly in adverse weather with a longer battery life and bigger payload. For example, a cheaper drone might only carry one type of camera at a time, normal or thermal imaging, meaning it

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NPAS uses the Eurocopter EC135 which can remain in the air for 2.5 hours – significantly longer than any commercial drone

would need to land in order to change the type of camera. A larger drone would be able to carry both types, and with more powerful lenses.

The use of drones is becoming more common in commercial photography so it's no surprise that they should start being used for police image capture. A small drone can be packed into a portable case and easily transported. A drone allows a wider range of images to be captured, such as fly-throughs, overhead pictures and, for example, being able to show the exact view of a motorist prior to a collision. Latest software can allow 360 degree imaging and presentation. This provides a more comprehensive capture of the scene and could help scenes be released more quickly. It helps present evidence to courts.

This is a case of keeping up with industry standards to provide a better service to investigators and courts. As more forces acquire drones and start using them for scene photography, expectations will rise and more forces are bound to follow.

Application

Drones are being used to capture images at live incidents too. Until now, the service has relied on conventional air support (usually a helicopter), but a drone provides an alternative option for pre-planned

operations and live incidents, depending on how quickly a drone can be taken there.

With a stock of ready-charged batteries (and some quick landings to change them over), a drone can be kept operational for a reasonable period. With good optical lenses and thermal imaging, a drone can be used to search areas around crime scenes or open ground, help locate missing people or spot cannabis factories, for example. There are technical solutions which allow images to be relayed to force control rooms (and some solutions which allow that even where the mobile phone coverage is poor), allowing a drone to provide live footage of the scene to the incident commander.

It is even possible to 'tether' a drone over a location to provide a continuous video feed – the 'tether' is a cable that supplies power to the drone and relays the images back to the ground – meaning it is possible to keep a drone flying over a location for as long as you wish, subject to the weather and operating conditions.

This provides a useful tool to improve safety at events, such as outdoor festivals, where CCTV options may be limited or expensive. A helicopter could also do this, but it would be hard to justify using a helicopter for 'just in case' reasons because of the cost and the likelihood it could be called away

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if something more serious happened. A helicopter has limited endurance too, dependent largely on the distance from the base to the scene. To provide continuous air support you would need to have at least two aircraft available – something that is only likely to happen for the highest risk operations. Drones therefore bring new options to police commanders when planning events and operations, which can only help improve safety, and (perhaps) reduce some of the need for ‘boots on the ground’.

Striking a balance

The availability of a drone of course depends on how many the force has, their type, where they are stored and how many trained operators are on duty. A large rural force may want to have several stored around the force area – otherwise opportunities to use them may pass. More expensive drones allow operations in adverse weather and darkness, whereas cheaper drones will be much more restricted in their usability – again leading to missed opportunities.

Police drone operations are regulated and licensed by the Civil Aviation Authority and there is a comprehensive regime governing their use. Drones generally have to be flown within the line of sight of the pilot at a maximum distance and height of 250m. The primary concern is safety and the operator needs to be able to see hazards around them. There has to be a team of two operators to ensure the pilot can concentrate on safe flying. There are tighter restrictions on the use of drones over crowded areas. Reliable as they are, hazards and risks increase when flying drones in urban areas and over crowds. Line of sight can be more difficult to maintain. This means shorter operating distances and minimum safety clearances. There is no imminent prospect of law enforcement drones being flown remotely from some underground bunker as we see in military operations.

Training

While drones are fairly intuitive to fly, it is a skilled task which not everyone may be suited to. There is also a lot to learn – safe operations, basic maintenance, CAA

regulations, operational tactics and decision making, including appropriate authorisation to conduct surveillance. On top of that, operating a drone is very much the same as running any other air operation. The CAA has to approve and license the force. There needs to be a manual for operations and training, insurance and maintenance regimes, and a management and governance structure. Pilots and managers have to maintain their experience, and manuals and procedures have to be kept up-to-date. The CAA expects high standards and forces have to demonstrate they take these responsibilities seriously.

Pilot training is likely to take a week and needs to be done by a CAA-licensed training provider. Round-the-clock cover would require perhaps 12 to 15 trained pilots per drone. If you train fewer pilots, then the times when the drone is available will reduce. If you train more, you increase availability and deployments. In other words, a force that wishes to operate drones needs to make a serious investment to ensure there is a reasonable level of use – otherwise that drone may end up sitting in a store cupboard.

There are risks too, apart from accidents. There is the potential for misuse, sadly. And, with public concerns about drones causing nuisance and invading privacy, there is nervousness among the public about the potential for more police surveillance. Not everyone views a police drone as a great operational asset. Forces will perhaps want to consider extra scrutiny measures to provide public reassurance over how a drone is used. If a PCC has invested in an expensive and high profile piece of kit that turns out to be a white elephant (or is lost or badly damaged), then there are other reputational and political risks too.

Conventional air support

But, as the growing interest among forces shows, drones remain attractive, boosted by the impact of the financial pressures on the National Police Air Service (NPAS). When the NPAS budget was cut considerably after 2010, bases were closed and aircraft were disposed of. There is a sense that forces have an ‘air support gap’ to fill, despite NPAS reassurances.

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Helicopters are complex and expensive machines, but their capability is impressive. Helicopters can reach incidents quickly, fly in most weather conditions and during hours of darkness, and with their sophisticated equipment can provide high quality operational support. NPAS provides round the clock cover, and if you want to get air support quickly to an incident, an NPAS helicopter remains the only real option. Helicopters are the only feasible option for tracking stolen vehicles or fleeing suspects, or providing flexible cover over crowded areas. Conventional air support will still be needed, but cost has become a major issue as forces look for savings. I once signed a cheque for £10million as the final payment for a new force helicopter – I confirmed that I wouldn't be personally liable if it bounced! On top of that comes the costs of the base, maintenance, fuel and crew. These costs were only affordable as a result of Home Office grants, which are now no longer there.

Costs and coverage

NPAS was established to rationalise costs and improve coverage. There were different aircraft types, different maintenance and operating deals. The aircraft were distributed across England and Wales in a way that was hard to defend. Austerity turned rationalisation into serious cost cutting. This could only be done by cutting aircraft and closing bases – because that is where the bulk of NPAS costs lie.

Cutting the number of helicopters has aroused a lot of emotion, but it allowed over £15million to be saved from police budgets nationally. If it hadn't been for NPAS, I'm sure most forces would have sold their helicopters by now. Thanks to NPAS, we now have far better resilience – even if there are fewer aircraft than a few years ago. There is 24/7 cover, overheads have been rationalised, and air support can be directed to the most important incidents.

But, as we know, running a fleet of helicopters is not cheap. A crude calculation shows that a police helicopter costs around £1300 to £1600 per hour/ deployment. Although there is a lot to think about in

setting up a force drone unit (with numerous costs on top of the purchase price), drones are clearly far cheaper. Forces are looking at their contribution to NPAS and wondering whether drones offer a way to increase capabilities while also saving money.

Striking a balance

There is a conundrum, here. Forces that use drones and reduce the number of times they call on a helicopter will understandably expect to pay less to NPAS. But if income reduces, NPAS will need to reduce their costs too – which can really only be done by reducing helicopter operating hours, closing bases, and cutting aircraft. That in turn will increase the perception of a gap in air support, and potentially encourage more forces to acquire drones. And put yet more pressure on the NPAS budget.

Clearly there is a balance to be struck here. Drones bring new capabilities and offer a significant cost advantage over helicopters. But the police service will still need a minimum number of helicopters and these have to be funded by forces. It is hard to see how the current number could be reduced further without a significant impact on cover outside the main centres of population (which is where most of the need lies).

Forces should not expect a simple, pro rata reduction in their NPAS contributions – but the cost and operational benefits of drones must be exploited too. Ultimately, this boils down to a question of need, and cost-benefit. Is a particular use of air support, whether a helicopter or a drone, an operational necessity or a 'nice-to-have'? Does a drone allow real savings or efficiencies to be achieved – and not just through an assumed saving in NPAS contributions?

And there are further considerations that all forces should be exploring. Is there a case to rationalise procurement and the CAA licensing process? Could drones be purchased, managed and used collaboratively? It shouldn't escape notice that these are, of course, the same considerations that led to NPAS being established. ❖

Previously published Policing Insight May 2017



Training

Learning to fly

Civil Aviation Authority certification is a necessity for commercial drone use.

Gary Mason looks into the steps towards gaining these qualifications and what the test actually involves



Gary Mason
Policing Insight contributor

Under Air Navigation Regulations all commercial operators of Small Unmanned Aircraft (SUA) need to receive permission by the Civil Aviation Authority (CAA) who hosts a register of all such operators.

There are currently more than 3,000 organisations on that list and it includes police forces and other blue light services. The police use of drones comes under civil aviation legislation and their operators work under the same safety criteria applied to commercial permission holders.

In order to get CAA permission to operate a drone commercially the CAA has established National Qualified Entities (NQE) to assess the competence of people operating small unmanned aircraft as part of the CAA's process in granting operating permissions.

Assessment by an NQE is necessary for those with no previous aviation training or qualifications. To achieve this, NQEs may offer a short educational course prior to the competency assessment aimed at bringing an individual's knowledge up to the required level (but these are not CAA approved training courses). A typical NQE full-course involves:

- pre-entry/online study
- 1-3 days of classroom lessons and exercises
- a written theory test
- a flight assessment

Some police forces are now starting to get their own NQE status in drones operation having trained their own staff and are able to share that knowledge with other forces.

The CAA has a list of 28 NQE training providers for drones and it includes one police force – Essex Police. The other organisations on that list are mostly commercial training providers ranging from the very small to the very large – for example NATS, who provide air traffic control services for the whole of the UK, are on the list.

'The CAA has a list of 28 NQE training providers for drones and it includes one police force – Essex Police'

Some other companies on the list have specialised in providing drone training for the blue light services. For example, in partnership with the Fire Service College, the Sky-Futures Training Academy offers Civilian Aviation Authority (CAA) approved Unmanned Aircraft System (UAS) training.

The UAS training programme is designed to take a candidate with limited aviation experience and train them to become a competent operational Remote Pilot. The training has been built around Sky-Futures' seven years of experience delivering UAS survey and

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Training

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structural inspections. Since obtaining its National Qualified Entity (NQE) status, the company says it has delivered scenario based training to many Emergency Service and First Responder clients.

The 5-day Advanced course is designed for those who are likely to fly in demanding operational conditions. The course begins with a full day of CAA approved ground school, taught by current aviation professionals. Following successful completion of the ground school exam, the course moves into a 4-day practical flying phase. The practical flying phase is delivered by instructors who all have a high level of experience and expertise according to the company.

Flight training is progressive and builds as the week develops. It begins in an open field to allow for the in-

'[The company] has written numerous scenarios for the training including MISPER, MTA, rail disaster, RTC data collection ... and collapsed building search'

creased margin of error at these early stages. In these conditions the teaching covers basic airmanship, flight routine, checklist discipline and non-normal procedures. The complexity of the course then builds and the rural operations become more urban. Take-off and landing areas become building tops or enclosed spaces to give the operators a greater breadth of experience by operating in complex environments. The aim is to take a delegate out of their comfort zone but in a safe and controlled manner.

The company says it has written numerous scenarios for the training including but not limited to MISPER, MTA, rail disaster, RTC data collection, missing aircraft and collapsed building search.

PC Ryan Duffy from Tactical Operations, Search & Marine Unit, Kent Police recently undertook the training course. He said: "Kent Police went operation-



The UAS training programme is designed to take a candidate with limited aviation experience and train them to become a competent operational Remote Pilot

ally live with 1 x drone and 4 x operators trained by Sky-Futures as of the 5th of June. Since then we have had 15 deployments, ranging from assisting in the search for a high risk missing persons, to completing security searches at locations before large public events, to evidence gathering at serious crime scenes and fatal road traffic collisions.

"On these occasions, this has provided aerial support in place of a helicopter, saving a significant amount of money as well as providing other benefits such as providing a greener option and being able to share evidential material faster. There have been a number of occasions where the technology has been requested by officers responding to spontaneous incidents but the drone, or the operators have not been available, so it is clear that demand is already greater than the current service".❖



Effective management of Unmanned Aerial Systems for law enforcement

Drones must be managed and maintained to the same exacting standards of manned aircraft. **David Hunkin** discusses how this can be achieved



David Hunkin OBE
Head of UAS at Centrik

As law enforcement bodies build their use cases for Unmanned Aerial Systems (UAS) or drones, there is an increasing realisation that this new capability must be managed and operated to the same levels as any other safety critical activity. Comparable to the application of firearms or response driving techniques, UAS can bring a level of risk, public scrutiny and negative media coverage that far outweighs the cost of these small systems if used and managed inappropriately.

Associating low operating costs and simplicity with lower operational rigour should be avoided, however. Paragraph 1.1 of CAP 722, the CAA's guidance for UAS operations in the UK clearly states that: "UAS operating in the UK must meet at least the same safety and operational standards as manned aircraft". Before thinking that this sets an unreasonably high bar, one must be mindful that CAA Regulations are a minima, and not a target.

Whilst CAP 722 is targeted largely at the leisure and commercial use of UAS, it remains one of the documents under which police forces in the UK also operate. The unique position that the police occupy however, is that it is both a user and enforcer of UAS legislation. For the same reasons that response

vehicles and driver training, or firearms and firearms training bear little resemblance to their civilian equivalents, police UAS operations must set a new benchmark above that of their civilian counterparts if they are to avoid accusations of hypocrisy and amateurism by a media poised to expose even the slightest of transgressions by UAS.

'UAS operating in the UK must meet at least the same safety and operational standards as manned aircraft'

Notwithstanding public safety, a professional UAS operation is vital if the police are to retain both authority and public support for this new technology. As prosecutions for illegal drone use increase both in number and publicity, it is imperative that all Government agencies clearly set themselves apart, particularly as criminals and the police can be flying the same equipment.

A Compliance Challenge

In recognition of this, many police forces are aiming for a state of 'compliance plus'. However, most police UAS operators lacking an aviation background, and

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Most police UAS operators lack an aviation background and NPAS is still defining its role with unmanned systems

NPAS is still defining its role with unmanned systems. Therefore, achieving both the letter and intent of the CAA's Regulations within a law enforcement construct remains a challenge. The question often asked is: "What does good look like?"

Beyond Compliance

The CAA provides useful guidance as to what higher levels of compliance should look like, as today it takes much more of a holistic view of aviation safety through its Risk and Performance Based Oversight Regime (PBR). There are good lessons for the UAS community in CAP 795, Safety Management Systems (SMS) Guidance for Organisations, and the booklet *The Whole Point is the Whole Picture*. It offers guidance as to 'what good looks like' when it comes to operational management:

- "a systematic and proactive approach for managing safety risks."
- "woven into the fabric of an organisation."
- "It becomes part of the culture; the way people do their jobs."
- "beyond compliance with prescriptive regulations, to a systematic approach where potential safety risks are identified and managed to an acceptable level."
- "adopts a business-like approach to safety, similar

to the way that finances are managed, with safety plans, safety performance indicators and targets and continuous monitoring of the safety performance of the organisation."

'These systems have become essential for those wishing to spend less time on compliance, more time operating'

How?

Operating to this level could appear daunting but again, lessons can be learned from manned aviation, as operators in that sector had to overcome the same challenge. The CAA requires even the smallest of commercial operators to evidence compliance to the same level as their much larger counterparts. That's easy for a large airline with a dedicated compliance department, not so easy for two entrepreneurs bringing one small aircraft into commercial use.

Whether operating at scale or extremely leanly, these operators learned quickly that existing business

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methods were too inflexible, cumbersome and vulnerable. Vast spreadsheets, disorganised and disaggregated folder structures and overloaded email systems all threatened the viability of the business from both a safety and commercial perspective. They turned instead to dedicated operational management software.

'It is vital to select a system that offers the flexibility and agility to keep ahead of regulatory thinking'

These systems have become essential for those wishing to spend less time on compliance, more time operating, whilst at the same time meeting or exceeding safety requirements.

Selecting the right system

There are important considerations to make when selecting such a system, and data security must be paramount in those considerations. Notwithstanding the threat from your data being anonymised, aggregated and sold, cloud solutions often share infrastructure, putting your data alongside unknown entities. It is also then often moved without your knowledge, so know your cloud provider!

Staying with robustness, the system needs to be built to ICAO/EASA and CAA standards, using methodologies that are accepted and recognised by the authorities. Clearly ease of use, ease of implementation and cost effectiveness are also key but beware of free trials. If software is free, then you are the product.

Look for future-proofing too. Unmanned aviation and its regulation is continually developing, so it is vital to select a system that offers the flexibility and an agility to keep ahead of regulatory thinking.

For all these reasons, Regulators, airlines and serious UAS operators use Centrik which is the only system that manages both manned and unmanned aviation to the same exacting standard. In use around the world as the operational management system of

choice, Centrik is now enabling some of the best UAS operators in the world. As Paul Forster, Head of leading British UAS company Martek recently said,

"Thinking that you can manage a major UAS operation with old fashioned spreadsheets, folders and emails is fundamentally flawed – akin to putting cart-wheels on a Tesla!"

Law enforcement agencies worldwide are facing unprecedented demands against increasingly divergent resource levels. Unmanned aerial systems can form part of an integrated aviation capability offering increased availability, whilst reducing cost and risk.

As thinking matures, it is likely that some sort of Integrated Aviation Management Strategy (IAMS) will develop but until that time, manned and unmanned aviation in the UK will continue to be administered and operated independently. From a safety and operational perspective however there is no need to wait for convergence. Centrik is enabling UAS operators around the world every day to maintain 'Compliance Plus'. It is raising standards, reducing cost, saving time and well worth considering. ❖

David Hunkin OBE, Head of UAS at Centrik, is a retired Royal Navy Commander with a background operating in some of the world's most dangerous environments, including a role as Security and Evacuation Advisor to the Foreign & Commonwealth Office in the Middle East. At Centrik, he provides expert guidance on operational management for unmanned systems, helping to raise standards for the industry as a whole.

Centrik was designed by authorities in the fields of aviation and defence who bring together decades of real-world experience and is powered by a dedicated UK support team of software experts. Originally developed for the manned aviation industry – a sector that has some of the most stringent safety and competence regulatory conditions in the world – it is the only operational management system of its type that can manage both manned and unmanned aviation operations to the standard demanded by the CAA, EASA and ICAO. www.centrik.net





Case study

Trail blazers: The UK's first fully operational, stand-alone police drone unit goes live

The Devon and Cornwall and Dorset police forces have been trialling drones for the past two years, now they have launched a fully operational drone unit. **Tina Orr-Munro** reports on the strategic alliance



Tina Orr-Munro
Associate editor, Policing Insight



The police force partnership uses the DJI Inspire drone

Devon & Cornwall and Dorset Police have become the first police forces in the UK to launch a fully operational police drone unit.

The two forces, part of a strategic alliance, have been trialling drones in their respective forces since November 2015. Their success has now prompted the creation of an operational drone unit - the first of its kind in the UK.

The forces have been remarkably open about their drone ambitions since they began trialling drones nearly two years ago. It even has its own twitter feed to keep the public informed about where and when the drone is in operational use so it is no surprise that the local and national media were invited to witness the official launch in July.

Present at the launch was Chief Superintendent Jim Nye, Commander for the Alliance Operations Department. He says the establishment of the unit has been great source of pride for the Alliance. He called the move a 'historic step' not only for the Alliance, but policing in the UK in general. "Drone capability is a cutting edge way to support operational policing across Devon, Cornwall and Dorset. [It] proves that we continue to work hard to find innovative ways to adapt to the ever-changing policing landscape. This technology offers a highly cost effective approach in supporting our officers on the ground in operational policing."

The Drone Unit is currently using a DJI Inspire drone equipped with a zoom camera and thermal

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DEVON AND CORNWALL POLICE AND DORSET POLICE

The drone was used to provide firefighters with a bird's eye view of the Clarence Hotel fire on 29 October 2016

imaging to allow for operational use, 24 hours a day. The camera is HD/4K quality and can capture both video and still images. It costs around £2,000 with the basic camera. A thermal camera costs around £6,000 and a zoom camera around £800.

The forces have also purchased a DJI Mavic to test its portability as it is smaller and lighter in weight. That costs £1300. One of the operators told *Policing Insight* that they had chosen this particular make and model after an exhaustive search. Their only drawback is they are not waterproof and in an area such as Devon and Cornwall with its high levels of precipitation their use can be curtailed.

Roads policing by drone

There are now six drones in operational use based in Plymouth and Dorset. In the coming months, drones will be in roads policing vehicles across Devon, Cornwall and Dorset, offering on the move, 24/7 support to operational policing across the Alliance.

The unit has five officers and staff trained across both forces. The forces are aiming to have a further 40 officers complete their Civil Aviation (CAA) training allowing them to be fully accredited by the start of

'There will never be a time when police helicopters are redundant. What the drone does is cover low level functions, such as scene mapping'

2018. The force will then look to procure additional drones to allow them to offer forcewide, 24/7 support. It believes there could be around a dozen drones available for operational use by 2018.

The drones are expected to aid missing person searches; crime scene photography; responding to major road traffic collisions; coastal and woodland searches and to combat wildlife crime.

Drone Team Manager, Andy Hamilton, said the technology would allow the forces to become more efficient in "what we are trying to achieve".

"An example of this is historically, any aerial photos or videos have been captured by The National Police Air Service (NPAS) helicopter. This is not always the best use

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of resources. Instead of always sending a helicopter on an hour's flight to take a few photos of a crime scene, we can now use a drone to carry out the same task. Whilst drones will enhance our roads policing function, I also see this technology being able to complement NPAS by allowing helicopter to be available for more serious incidents across the South West."

Roads policing by drone

However, one of operators told *Policing Insight* that the drone had already been used in cases they had not anticipated. As one of two trained operators in Dorset police, the drone is kept in the boot of his car, allowing him to continue his normal police duties, and is called upon as and when required. Recently, he responded to a call that someone had climbed into a cab on a crane. The drone allowed them to sidestep discussions on who should climb the crane to the cab as it was launched and revealed the cab had been empty and the caller mistaken. Had it not been for the drone, the police helicopter would almost certainly have been called out.

The drones have also been used to search traffic collision sites in case a passenger has been thrown clear and have been used to approach people committing suicide. The operator told us that ultimately the drones could be equipped with a mobile phone or medicines which could be dropped at specific sites.

Whilst eyebrows have been raised that drones are in direct competition with police helicopters, Devon and Cornwall and Dorset's drone unit has had the backing of the National Police Air Service (NPAS) which operates a fleet of 19 helicopters throughout England and Wales. NPAS does not operate Unmanned Aerial Systems (UAS) or drones. NPAS Drones Lead, Russ Woolford, says: "NPAS support the use of drones in policing and is committed to achieving their effective, ethical and safe operation as part of the overall capability available for policing from the air."

Although forces view drones as a complement to helicopters, the fact is they are cheaper and more available to forces. Chief Supt Jim Nye says, "While based in Exeter, we recognised that the helicopter is

not always available to us. It's often used to support our colleagues in the Met which is what it should do, but our command area is 225 miles. Having these drones spread out across Devon, Cornwall and Dorset allows me to have much faster deployment of an asset for photographic purposes whereas the helicopter, being so expensive, can be kept back for life saving incidents.

'With forty officers trained, they'll have the drones in the back of patrol cars ready to use. When an incident comes, they'll be able to launch them'

"All forces are always continually reviewing the hours they contract through NPAS. I do see this as a complement to NPAS, but, no doubt, in the future I will have to look at the contract. We are paid by the taxpayer. We must always make sure we are cost efficient.

Weather problems

A spokesperson added that drones cannot fly in extreme weather. "Although we've got new and better drones coming in which will be waterproof, NPAS still has a huge part of play. There will never be a time when police helicopters are redundant. What the drone does is cover low level functions such as scene mapping."

The cost of the drones, especially when compared to helicopters, always makes for a powerful business case even when the additional staff costs are factored in.

Ch Supt Nye adds: "The business case will deliver. I'm employing three people full time (one in Dorset, one Devon and Cornwall and one other additional staff member) and there is an upfront cost to that. The kit comes in around £20,000, but utilising the helicopter at £700 to £800 per hour and it doesn't take long [for drones] to become very cost effective."

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Case study

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DEVON AND CORNWALL POLICE AND DORSET POLICE

The police provided drone support to the cliff rescue team during a training exercise on the South Coast on 25 April 2016

Roads policing by drone

A Freedom of Information request carried out by *Policing Insight* revealed that some forces are rarely using the drones they have bought. Ch Supt Nye couldn't comment on the activities of other forces, but was adamant that Devon and Cornwall in alliance with Dorset would benefit from the low cost and availability of the technology.

"Each force and chief has their own way of doing business, but we have taken the view down here in Dorset and Devon and Cornwall that we want to try the new technology. We see the benefits.

"We have the biggest command area with the Alliance and the longest bit of coastline so it is absolutely right for the public that we have a network of drones across three counties, operating 24 hours a day.

"It provides us with that extra policing edge when we're looking for people, dealing with traffic collisions and carrying out aerial photography."

In time, the technology will be put to even greater use, says Ch Supt Nye. "In the future, drones will be able to contribute towards counter terrorism such as dealing with the marauding terrorist where situational awareness is really important because you can get the device up, film what you need to film and, in the fu-

'It provides us with an edge when we're looking for people, dealing with traffic collisions and carrying out aerial photography'

ture, it will be downloaded into command areas so we can make decisions. I expect to have that capability."

Awareness in the forces of their presence and their capability is not something that concerns the team. "With forty officers trained, they'll have the drones in the back of patrol cars ready to use. When an incident comes, they'll be able to launch them."

One of the operators had already started to educate others in his force, encouraging them to take a 'think dog, think drone' approach to jobs they attend.

Standing in a field in mid-Devon watching the officers and staff demonstrate the speed at which the drones can be deployed and the level of control they have over them, and it does feel like we are watching a new era of police technology. As Ch Supt Nye says, "It is the future." ❖



Case study

An answer to austerity: Drones to augment NPAS missions

Budget cuts have encouraged the Warwickshire and West Mercia Police forces to invest in drones to provide aerial photography – even at night – in anticipation of a possible reduction in NPAS availability in the future



Tina Orr-Munro
Associate editor, Policing Insight

Warwickshire and West Mercia Police are among UK forces trialling drone technology. As part of the trial, the forces bought two off-the-shelf drones at a cost of £13,000, similar in quality to those used in film and television circles. The battery lasts around 20 minutes, but this can be extended to two hours with spare batteries. Allowed to fly to a height of 500 ft, the drones are liveried and operated by officers in uniform. The entire project at West Mercia and Warwickshire police has cost less than £25,000 which includes insurance and pilot training. By the end of the trial drone, or unmanned aerial vehicle, had been launched 120 times.

The decision to take part in the trial was driven by changes at the National Police Air Service (NPAS). Austerity has impacted across the police service, including the police aerial support and, whilst NPAS will still offer the higher levels of support, other areas such as aerial photography, fatal collisions and thermal imaging are under threat.

Operational benefits

West Mercia Police's Inspector Damian Sowrey who led the trial said, in terms of operational benefits, the drones have already proved effective in areas of policing that are traditionally resource intensive, such as searching for missing people. During the trial, a drone helped rescue three dementia sufferers who had

gone missing. Insp Sowrey said this capability is particularly useful for forces covering large rural areas.

The drones have also been used in incidents involving hunt saboteurs, but their primary use has been in collision investigations. The size and manoeuvrability of the drone means it can fly at the car driver's height, replicating the course the person has taken and building up a picture for the coroner or a criminal case. Insp Sowrey said his team found the drones were often more flexible than a helicopter. During the trial, the team came across new situations where helicopters would unlikely to have been used at all, including

'It's not the drones themselves that might create the issue, but the police use of these drones'

low level anti-social behaviour such as the problem of boy racers.

During the trial, the team considered the ethical concerns around the police use of drones. Insp Sowrey said: "Our feeling was always that it's not the drones themselves that might create the issue, but the police use of these drones. We were very concerned that they would be seen as an aggressive police tactic and there are those who would see it that way."

"We can fly these drones without regulations, insurance or an operations manual, but we thought

Continued on next page



Case study

Continued from previous page ➤



Like many of the forces *Policing Insight* spoke to, West Mercia and Warwickshire Police have chosen the DJI Inspire range of drones to provide aerial photography. The forces spent £1,200 per pilot training them to Civil Aviation Authority standards.

that was a risky decision to take. We decided that as we were using them for professional purposes we should be subjected to the same regulations as commercial users so we submitted our policies and operations manual for approval to the Civil Aviation Authority (CAA). We wanted to be able to demonstrate that we had done everything possible to ensure they were safe."

The team worked closely with Independent Advisory Groups to demonstrate their transparency regarding the forces' use of the drones. They also approached Amnesty International who were "broadly positive" and more concerned that the legislation on data management is the same as it is for CCTV which operates a limited viewpoint, unlike drones that can film wide areas.

"Data management was a concern, but the drones are deployed for either pre-planned operations or to respond to an incident. We don't use them speculatively. All the data generated is held within the rules of the Data Protection Act 1998 and subject to Freedom of Information requests. It's no different to CCTV and Body Worn Video. We don't always film incidents, such as a missing person," said Insp Sowrey.

The next step to ensuring the success of the project was selecting the right pilots. This was an area the team spent a considerable amount of time on, with the emphasis on choosing sensible, mature people who were not going to put the reputation of the organisation in jeopardy.

Professional standards

Once chosen, the pilots were trained to CAA standards and are now nationally qualified to fly drones. Each pilot cost £1,200 to train, prompting the force to explore the idea of gaining accreditation so they can offer training to other forces. Paperwork does accompany the drones. A maintenance flight record for each flight takes about an hour to complete and includes details such as film footage recorded. "It's not just about taking it out of the car and flying it," adds Insp Sowrey.

There is also a monthly meeting on governance to address any issues, including complaints, although, to date, there haven't been any. The six-month trial has now ended. The report on its operation has been written and the team are now waiting to hear if the force will adopt drones as part of their policing strategy. The decision is still pending.❖



Case study

A cautious start – with promising results

North Wales Police is currently establishing the governance requirements to routinely fly its first drone. Though its team of trained officers are grounded for now, it has already seen what a powerful tool it could be



Ian Wiggett
Policing Insight Analyst

At the start of this year, North Wales Police acquired their first drone. They were tempted by examples of drone use in other forces, which they felt would help their operations. The cost of NPAS operations was also a factor and the force is hoping that the drone will allow savings to be achieved.

North Wales is operating a DJI Inspire 1 drone. There is a large choice on the market and, as a first toe in the water, they went for a simpler model. At around £2,500 each, this model is aimed at the mainstream market rather than some of the larger and more robust models, which can cost over £50,000 each, such as the Aeryon Skyranger model purchased by Surrey and Sussex using Police Innovation funding.

Early impressions

North Wales Police are already impressed by the capabilities of their drone. It is easy to fly with a battery endurance of up to 18 minutes, depending on weather conditions. With a stock of spare batteries, they simply land it and swap the battery if they want to fly for longer. The drone can carry either an ordinary camera with an optical zoom or a thermal imaging camera.

More expensive drones have longer battery life,

are weatherproofed and equipped to fly in wet weather and darkness, and can carry both an ordinary camera and a thermal imaging camera, with more powerful lenses.

The force is still in the process of acquiring its CAA licence. This has involved a fair amount of work to prepare operating manuals for approval and establish the governance structure that CAA requires – an accountable manager and executive officer. It is not straightforward and they have been grateful for the support of other forces with licences to help them work through the process. Having discounted the dedicated unit option because of the cost, they have

'While the drone is easy to operate, it does require skill too – rather like driving. There is a lot to learn and there are a lot of risks to be aware of'

trained 14 officers and staff from across the force as pilots to provide a good geographic spread, including officers, CSIs and PCSOs. Most already had some private experience of flying drones. Training lasts a

➤ Continued on next page



Case study

Continued from previous page ➤

The force envisages that its DJI Inspire 1 drone (similar to the one pictured) will be used mainly for missing person searches, support at firearms incidents and operations and imagery at crime scenes and serious collisions



WALTERFLOCK (CREATIVE COMMONS)

week and includes theory and practical exams. While the drone is easy to operate, it does require skill too – rather like driving. There is a lot to learn and there are a lot of risks to be aware of.

The drone is stored centrally, but folds into a case and is easy to transport. The intention is that pre-planned deployments will be managed through the executive officer while deployment to live incidents will be approved by the Force Incident Manager.

The force envisages that the drone will be used mainly for missing person searches, support at firearms incidents and operations and imagery at crime scenes and serious collisions. They are also considering using it to identify potential cannabis factories. There are a number of large public events and music festivals, and it is hoped the drone could prove useful to commanders there as well.

Although North Wales Police has not yet been licensed, the CAA has given approval for them to carry out their first deployment. This was a search of a stretch of remote, rocky coastline which they were able

'Although North Wales Police has not yet been licensed, the CAA has given approval for them to carry out their first deployment'

to complete in under half an hour – compared to either a helicopter deployment, or a team of officers having to search on foot, with the obvious risks entailed.

The view remains though that drones are not a replacement for helicopters. They provide a useful additional capability, but have their limitations. However, if the experience over the coming year goes well, they would hope to acquire additional and more robust drones, which could be stored across the force area. ❖

Previously published Policing Insight May 2017



Case study

The price of performance

With five £64,000 drones and 40 trained operators, the partnership between Surrey Police and Sussex Police has created the UK's most expensive police drone fleet



David Devonport
Policing Insight contributor

The Surrey and Sussex forces lead police drone use in the UK and assistant chief constable Steve Barry is the National Police Chiefs' Council lead for drones. The two forces share a fleet of five Aeryon Skyranger quadcopters, which are used to support policing operations around the expansive footprint of Gatwick Airport, but also to aid specific tasks anywhere in the combined force area.

The drones were purchased using Home Office funding at a cost of £64,000 each (£320,000 in total) including the cameras, granted from the Police Innovation Fund. It has the largest cadre of trained drone pilots in the UK, with around 40 operators available to fly the five drones.

This investment has created a formidable aerial unit that can operate in all weathers and in winds up to 40mph. The drones carry a variety of cameras, including dual daylight/thermal units with a 4x digital zoom and daylight HD cameras with either 4x digital zoom or 30x optical zoom, so there is a unit suitable for most incidents imaginable.

Officers use the devices to assist with searches for missing people and investigations into road traffic collisions, major crime incidents and industrial accidents. They also aid event planning and management and provide

situational awareness to officers and commanders in a variety of policing situations.

The force partnership says that the drones will help it to be more efficient and effective by having the right resources in the right place at the right time to resolve incidents quickly. It claims that the drones will enhance the safety of the public and its police officers by allowing a drone to be deployed into situations which would otherwise involve risks to individuals. The high-quality imagery offers the opportunity to gather excellent evidence to assist in catching and prosecuting offenders.

With such a prolific and highly funded drone fleet, privacy could be a concern among residents, but Assistant Chief Constable Steve Barry, head of Surrey and Sussex Police Operations, says: "Our drone operations will be overt, open and transparent, and we will use all outlets available to us to ensure the public are informed of our drone use." ❖

Information sourced from force website



Aeryon Skyranger



Case study

Police sensitivity over accusations of spying

Privacy concerns have encouraged Kent Police to commit to only using its drone when there is a legitimate and genuine need for it and the force has explicitly ruled out flying the drone for general patrol purposes



David Devonport
Policing Insight contributor

Kent Police has only recently begun using drones and is already part of the National Drones Working Group run by the National Police Chiefs' Council. Although it has not provided details of the model it has procured, *Policing Insight* understand that it is a DJI Inspire 1. Information sourced from the Kent Police website says the device and accessories cost just under £4,000, while training, qualifications and authorisations cost just over £2,500. The officers operating the drone have been trained by an external NQE training provider who is qualified with the Civil Aviation Authority (CAA). The force also holds a CAA Permission For Aerial Work licence.

Early operations

Since it began undertaking missions on 5 June 2017, it has been using the drone to search for missing persons, to assist in security searches at Chatham Dockyard, to help officers search and photograph crime scenes, and to survey the location at several road traffic collisions.

The force says that several of these uses would previously have required a helicopter, and that the drone therefore represents a significant financial saving. Despite this, Kent Police says that it has no plans

to replace its helicopter with a fleet of drones. They will be used for things a helicopter is not economically appropriate for, such as taking pictures of crime scenes and collisions. It will also be used when the helicopter is unavailable attending more serious incidents.

Privacy concerns

The force is aware of the potential to intrude on law-abiding citizens' privacy, so it says the drone will only be used when there's a genuine and legitimate need for it, such as quickly searching large areas for vulnerable missing people, managing critical incidents, locating suspects known to be hiding in a specific area, and to capture aerial images to help with emergency and events planning.

Kent Police's drone operators follow the same policy processes currently used by its helicopter crew and officers using body-worn videos. These involve being open, transparent and overt in use of the drone. It will only be operated by uniformed police officers authorised by the CAA. If the force needs to use private land, it will seek the owner's permission first, where practicable. It has also committed to publishing how the drone has been used. Evidential images are held on a secure server that only investigating police officer(s) can access, and any images not required will be deleted after 31 days. The force has explicitly ruled out using the drone for general patrolling purposes. ❖



Product specifications

The most popular drones

Policing Insight compares the specifications of some of the most popular drones used by police forces in the UK

Data sourced where available from suppliers' websites



IMAGES NOT TO SCALE

Click drone name to visit website	DJI Inspire 1	DJI Mavic	DJI Phantom 4 Pro	Yuneec Typhoon H	Yuneec Tornado H920	Aeryon Skyranger
Dimensions	580mm (diagonal size propellers excluded)	335mm (83x83x198mm when folded) (diagonal size propellers excluded)	350mm (diagonal size propellers excluded)	520x457x310mm	920mm (diagonal size propellers excluded)	1020x240mm (500x250mm when folded)
Weight	2845g	734g (inc propeller)	1388g	1695g		2400g
Weight with camera	3060g			1950g	4990g	
GPS Hovering Accuracy (Vertical)	+/- 0.5m	+/- 0.1m	+/- 0.1m			
GPS Hovering Accuracy (Horizontal)	+/- 2.5m	+/- 0.3m	+/- 0.3m			
Max Angular Velocity (Pitch)	300°/s					
Max Angular Velocity (Yaw)	150°/s			85 °/s	100 °/s	
Max Tilt Angle	35°		42°	35°	35°	
Max Ascent Speed	5 m/s	5 m/s	6 m/s	5 m/s		
Max Descent Speed	4 m/s	3 m/s	4 m/s	3 m/s		
Max Speed	49 mph	40 mph	45 mph	43 mph	25 mph	56 mph
Max Takeoff Sea Level	2500m	5000m	6000m	122m	4000m	4500m
Max Wind Speed Resistance	22mph					40mph
Max Flight Time (Approx)	18 mins	27 mins	30mins	25 mins	24 mins	50 mins
Max Flight Distance		8 miles				3 miles
Max Take off weight	3500g					3500g

* Supplied maximum weights unless otherwise stated does not include propeller, battery, gimbal or camera as these are modified to fit requirements

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Survey data

Training and procurement

Policing Insight surveyed police forces in the UK to discover the costs involved in officer training and procurement of drones

This data was sourced primarily from an FoI issued to all police forces in May 2017 and supplemented by research from media sources. Where fields are blank the force declined to answer and/or no information could be found. The data is not viable for comparison due to differing time frames. The data refers to overt rather than covert use of drones as forces declined to comment on covert use. Forces also calculate their costs differently.

Police force	Drones owned	Model(s)	Supplier	Number of officers/staff trained	Training costs per person	Training costs total	Total spent on acquisition	Notes
Bedfordshire/ Cambridgeshire/ Hertfordshire	4	3dr Solo	3dr	17	£545	£9,265		Partnership
Cheshire	Yes							Confirmed use of drones but declined to give any information
Cumbria	5			13	£923	£12,000	£15,099	
Derbyshire	2	Phantom 4 and S1000	DJI	3			£3000	
Dorset/Devon and Cornwall	6	Inspire 1 and Mavic	DJI	6	£1,600	£7200	£15,000	Partnership – First dedicated drone unit
Durham	3	Inspire 1 and Vehu Muvi	DJI	1	£1,000	£1,000		
Essex	1						£8641	
Gwent	1+			14				Sourced from force Facebook account and media story
Kent	1	Inspire 1	DJI	1	£2,000	£2,000		Sourced from force website and media
Metropolitan Police	1			7	£1,000	£7,000	£13,000	Acquisition cost includes training costs
Norfolk	2	Inspire 1 and Mavic	DJI	4			£8,000	Sourced from force website and media story
North Wales	2	Inspire 1	DJI	15	£750	£11,250		
Northamptonshire	2	Inspire 1	DJI	6	£1,750	£10,500	£3,500	
Police Service of Northern Ireland	9			12			£1.5m	Sourced from 2014 FoI and media
South Wales	2	Typhon H	Yuneec	10	£800	£8,000	£1,660	
Surrey/Sussex	5	Skyranger	Aeryon	40			£320,000 (£64k each)	Lead UK drone partnership. Information sourced from force website and the media
West Midlands	1	Tornado H920	Yuneec	1			£27,000	Includes training costs. Received POCA funding
Wiltshire	2	Inspire 1	DJI	6	£750	£4,500	£23,913	
West Yorkshire	3			11				Sourced from 2016 FoI
West Mercia/ Warwickshire	2	Inspire 1	DJI		£1,200		£13,000	Partnership



Survey data

Drone missions

Policing Insight surveyed UK police forces to ask how many drones they owned, how they have been used so far and how often

The data in this table was sourced primarily from an FoI issued to all police forces in May 2017 and supplemented by research from media sources. Where fields are blank the force declined to answer and/or no information could be found. The data is not viable for comparison due to differing time frames. The data refers to overt rather than covert use of drones as forces declined to comment on covert use.

Operational uses

Police force	Drones owned	Scenes of crime	Road traffic collisions	Rural crime	Missing persons	Armed support	Wildlife crime	Surveillance	Public order	Public engagement
Bedfordshire/ Cambridgeshire/ Hertfordshire	4	✓	✓	✓	✓					
Cheshire	*									
Cumbria	5	✓	✓		✓	✓				
Derbyshire	2	✓								
Devon and Cornwall/ Dorset	6	✓	✓		✓		✓			
Durham	3				✓			✓		
Essex	1	✓		✓	✓					
Gwent	1									
Kent	1	✓	✓							
Metropolitan Police	1	✓								
Norfolk	2									
North Wales	2	✓	✓		✓	✓			✓	
Northamptonshire	2		✓		✓					
Police Service of Northern Ireland	9	✓			✓		✓		✓	
South Wales	2				✓			✓		✓
Surrey/Sussex	5	✓	✓		✓				✓	
West Midlands	1	✓			✓			✓	✓	
Wiltshire	2									
West Mercia/ Warwickshire	2									

* Cheshire confirmed its use of drones, but declined to provide details of numbers or deployments



In the media

Police drone media links

Selected links to news, opinion, analysis and reports from mainstream and specialist media to provide context and insight

Links exported from Policing Insight's [Media Monitoring service](#)

20 officers trained on police drones to help tackle crime

The force should get their flying licence by the end of the month.

Lincolnshire Live, 9/8/2017

Norfolk Police launch drones trial

Norfolk Police will be using drones to help search for missing people, obtain crime scene photography and investigate rural crime.

Bury Free Press, 1/8/2017

US police are now using drones to gather evidence on crime investigations

Police in Maryland have used drones to locate stolen goods and provide evidence for investigations.

International Business Times UK, 20/7/2017

Full-time flying squad: Police launch first 24-hour drone unit

The drones are helping in missing person searches, crime scene photography and responding to traffic collisions. *Sky News, 14/7/2017*

First UK police drone unit launched in Devon, Cornwall and Dorset

The first dedicated police drone unit in the UK has been launched. Devon and Cornwall Police began testing the drones with Dorset Police in 2015, but have now established a permanent unit with three full-time staff. *BBC, 14/7/2017*

This is the police drone unit which will fight crime in Plymouth

Two police forces have become the first in the UK to launch a fully operational drone unit. Devon and Cornwall and Dorset police forces began trialling the technology in November 2015 and the unit has now become fully established.

Plymouth Herald, 14/7/2017

Police now have an investigative squad for drone crime

Criminals are increasingly using drones to smuggle drugs and other banned items into prisons. In a bid to catch them, a new squad of police and prison officers has been set up.

Business Insider, 10/7/2017

New weapons to fight crime in Lincolnshire

Around £80,000 is being invested in a series of initiatives, including a pilot drone project, upgrading nine vehicles to 4x4s, and purchasing all-terrain vehicles (a cross between a beach buggy and quad bike).

Spalding Today, 14/6/2017

Bird's-eye view: PSNI using drones to fight raptor persecution

Wildlife criminals will be left with "no hiding place" now the Police Service of Northern Ireland (PSNI) has begun using drones to protect endangered birds.

Police Professional, 23/5/2017



In the media

Norfolk's police and crime commissioner says drones could be used to help fight rural crime in Norfolk

Drones could soon be patrolling the skies above rural Norfolk to help target illegal hare coursers operating in the county according to Norfolk's police and crime commissioner.

Eastern Daily Press, 15/5/2017

Police use crime-fighting drones just nine times in six months

The drone fleet of five launched after a nine-month trial and police insisted they were not a waste of money.

Cambridge News

Police use drones to monitor disorders at football games

Police are streaming footage from a drone back to their control room to monitor crowds and any disorder at football matches.

ITV News, 24/4/2017

Police 'flying squad' to bring down jail drones

A drone squad will fight radio controlled drops into prisons which have risen dramatically.

The Times - Subscription at source, 17/4/2017

Bill could see Connecticut police use drones armed with LETHAL weapons in a first for the US

Police drones fitted with lethal weapons could take to the skies in Connecticut. Lawmakers are considering a bill that would allow police to use drones fitted with deadly weapons.

Mail Online, 31/3/2017

NPAS applying for funding to explore role in use of drones

The organisation could oversee a national drone department in the future.

Police Oracle - Subscription at source, 24/3/2017

Drones one of a number of potential options for improving police air support

As Devon and Cornwall police launch a 24 hour drone unit, ACC Steve Barry says police are continuing to learn more about how drones can support police forces to protect the public.

National Police Chiefs' Council (NPCC), 20/3/2017

Police force recruits 'drone manager' to take control of crime-fighting 'flying squad'

A police force is recruiting a "drone manager" to head up a dedicated unit fighting crime with the flying devices. Devon and Cornwall Police, which covers the largest geographical area of any force in England, will dispatch them to crime scenes to take pictures and gather information.*The Telegraph, 20/3/2017*

Devon and Cornwall Police to launch UK's first 24-hour drone unit

The "dynamic" unit is being launched amid warnings over a severe shortage of detectives and investigators across the country. *Sky News, 20/3/2017*

Take off for police drones air force: Remote-controlled 'flying squad' to chase criminals and hunt for missing people

The first 24-hour police drone unit is to be launched, amid fears that forces may have to rely on them because of falling officer numbers. The 'flying squad' will pursue suspects, find missing people and help solve murders. Assistant Chief Constable Steve Barry, national spokesman on drones, predicted forces across Britain would soon be using them as they are cheaper than helicopters and can perform some duties of bobbies on the beat. *Mail Online, 20/3/2017*

Drones drafted in to help North Wales Police crack crime

The force will also use the devices to search for missing people, survey floods and police large events.

Daily Post (Wales), 2/2/2017



Gwent Police to start using drones

Gwent Police have announced that they will start using drones. They have been granted permissions from the Civil Aviation Authority (CAA) to use unmanned aircraft at live police incidents.

Campaign (Wales), 30/11/2017

Here's the drone-catching drone to police the skies against terrorists and crooks

The defence drone disables others without destroying them by using a Kevlar net.

The Sun, 24/11/2016

Call for police to consider drone use to fight crime

Police in Norfolk should explore the potential of using drones to help combat crime, according to the county's police commissioner.

Eastern Daily Press, 24/11/2016

Cumbria police drones flying high after being used 100 times in the last year

Drones have been used about 100 times in Cumbria in the last year, with officers launching them to search large swathes of the countryside and monitor crime scenes.

News & Star, 11/11/2016

Patent for mini police drone granted

Law Officer, 7/11/2016

NPAS 'could provide oversight' of police drones

Chief operating officer said debate is taking place around the role the organisation could play in the use of drones.

Police Oracle - Subscription at source, 2/11/2016

Police force uses drone to keep football match in check

A police force has used a drone to keep tabs on a football match for the first time.

The Telegraph - Subscription at source, 30/10/2016

Police take to sky using DRONES to catch crooks and stop anti-social behaviour

The drones can travel at up to 40mph and, most importantly for the officers, the devices can capture high quality images from a distance.

Mirror, 6/10/2016

Drones assist Merseyside in one day 13 drug raid blitz

Force was using unmanned aerial vehicles for the first time in a major operation.

Police Oracle - Subscription at source, 21/11/2016

