DRONE READY CITIES FINAL REPORT

Issue 1 8th May 2025

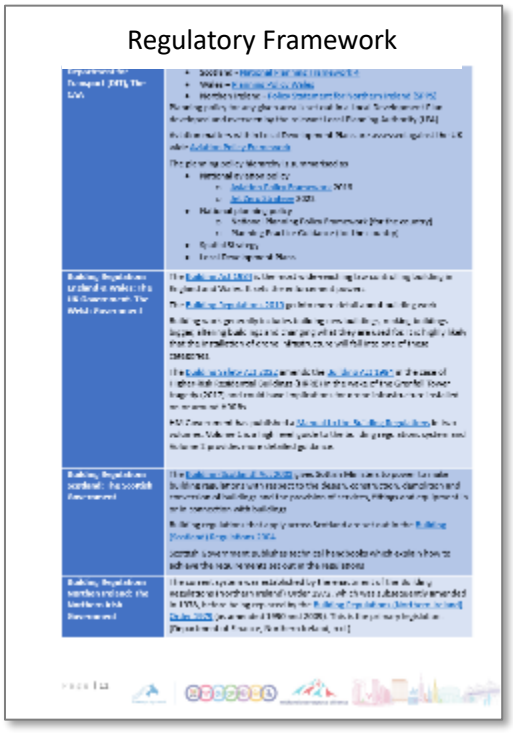
Coventry City Council and Midlands Aerospace Alliance were contracted by the UK Department of Science, Innovation and Technology to create a regulatory framework for the adoption of drone use in urban areas, as a means to reduce barriers and accelerate adoption. Building on this, the project has achieved significant engagement and movement towards the adoption of drones in cities through a number of practical use cases. Learn why, how, the outcomes, lessons learned, the challenges faced, how they were overcome and what might happen next.

Summary

The use of drones can deliver many benefits including efficiency, cost saving and reduced emissions. Although technology is ready for the majority of uses, appropriate regulations are also required, especially regarding safety, for the full economic and public good potential to be realised.

Aviation regulations are developing to permit greater benefits with routine flight beyond the drone operator's range of vision. However, with little evidence of development of non-airspace regulation, the Drone Ready Cities project (DRC) was commissioned by the Department of Science, Innovation and Technology and delivered by Coventry City Council (CCC) and Midlands Aerospace Alliance (MAA), with the support of drone service provider Skyfarer, to address non-aviation regulatory barriers to the adoption of drones.

The original plan was to do this by creating and disseminating a new Regulatory Framework, having drafted one and reviewed it in stakeholder, regulator and local authority workshops. However, with take-up at other local authorities initially slow due to resource constraints, the team proceeded to stress test the framework and stimulate interest in drone uptake with funded demonstration drone flights and support for end users in Coventry and beyond.


Regulatory Framework

A further challenge was reaching local authorities for dissemination via the various UK local authority associations. Instead, the DRC partners chose to allocate project resources to exhibiting themselves at the Local Government Association (LGA) Conference, engage directly with the West Midlands Combined Authority (WMCA) and use a direct email campaign in addition to attending and speaking at numerous stakeholder and end-user events. This proactive approach produced positive results. The email campaign achieved open and click rates way beyond industry norms and resulted in more than 850 downloads of the Regulatory Framework, indicating very strong nascent interest and demand. Engagement was achieved with 46 local governments and numerous other stakeholders.

In the process of creating the Regulatory Framework, more than 30 significant drone applications were identified in a Use Cases report. An international benchmarking study revealed that the United Kingdon (UK) has the opportunity to lead with a widely applicable regulatory framework.

The majority of drone use cases are possible within current regulation and the Regulatory Framework supports the achievement of this. It is suitable for aiding the development of more detailed policies and acquisition frameworks by local authorities as enforcers and end users. It is also suitable for other end users and bodies concerned with developing aviation, planning, building, fire safety, electronic communications and environment regulations that enable drone use.

The potential for annualised benefits across the organisations selected for drone demonstrations ranged up to £800k cost savings and the avoidance of 2,000 hours working at risk. Other benefits included

avoidance of road closures, traffic management and travel plus the capture of data only available from the air.

Despite the benefits demonstrated, the vast majority of local government organisations have low awareness of and are not prepared to gain the benefits of using drones yet. Without continuation, the momentum that DRC has generated will be lost.

CCC and MAA will seek funding for a follow-on project with additional partners. A further round of Regulators' Pioneer Fund (RPF), Future Flight Challenge (FFC) or other suitable funding is prerequisite to delivering the regulatory development required to permit the full potential value of drone use to be realised.

Acknowledgments

DRC would like to thank…

- The RPF team at the Department for Science, Innovation and Technology for its consistent support and flexibility that allowed the project to deliver beyond its original scope.
- Skyfarer, the drone service provider for accommodating a wide range of use cases, interfacing with a variety of end users and being tenacious when challenges arose, particularly from the British weather.
- The many stakeholders that gave freely of their time and expertise to create a regulatory framework that we hope will benefit the whole drone industry so it can realise its potential for the UK economy and public sector.

Contents

Context

Drones can benefit our society by:

- Increasing safety & efficiency e.g. blue light services, infrastructure maintenance
- Reducing CO_2 emissions
- Delivering social benefits e.g. faster medical sample transport
- Reducing ground transport congestion
- Reducing costs of logistics deliveries
- Creating new business & job opportunities

Many valuable drone applications are technically feasible right now, with the potential to start delivering social and economic benefits over the next few years. Examples include transferring time-sensitive samples between National Health Service (NHS) facilities and infrastructure inspection without scaffolding, working at height or road closures.

Most drone operations are performed within 'Visual Line of Sight' (VLOS) with the drone pilot maintaining continuous unaided visual contact with the drone. Many more applications will be unlocked when routine flight of drones Beyond Visual Line of Sight (BVLOS) is permitted in future.

Image source: CAA, The Drone and Model Aircraft Code, CAP2320, March 2024

Current aviation regulations permit BVLOS operations by exception and largely in segregated airspace. Development of the means and regulations to permit qualifying operations using BVLOS routinely in unsegregated airspace is underway. Over the period 2024 to 2027, a phased approach by the Civil Aviation Authority (CAA) is planned to allow for repeatable, scaled BVLOS.

As routine BVLOS operations expand, so will the feasibility and social and economic benefit use cases. Consequently, the services offered and taken up by end-users will increase. For local authorities this will mean an increasing number of drone operations and operators working in their areas.

Although the regulation of UK airspace lies with the CAA, drone operation within the local authority area has important regulatory and policy implications relating to local airspace, ground infrastructure, supporting services, security, privacy, environment, the carriage of dangerous goods and maintaining social equity.

The risk is that drone technology, and airspace regulations, will develop faster than the non-aviation regulatory environment. Accordingly, councils may adopt excessively risk-adverse approaches towards drone operations. Applications to local authorities for drone use may be prohibitively resource-consuming, very slow, or simply declined without good reason.

The Drone Ready Cities project (DRC) therefore aimed to tackle non-aviation regulatory barriers to urban drone use to enable public and private organisations to deliver goods and services faster, safer, cheaper and with less impact on the environment.

In November 2022, the UK Government awarded CCC and MAA a grant of £268,175 via the Regulators' Pioneer Fund (RPF) to deliver DRC, which started in September 2023. The RPF is a grant-based fund to enable UK regulators and local authorities to help create a UK regulatory environment that encourages business innovation and investment. The current £12m round is being delivered by the Department of Science, Innovation & Technology. CCC and the MAA partnered to deliver the project and subcontracted to locally-based drone service provider, Skyfarer, to deliver drone demonstrations.

In January 2025, the grant was increased to £285,286 and project end date extended from 28th February 2025 to 31st March 2025 to enable additional demonstrations to take place.

Approach

To support the identification of appropriate stakeholders and potentially relevant areas of non-aviation regulations, an analysis of drone use cases was created through desk research of existing reports and published uses of drones. Content was validated by key stakeholder review.

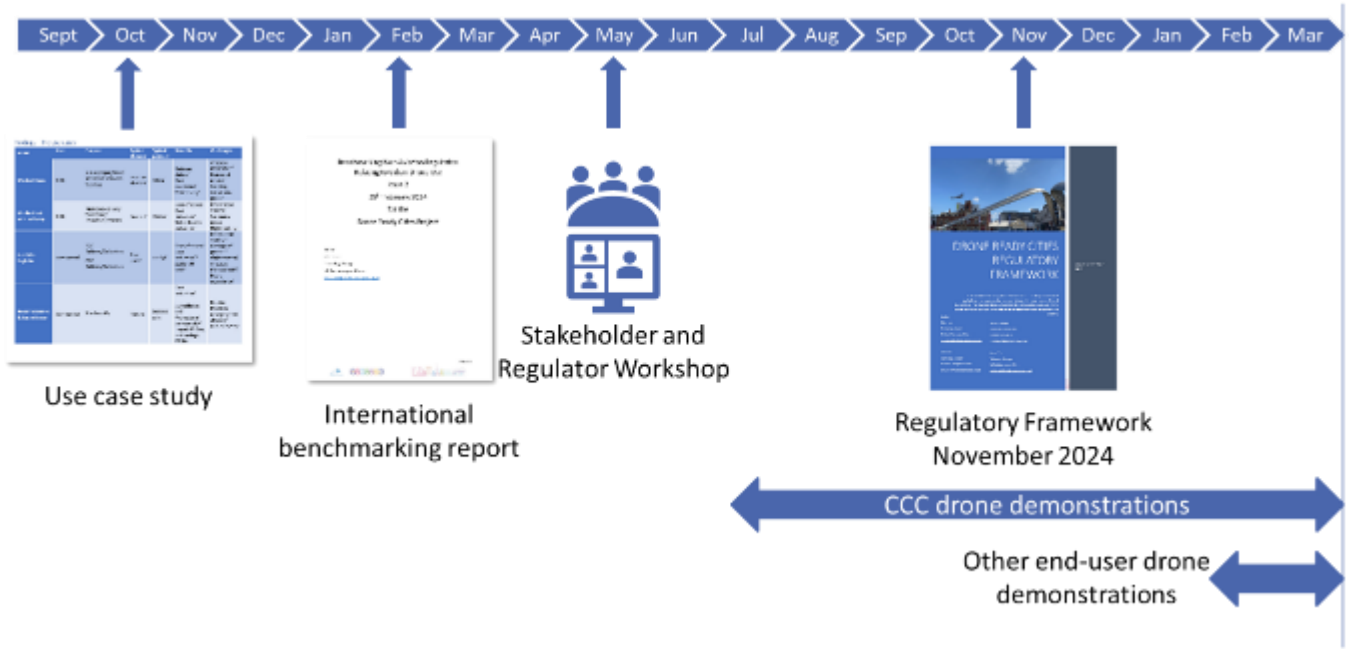
An international benchmarking study was used to identify best practice, how the UK compares globally and the roles of local authorities in other countries.

This was followed by desk research to construct a draft regulatory framework. The framework was then reviewed by a variety of experts with regulatory roles, stakeholders and end-users in a two-part workshop. A virtual workshop set the scene by introducing the project and the draft framework. This was followed by a hybrid workshop to tease out the areas of non-aviation regulation that would need to be developed if the economic and public good value of urban drone use was to be realised.

The workshop identified improvements to the framework, for instance in the areas of Fire Safety and Environment. These were incorporated before the first issue of the Regulatory Framework in November 2024.

From July 2024, the Regulatory Framework was stress tested in the real world by funding drone trials in a variety of use cases within Coventry, with monthly reporting on findings by the Skyfarer.

Further, in February and March 2025, funded drone demonstrations were offered to local authorities elsewhere in the UK. Ten demonstrations were taken up by five local authorities and the Canal & River Trust (CRT). The latter was identified through CCC.



In parallel with development and stressing of the framework, dissemination and communication activities were pursued. These included attending and speaking at numerous stakeholder and end-user events. The most significant of these proved to be exhibiting at the Local Government Association (LGA) Conference & Exhibition in October 2024. Other events are shown in the table overleaf.

		DRC Represented	DRC Presented/Demonstrated/Exhibited
2023	Sep	DroneX	
	Nov	'Future of the Stenosphere' Dubai Airshow ARPAS-UK webinar 'Drones and Electric Air Taxis- The Impact on Local Authorities'	
	Dec	Future Flight Conference	ADS Drone Platform and Counter-Drone Special Interest Group
2024	Jan	Westminster eForums "Priorities and next steps for the UK drone industry 2024"	
	Mar		Digital Revolution In Connected Cars Connected Places Summit
	Jun		Coventry MotoFest
	Jul		Local Council Roads Innovation Group (LCRIG) Innovation & Learning Festival Global Urban & Advanced Air Summit (GUAAS), Farnborough International Airshow
	Sep	DroneX	JCT Traffic Signals Symposium & Exhibition Global Aerospace Summit, Dubhai Midlands Highways Alliance+ Annual Event European Aerospace Cluster Partnership, UAS Online Project Marketplace Midlands roundtable with Civil Aviation Authority
	Oct	LCRIG Strictly Highways Conference Highways UK	LGA Conference and Exhibition Airtaxi World Congress, Dubhai
	Nov	Local Government Partnership Network	Aerial Cities Inno Mob, Thessaloniki, Greece
	Dec	UK India Business Council Christmas Reception	West Midlands Combined Authority event
2025	Jan	IUK Future Flight Challenge Celebration	
	Feb		Road Safety Roundtable in Stuttgart Flight Crowd's Boot Camp STEM event MAA's Technology Development Group CCC Business, Economy & Enterprise Scrutiny Board Future Flight Challenge Technologies Roundtable Yunex Traffic User Group
	Mar	Westminster eForums "Next steps for the UK drone industry"	MAA Board of Directors Somerset County Council drone workshop
	Apr		London City MSc course WM Combined Authority Lunch & Learn

Dissemination was also achieved through publicity as captured in the table below.

2024	Jan	DRC Webpage live on MAA website
	Mar	Press release with ministerial quotation
	Apr	LinkedIn post announcing DRC
	Jul	Article on demonstration at Local Council Roads Innovation Group (LCRIG) Innovation & Learning Festival 2 x LinkedIn posts covering DRC at Global Urban & Advanced Air Summit LinkedIn post covering DRC meeting with CAA at Farnborough Airshow
	Sep	LinkedIn post covering DRC at MAA roundtable with Chairman of Civil Aviation Authority
	Oct	DRC was mentioned in an interview with the CCC project lead Sunil Budhdeo published in Airports International 4 x LinkedIn posts on exhibiting at Local Government Association (LGA) Conference and Exhibition
	Dec	LinkedIn post covering West Midlands Combined Authority workshop in Birmingham
2025	Feb	Updated DRC webpage Article in European Aerospace Cluster Partnership newsletter
	Mar	Sunil Budhdeo's Aerial Cities in November 2024 panel participation promoted on LinkedIn Final Review mentioned on LinkedIn

DRC purchased a mailing list to reach over 3,200 local authority staff by email to promote the project, the regulatory framework and funded drone demonstrations.

Outcomes

The Regulatory Environment

Although the Benchmarking Report identified no utopian solution anywhere, there was significant variance between territories researched. In many territories, including the UK, a confusing and discouraging array of regulation at various governance levels was apparent. This has potential to impede the realisation of the value of urban drone use through the sheer burden placed on technology providers, licensing local authorities and end usersto work their way through uncoordinated and contradictory regulations and regulatory behaviours.

Interestingly, the non-aviation regulatory environment did not appear to have been tested and developed in readiness for the realisation of the value of drone use in any of the territories researched. This could give the UK the opportunity to take a lead with a widely applicable regulatory framework.

The research and stress testing of the regulatory framework concluded that many use cases are possible within current regulations, as long as, between them, end-users, licensing authorities and operators ensure they are well understood and complied with. The DRC Regulatory Framework supports the achievement of this. It is therefore suitable for aiding the development of more detailed policies and acquisition frameworks and for multiple parties to use it as a basis to communicate effectively with each other.

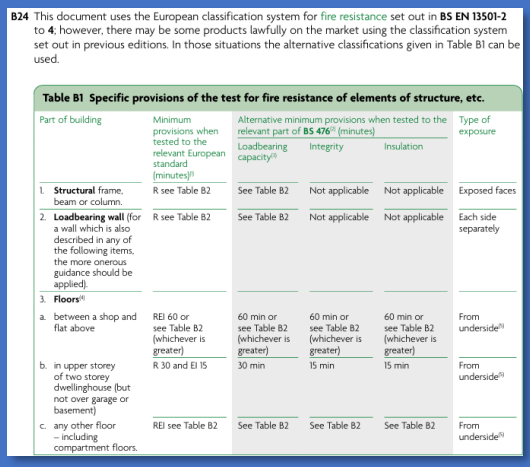
However, for the realisation of the full potential value of drone use at scale, development is required in regulation of aviation, planning, buildings, fire safety, electronic communications and environment. This is summarised in the table below and detail can be found in the Regulatory Framework.

	Regulators	Compliance for majority of current use cases	Developments for future operations
Aviation	CAA	✓	BVLOS Carriage of dangerous goods
Privacy and data protection	CAA Information Commissioner's Office (ICO), Biometrics and Surveillance Camera Commissioner	✓	
Planning	Department for Levelling Up, Housing and Communities in England and devolved governments in Wales, Scotland and Northern Ireland The Department for Transport (DfT), CAA	✓	Common planning definitions Top-down planning policies Evidence on need and consequences Guidance Permitted Development rights Aerodrome Safeguarding
Building Regulations	Department for Levelling Up, Housing and Communities in England & Wales and devolved governments in Scotland and Northern Ireland	✓	Battery charging
Fire Safety	Ministry of Housing, Communities & Local Government in England &	✓	Battery charging

	Regulators	Compliance for majority of current use cases	Developments for future operations
	Wales and devolved governments in Scotland and Northern Ireland Health and Safety Executive		
Health and Safety	Health and Safety Executive	✓	
Electrical Inspection	Health and Safety Executive	✓	
Electronic Communications	United Nations Ofcom	✓	Adequate/allocated bandwidth
Environment	CAA International Civil Aviation Organization Environment Agency	✓	Additional measures in aviation regs

Example – Building Regulations

In England and Wales, The Building Regulations 2010 include fire safety requirements. Guidance on fire resistance compliance is provided in an 'Approved Document'. These require review by fire safety experts to assess suitability and potential development to accommodate the charging of multiple Lithium-Ion batteries at future drone hubs.



B24 This document uses the European classification system for fire resistance set out in **BS EN 13501-2** to **4**; however, there may be some products lawfully on the market using the classification system set out in previous editions. In those situations the alternative classifications given in Table B1 can be used.

Table B1 Specific provisions of the test for fire resistance of elements of structure, etc.

Part of building	Minimum provisions when tested to the relevant European standard (minutes)[1]	Alternative minimum provisions when tested to the relevant part of BS 476[2] (minutes)			Type of exposure
		Loadbearing capacity[3]	Integrity	Insulation	
1. **Structural** frame, beam or column.	R see Table B2	See Table B2	Not applicable	Not applicable	Exposed faces
2. **Loadbearing wall** (for a wall which is also described in any of the following items, the more onerous guidance should be applied).	R see Table B2	See Table B2	Not applicable	Not applicable	Each side separately
3. **Floors**[4]					
a. between a shop and flat above	REI 60 or see Table B2 (whichever is greater)	60 min or see Table B2 (whichever is greater)	60 min or see Table B2 (whichever is greater)	60 min or see Table B2 (whichever is greater)	From underside[5]
b. in upper storey of two storey dwellinghouse (but not over garage or basement)	R 30 and EI 15	30 min	15 min	15 min	From underside[5]
c. any other floor – including compartment floors.	REI see Table B2	See Table B2	See Table B2	See Table B2	From underside[5]

Engagement

Engagement was achieved with the 43 local governments listed below

Braintree District Council

Blaby District Council

Buckinghamshire Council

Burnley Borough Council

Canterbury City Council

Causeway Coast & Glens Borough Council

Cornwall County Council

County Council Network

Darlington Borough Council

East Hertfordshire County Council

Fareham Borough Council

Flevoland, Netherlands

Gloucester City Council

Hammersmith and Fulham London Borough Council

Hampshire County Council

King's Lynn & West Norfolk Borough Council

Leeds City Council

Leicester City Council

Lisbon & Castlereagh City Council

Local Government Association, including Strategic Aviation Special Interest Group

Middlesborough Council

Milton Keynes City Council

North Lincolnshire Council

Nottingham City Council

Plymouth City Council

Reading Borough Council

Royal Borough Kingston Council

Rugby Borough Council

Solihull Metropolitan Borough Council

Somerset County Council

Staffordshire County Council

Transport for Greater Manchester

Transport for West Midlands

Wakefield Council

Walsall Metropolitan Borough Council

Waltham Forest Council

Warwickshire County Council

West Midlands Combined Authority

West Suffolk District Council

Winchester City Council

Worcester City Council

Worthing Borough Council

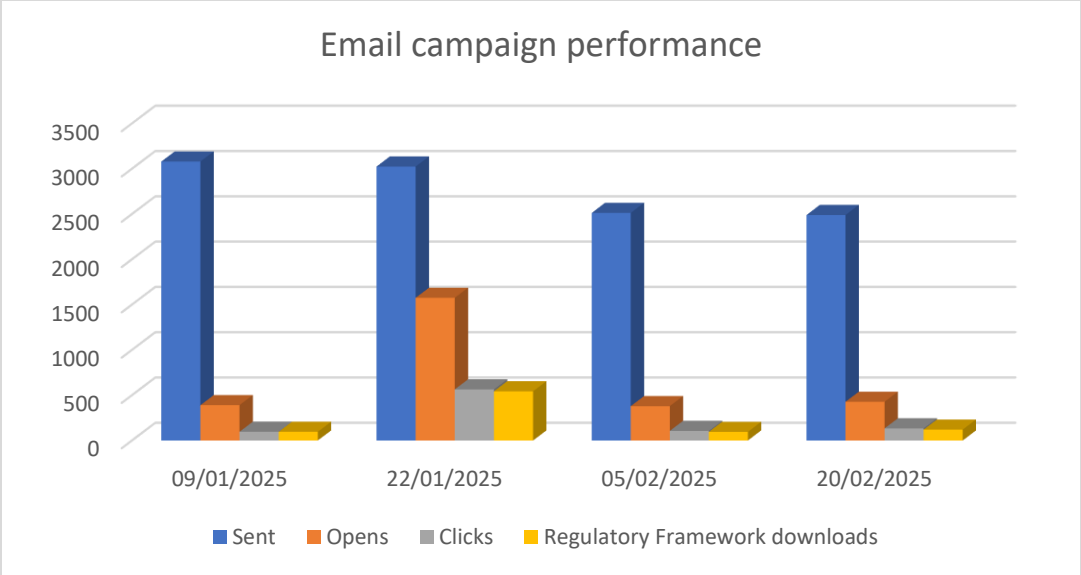
York City Council

Engagement was achieved with the stakeholder organisations listed in the table below.

Funders	Networks	Projects	Stakeholders	Regulators	Industry	Academia
UKRI Future Flight Challenge Connected Places Catapult	End user Advancement and Sharing Exchange (EASE) ARPAS-UK ADS Drone Platform and Counter-drone European Aerospace Cluster Network Logistics UK Hamburg Aviation Flight Crowd	Regulating Unmanned Aerial Vehicles within Smart City Environments AAM4Gov DronePorts:MK Future Flight Regional Use Case Study Future Flight Planning Guidance Report Project Blueprint Future of Flight Drones as First Responder FFLIP	West Midlands Police National Police Air Service NHS Canal & River Trust West Midlands Fire Service	Law Commission Regulators' Innovation Network Civil Aviation Authority Department for Transport British Standards Institute	Skyfarer Herotech8 Ajuno Manna 3Mile Dronecloud Altitude Angel DHL Pilotaware Airvis Dronedesk Inteliports Cornerstone Radnor Neuron ARC Aerosystems Optimal Cities Skyports Ferrovial Urban-Air Ports Angoka Flare Bright Sensoriis uAvionix	University of Bath University Hospital Coventry & Warwick University of West of England University of Reading University of Birmingham

Performance of the email campaign exceeded industry norms by some margin. Results are shown in the table and chart below.

Campaign date	Sent	Opens	Clicks	Regulatory Framework downloads	Use case report downloads
09/01/2025	3079	390	97	96	92
22/01/2025	3024	1575	564	543	545
05/02/2025	2512	379	106	95	94
	2489	427	134	120	N/A
Total				**854**	**731**



Drone Demonstrations and benefits

The demonstrations achieved are listed in the table below.

Coventry City Council	Road Surface Temperature Monitoring
	Flood Zone Mapping
	Heat Loss
	Park / Corporate Land Surveying - Allotments and Recycling Centre
	Bridge and General Structure Inspections
	Road Surveys
	School Site Monitoring
	Traffic Monitoring
Burnley Borough Council	Monitoring fly tipping
Cornwall County Council	Planning enforcement
Canal & River Trust	LiDAR survey of embankment
	Roof survey
Solihull Metropolitan Borough Council	Traffic surveys for autonomous bus
Somerset County Council	Woodland surveys for management plan
	Leisure Centre roof survey
	Multi-Storey car park survey for works
Warwickshire County Council	Traffic queue measurement to support development

Where possible, the benefits of using a drone over traditional methods were captured and potential annual benefits estimated. Some initial and indicative results can be found in the following table.

Use Case	Potential annual saving within organisation	Potential annual hours working at risk avoided	Other benefits
Building condition assessment	£800k	1,600	
Council asset roof survey	£100k-£300k	1,200-2,000	No road or building closures
Roof survey	£160k	720	Less disruption, faster, data easy to understand and share
Canal Embankment Survey	£33k	480	Faster Access to difficult areas No vegetation clearance
Footbridge inspection over road	£58k	60	No road traffic management
Event pedestrian egress monitoring	£23k		Enhanced understanding of traffic flow Response to incidents
Planning enforcement		20	Avoided confrontation with landowner
Traffic queue survey	£1k		Noticing other congestion issues and rat running
Traffic survey			Data only available from aerial view

Drone Readiness

Through engagement with many potential end users via events, email and drone demonstrations, it is clear that there is a broad range in the level of awareness of the potential of and readiness for drone use. This is particularly true of local government. Although some level of engagement was achieved with 43 local government organisations, there are still many more amongst the 317 UK local authorities that are far less aware of and prepared to realise the benefits of using drones.

Example: Somerset Council building condition assessment

Task
Assess condition of a car park building including the roof and leased areas

Challenge
Gaining access would normally require access equipment, take considerable staff time and create disruption to users

Solution
Aerial drone survey to create data model

Potential annual benefits

£

£800k in staff and equipment costs saved

1,600 hours working at risk avoided

Lessons Learned

In exhibiting at the LGA Conference & Exhibition, it became clear that engagement with senior leaders and executives of local governments achieves much better outcomes.

The combination of CCC's knowledge and experience of the operation of local government and MAA's knowledge and contacts in aviation contributed greatly to the success of the project and would be highly beneficial to related future projects.

Challenges

Task	Challenge	Solution
Attracting local authorities to a regulatory workshop	Approaching the LGA via its Strategic Aviation Special Interest Group (SASIG) did not result in the engagement that we had hoped for	Replaced the 'Simulation Workshops' with drone trial use cases to stress test the regulatory framework
Dissemination of Regulatory Framework to local authorities	Approaches to the LGA via its Strategic Aviation Special Interest Group (SASIG) did not result in the engagement hoped for. Further approaches to the general administration of the LGA (England & Wales), WLGA (Wales), NILGA (Northen Ireland), COSLA (Scotland) the County Council Network (CCN) with the offer of newsletter articles, presentations at their events and a series of online drop-in briefings yielded very limited responses	Exhibiting at the LGA Conference Met with 57 councils. 17 councils requested follow-up Dissemination to West Midlands authorities via connections at WMCA Funded demonstration with Warwickshire County Council Lunch & Learn with WMCA Direct marketing to local authorities

Next steps

Drone Ready Cities has generated momentum in the movement of end users from low awareness to adoption. Without continuation, this momentum will be lost. Any future intervention to achieve further movement would require resource at the start to rebuild this momentum before making progress beyond DRC.

CCC and MAA will develop an outline proposal for a follow-on project and engage with other partners that could contribute to and benefit from it. This is to be ready to make best value of any future funding streams as they emerge.

The Regulatory Framework identifies areas of regulation requiring development to permit the full potential value of drone use to be realised. With a further round of RPF funding looming, the DRC partners are enthusiastic to propose a project to continue to deliver the required regulatory developments identified in DRC so that the UK can be at the forefront of drone innovation.

Abbreviations

AAM	Advanced Air Mobility
BVLOS	Beyond Visual Line of Sight
CAA	Civil Aviation Authority
CCN	County Council Network
COSLA	Convention of Scottish Local Authorities
DfT	The Department for Transport
DRC	Drone Ready Cities
FFC	Future Flight Challenge
GUAAS	Global Urban & Advanced Air Summit
LCRIG	Local Council Roads Innovation Group
LGA	Local Government Association
MAA	Midlands Aerospace Alliance
NILGA	Northern Ireland Local Government Association
RPF	Regulators' Pioneer Fund
SASIG	Strategic Aviation Special Interest Group
STEM	Science, Technology, Engineering, and Mathematics
UK	United Kingdom
UKRI	UK Research & Innovation
VLOS	Visual Line of Sight
WLGA	Welsh Local Government Association
WMCA	West Midlands Combined Authority