Regulation of Advanced Air Mobility

European Union • United Kingdom

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SUMMARY Regulation (EU) 2018/1139 (Basic Regulation) updates European Union (EU) safety legislation in the field of civil aviation and includes, among other things, rules for unmanned aircraft systems (UASs), commonly referred to as drones. Drone operations are divided into the following three categories: open, specific, and certified. Urban Air Mobility (UAM), such as air taxis or drone flights with goods, falls under the certified category. Drone operations that fall in the certified category require the certification of the drone, the certification of the operator and, where applicable, the licensing of the remote pilot.

To address UAS operations and maintenance in the high risk “certified UAS category,” the European Union Aviation Safety Agency (EASA) is preparing amendments to the existing regulations that are applicable to manned aviation and proposing a new delegated regulation. A Notice of Proposed Amendment (NPA) was published on June 30, 2022 (NPA 2022-06). It addresses air mobility with manned vertical take-off and landing (VTOL)-capable aircraft, the initial airworthiness of UAS subject to certification, and the continuing airworthiness of those UAS operated in the “specific UAS category.” The adoption by the European Commission is expected for the fourth quarter of 2023.

In July 2019, the EASA published a VTOL special condition (SC) to address some VTOL-capable aircraft under certification, in particular air taxis (SC-VTOL-01). It is expected that the SC-VTOL-01 will be the basis for developing a VTOL certification specification in the future. The German companies Lilium N.V. and Volocopter GmbH are seeking type certification for their VTOL-capable aircrafts under SC-VTOL-01, which is expected for 2025 and 2024, respectively.

In March 2022, the EASA published the non-binding “Prototype Technical Design Specifications for Vertiports” (PTS-VPT-DSN) with detailed recommendations, in particular to utilize a funnel-shaped area above the vertiport (obstacle-free volume) and omnidirectional trajectories to vertiports. In addition, NPA 2022-06 includes some recommendations regarding the regulation of vertiports and classifies them as “aerodromes.”

I. Introduction

Regulation (EU) 2018/1139 (Basic Regulation) updates European Union (EU) safety legislation in the field of civil aviation and includes, among other things, rules for unmanned aircraft systems (UASs), commonly referred to as drones.\(^1\) UASs are defined as “any aircraft of any operating mass

\(^1\) Regulation (EU) 2018/1139 (Basic Regulation), 2018 O.J. (L 212) 1, https://perma.cc/D8E5-YASU.
flown autonomously or remotely without a pilot on board.” Remote pilots are defined as “natural person[s] responsible for safely conducting the flight of an unmanned aircraft by operating its flight controls, either manually or, when the unmanned aircraft flies automatically, by monitoring its course and remaining able to intervene and change the course at any time.”

“Unmanned aircraft system operators (‘UAS operators),” on the other hand, are “any legal or natural person[s] operating or intending to operate one or more UAS.”

The Basic Regulation authorizes the European Commission to adopt implementing and delegated acts to establish detailed provisions for the operation of drones and for personnel, including remote pilots; for the design, production, and maintenance of drones; and for the personnel, including remote pilots, involved in those activities. In 2019, the European Commission adopted an implementing regulation that governs the operation of commercial and recreational UASs and sets out requirements for their remote pilots, as well as a delegated regulation setting out technical requirements for drones. In 2021, it adopted another implementing regulation, which defines a minimum set of requirements for the safe UAS operations in certain UAS geographical zones (U-space airspace), integration of UAS into the aviation system, and for the provision of U-space services. It applies to operators of UAS, U-space service providers, and providers of common information services.

Furthermore, to address UAS operations and maintenance in the high risk “certified UAS category,” in particular with regard to urban air mobility (UAM), the European Union Aviation Safety Agency (EASA) is preparing amendments to the existing regulations that are applicable to manned aviation and proposing a new delegated regulation. On December 19, 2022, EASA published the fourth edition of the Terms of Reference for Rulemaking Task 0230 (ToR RMT.0230), outlining the timeline and proposed regulatory framework for the operation of UAS and for UAM in the EU aviation system. A Notice of Proposed Amendment (NPA) for ToR RMT.0230 was published on June 30, 2022 (NPA 2022-06). It addresses air mobility with manned

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2 Id. art. 3, no. 30.

3 Id. art. 3, no. 31.


5 Basic Regulation, arts. 57, 58. For a definition of implementing and delegated acts, see Consolidated Version of the Treaty on the Functioning of the European Union (TFEU), arts. 290 & 291, para. 2, 2016 O.J. (C 202) 47, https://perma.cc/3S78-4ZVQ.


8 Id. art. 1, para. 2.

9 More information on the “certified category” is provided below.

10 European Union Aviation Safety Agency (EASA), ToR RMT.0230, Issue 4, https://perma.cc/F7DU-KPPQ.

11 An NPA is comparable to a Notice of Proposed Rulemaking from a U.S. federal agency that announces and explains the agency’s plan to address a problem or accomplish a goal.

vertical take-off and landing (VTOL)-capable aircraft, the initial airworthiness of unmanned aircraft systems subject to certification, and the continuing airworthiness of those unmanned aircraft systems operated in the “specific UAS category.” The public consultation ended on September 30, 2022, and the EASA is expected to submit its opinion to the European Commission in the first quarter of 2023. Based on the opinion, the European Commission will decide whether to amend the existing regulations and adopt new delegated and implementing acts. The adoption by the European Commission is expected for the fourth quarter of 2023.13 Other NAPs for ToR RMT.0230, such as requirements for VTOL-capable aircraft without a human pilot on board, are not covered by NPA 2022-06 and will be published at a later stage.

EU regulations are directly applicable in the EU Member States and replace existing national rules.14 However, Member States may enact national rules for operating drones for subjects falling outside the scope of the regulations.15 The rules contained in the 2019 implementing regulation started applying on December 31, 2020; however, there are some transitional rules until December 31, 2023.16 Rules in the 2021 implementing regulation started applying on January 26, 2023.17

The implementing regulations and the delegated regulation set out the framework for the safe operation of UAS in the EU. They adopt a risk-based approach, and, as such, do not differentiate between commercial and non-commercial UAS activities. Instead, they consider the weight and the specifications of the UAS and the operation it is intended to conduct.

II. Categories of Drone Operations

The Implementing Regulation 2019 divides drone operations into the following three categories: open, specific, and certified.18 Depending on the category, drone operators require an operational authorization or certification from the national authorities. No authorization is required for the open category, whereas the specific category requires an operational authorization. Drone operations that fall in the certified category require the certification of the drone, the certification of the operator and, where applicable, the licensing of the remote pilot.19 Urban Air Mobility (UAM) falls under the certified category. The EU uses the term UAM instead of Advanced Air Mobility (AAM).

Drone operations are classified as “certified” when they are certified in accordance with specific enumerated standards outlined in the Delegated Regulation and the operation involves the

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13 Id. at 1.
14 TFEU, art. 288, para. 2.
15 Basic Regulation, arts. 2, 56, para. 8; Implementing Regulation 2019, art. 18; Implementing Regulation 2021, art. 22.
16 Implementing Regulation 2019, art. 23.
17 Implementing Regulation 2021, art. 19.
18 Implementing Regulation 2019, art. 3.
19 Id.
• operation over assemblies of people,
• transport of people, or
• carriage of dangerous goods that may result in high risk for third parties in case of an accident.\textsuperscript{20}

Drone flights with passengers on board, such as air taxis or airport shuttles, or the transport of goods, such as last mile delivery of small goods, cargo, or medical/emergency equipment, would be examples.\textsuperscript{21} Furthermore, the certified category also applies to drone operations where the national authority considers that the risk cannot be adequately mitigated without certification of the drone and the operator, and the licensing of the remote pilot.\textsuperscript{22}

### III. Legislative Framework

#### A. EASA Special Condition on Vertical Take-Off and Landing (SC-VTOL)

In July 2019, the EASA published a VTOL special condition (SC) to address some VTOL aircraft under certification, in particular air taxis (SC-VTOL-01).\textsuperscript{23} Three Means of Compliance (MOC) with the SC-VTOL were issued by the EASA.\textsuperscript{24} It is expected that the SC-VTOL-01 will be the basis for developing a VTOL certification specification in the future.

Special conditions are defined as follows:

The EASA is authorized to issue special detailed technical specifications (special conditions) for a product if the related certification specifications do not contain adequate or appropriate safety standards for the product because:

1. the product has novel or unusual design features relative to the design practices on which the applicable certification specifications are based;
2. the intended use of the product is unconventional; or
3. experience from other similar products in service or products having similar design features or newly identified hazards have shown that unsafe conditions may develop.\textsuperscript{25}

As a justification for the SC, the EASA stated that

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\textsuperscript{20} Id. art. 6.


\textsuperscript{22} Implementing Regulation 2019, arts. 6, 11.

\textsuperscript{23} EASA, Special Condition Vertical Take-Off and Landing (VTOL) Aircraft (SC-VTOL-01) (July 2, 2019), https://perma.cc/8S4C-8N5K.


Despite having design characteristics of aeroplanes, rotorcraft or both, in most cases EASA was not able to classify these new vehicles as being either a conventional aeroplane or a rotorcraft as covered by the existing certification specifications. Applying either the certification specifications for aeroplane or for rotorcraft, depending on whether they are rather an aeroplane or rather a rotorcraft, and only adding some modifications would not ensure equal treatment. . . . Instead, EASA favours to use objective based certification requirements, which provide the necessary flexibility to certify innovative state-of-the-art designs and technology, to establish a common set of conditions for the certification of these new concepts. Therefore EASA developed this VTOL Special Condition. . . .”

The SC-VTOL is applicable to aircraft with a maximum of nine passenger seats and a maximum certificated takeoff mass of 3,175kg (7,000 lbs.) or less. It includes two types of certification categories, basic and enhanced, depending on the intended type of operations. VTOL aircraft intended to fly over congested areas or for commercial air transport operations of passengers must get an enhanced category certification. For the basic category, the safety objectives are linked to the maximum number of passenger seats. VTOL aircraft in the enhanced category must be capable of continued safe flight and landing, whereas the ones in the basic category must be capable of a controlled emergency landing. Recorders will be required for VTOL aircraft.

B. ToR RMT.0230 (C)

The rule drafting process for UAS operations in the certified category and UAM is ongoing. According to the EASA, the objectives of RMT 0230 (C) are

- to ensure a high and uniform level of safety for UAS, enabling operators to safely operate UAS in the single European sky (SES), especially for higher-risk operations;
- to create the conditions for manned aircraft and UA to safely operate in the U-space airspaces;
- to promote innovation and development in the fields of UAS and urban air mobility while creating an efficient, proportionate, and well-designed regulatory framework, free of burdensome rules that could hinder the market’s development;
- to harmonise the regulatory framework across MSs by enhancing clarity, filling the gaps, and removing the inconsistencies that a fragmented system may have (e.g. cross-border operation of UA); and
- to foster an operation-centric, proportionate, as well as risk- and performance-based regulatory framework, considering important aspects, such as privacy, personal data protection, security, and safety.

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26 SC-VTOL-01, supra note 23, at 4.
27 Id. at 7, subpart A, VTOL.2005, (a).
28 Id. at 7, subpart A, VTOL.2005, (b).
29 Id.
30 Id. at 5.
31 Id. at 7, subpart A, VTOL.2005, (b).
32 Id. at 6; subpart F, VTOL.2555.
33 ToR RMT.0230, supra note 10, no. 2. Emphasis added by author.
The RMT 0230 (C) differentiates between three types of operations, as follows:

- **Type #1 operations**: Instrument flight rules (IFR) operations of UAS for the carriage of cargo in airspace classes A–C (ICAO airspace classification) and taking off from and/or landing at aerodromes falling under the Basic Regulation [Regulation (EU) 2018/1139].

- **Type #2 operations**: operations of UAS taking off and/or landing in a congested (e.g. urban) environment using predefined routes in the U-space airspace (part of the operation could be in a non-congested, e.g. rural, environment). These include operations of unmanned VTOL aircraft carrying passengers (e.g. air taxis) or cargo (e.g. goods delivery services).

- **Type #3 operations**: same as for type #2 operations with VTOL aircraft with a pilot on board, including operations out of the U-space airspace.

The EASA will publish three different opinions that will deal with the different types of operations and will propose amendments to Regulation (EU) No 965/2012 (Air Operations), Regulation (EU) No 1178/2011 (Aircrew Regulation), Regulation (EU) No 748/2012 (Initial Airworthiness, IAW), Regulation (EU) No 1321/2014 (Continuing Airworthiness, CAW), Regulation (EU) No 923/2012 (Standardised European Rules of the Air, SERA) and Regulation (EU) No 139/2014 (Aerodromes, ADR).

At a later undetermined date, the EASA will publish RMT.0230(D) on certification specifications for UAS (CS-UAS and CS-Light UAS), certification specifications for vertical take-off and landing aircraft (CS-VTOL), and certification specifications for European technical standard orders (CS-ETSO).

C. **Notice of Proposed Amendment (NPA) 2022-06**

The NPA 2022-06 was published on June 30, 2022. It states that there is no agreed and consolidated definition of the notion of UAM and that the focus on mobility might be too restrictive. In this document and in future EU legislation, the EU will therefore treat UAM as a subcategory of Innovative Air Mobility (IAM). IAM and UAM as well as similar concepts are defined as follows:

- **Innovative aerial services (IAS)**: the set of operations and/or services that are of benefit to the citizens and to the aviation market, and that are enabled by new airborne technologies; the operations and/or services include both the transportation of passengers...
and/or cargo and aerial operations (e.g. surveillance, inspections, mapping, telecommunications networking, etc.).

— **Innovative air mobility (IAM):** the safe, secure and sustainable air mobility of passengers and cargo enabled by new-generation technologies integrated into a multimodal transportation system.

— **Urban air mobility (UAM):** the subset of IAM operations conducted in to, within or out of urban environments.

— **VTOL-capable aircraft:** a power-driven, heavier-than-air aircraft, other than aeroplane or rotorcraft, capable of performing vertical take-off and landing by means of lift or thrust units used to provide lift during take-off and landing.\(^37\)

For UAS subject to certification, the NPA 2022-06 proposes rules on initial airworthiness, meaning amendments to the Initial Airworthiness Regulation, with most changes related to the introduction of the concept of “command unit” and “command unit components”; for UAS subject to certification which are operated in the high-risk specific category, rules on all aspects of UAS continuing airworthiness (maintenance and continuing airworthiness management), which will be published as a new delegated act; and for manned VTOL-capable aircraft, rules on air operations, flight crew licensing, and SERA.\(^38\)

In addition, the definitions of helicopter and rotorcraft have to be amended to distinguish them from VTOL-capable aircraft.\(^39\) The NPA proposes to define “helicopter” as “heavier-than-air aircraft supported in flight chiefly by the reaction of the air on up to two power-driven rotors on substantially vertical axes” and “rotorcraft” as “power-driven, heavier-than-air aircraft that depends principally for its support in flight on the lift generated by up to two rotors.”\(^40\) Helicopters are to be considered a subcategory of rotorcraft.\(^41\) For VTOL-capable aircraft, the EASA proposes to “employ the regulatory infrastructure available today for aeroplanes and helicopters with the necessary amendments considering novel aircraft designs, types of propulsion, and concepts of operation.”\(^42\) Different rules would apply to operations in congested (urban) areas, such as in densely populated urban areas or between such areas and suburbs where transportation centers/hubs may be located or originating from a congested area to a non-congested area, and operations in non-congested areas, such as countryside-to-countryside non-commercial, low-risk operations with VTOL-capable aircraft.\(^43\) A future NPA will deal with VTOL-capable aircraft that are unmanned and carry passengers or cargo (UVCA and DVCA) and their relevant general requirements.\(^44\)

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\(^{37}\) Id. at 18, 19.

\(^{38}\) Id. at 23, 24; 25-28; 29-32.

\(^{39}\) Id. at 35.

\(^{40}\) Id.

\(^{41}\) Id.

\(^{42}\) Id. at 35, 36.

\(^{43}\) Id. at 36.

\(^{44}\) Id.
Operational requirements proposed for VTOL-capable aircraft include pilot training related to engine management and emergency handling; use of normal, abnormal and emergency checklists; air traffic control (ATC) communication; autopilot management, if applicable; and use of simplified in-flight documentation, among others, as well as flight experience. \(^{45}\) Operator proficiency checks must be performed every 12 months.\(^{46}\) The requirement to install recorders established in SC-VTOL-01 will be maintained as part of the airworthiness requirements. Some data may be transmitted and recorded remotely.\(^{47}\)

Furthermore, with regard to SERA, the document proposes the establishment of a limited set of predefined routes or areas/corridors and a limited number of vertiports and operating sites in each city until “experience is gained on how to validate UAS operations in urban environments from a safety, environmental, security and privacy point of view.”\(^{48}\)

Lastly, in the initial phase of VTOL operations, the minimum flight visibility for visual meteorological conditions (VMC) should not be less than 1,500 meters (about 4,921 feet) for manned VTOL-capable aircraft.\(^{49}\)

### D. Vertiport and Infrastructure Guidance

RMT.0230(G) on certification specifications for vertiports design (CS-VPT-DSN) based on the “Prototype Technical Design Specifications for Vertiports” and to amend the certification specification for aerodrome design (CS-ADR-DSN) will be published at a later date.\(^{50}\) The EASA published the non-binding “Prototype Technical Design Specifications for Vertiports” (PTS-VPT-DSN) in March 2022.\(^{51}\) “Vertiport” is defined as “an area of land, water, or structure used or intended to be used for the landing and take-off of VTOL-capable aircraft.”\(^{52}\) However, the PTS-VPT-DSN states that vertiports would be classified as aerodrome with regard to aerodrome and vertiport regulations.\(^{53}\) According to the PTS-VPT-DSN, rules for vertiports will be developed in two stages, as follows:

[i]n the first stage, EASA will introduce the Prototype Technical Specifications as non-regulatory material for the design of VFR vertiports or parts thereof, applicable for the operation of manned VTOL-capable aircraft certified in the enhanced category (PTS-VPT-DSN, hereinafter ‘PTTs’). In the second stage, the rules will cover vertiports that are

\(^{45}\) Id. at 172, ORO.FC.402.

\(^{46}\) Id. at 173, ORO.FC.430.

\(^{47}\) Id. at 222.

\(^{48}\) Id. at 41, 42.

\(^{49}\) Id. at 43.

\(^{50}\) ToR RMT.0230, supra note 10, no. 4.8.


\(^{52}\) SC-VTOL-01, supra note 23, at 7, VTOL.2000, (b)(8).

\(^{53}\) PTS-VPT-DSN, supra note 51, at 4.
considered to be in the scope of Regulation (EU) 2018/1139 (the ‘Basic Regulation’): a full set of vertiport rules, including the authority, vertiport operator and vertiport operation requirements, will be introduced, along with the certification specifications (CSs) and guidance material (GM) for vertiport design and certification. The Basic Regulation (Article 2(1) (e)) defines the aerodromes (vertiports) that fall under its scope.\(^{54}\)

The PTS-VPT-DSN recommends in particular, to utilize

a funnel-shaped area above the vertiport, defined as an **obstacle-free volume**. This concept is tailored to the operational capabilities of the new VTOL aircraft, which can perform **landings and take-offs with a significant vertical segment**. Depending on the urban environment and on the performance of certain VTOL-capable aircraft, **omnidirectional trajectories to vertiports** will be also possible. Such approaches can more easily take account of **environmental and noise restrictions** . . . \(^{55}\)

However, NPA 2022-06 already includes some recommendations regarding the regulation of vertiports and classifies them as “aerodromes.”\(^{56}\) The definition of “vertiport” used in SC-VTOL-01 and PTS-VPT-DSN is kept.\(^{57}\) It states that “[v]ertiports are aerodromes predominantly used by and designed to accommodate VTOL-capable aircraft. Vertiports shall have adequate infrastructure and provide necessary services with regard to operations with VTOL-capable aircraft.”\(^{58}\) Furthermore, the NPA 2022-06 points out that vertiports might benefit from alternative security measures than the ones foreseen by the general EU aviation security framework depending on the nature of the operations and the location.\(^{59}\) When taking off and landing at vertiports within the airside of an aerodrome, the NPA 2022-06 suggests that a wake-turbulence analysis might be needed to evaluate risks with flying close/near an aerodrome with “conventional” manned aircraft and considering the different types of manned VTOL-capable aircraft operating at vertiports.\(^{60}\) To mitigate the risk of collision, a traffic management function, a vertiport information zone (VIZ) similar to the flight information zone (FIZ) managed by a third party, and an effective time slot allocation system are proposed.\(^{61}\)

\(^{54}\) Id. at 12.

\(^{55}\) Id. at 1; at 65, PTS VPT-DSN D.455. Emphasis added by author.

\(^{56}\) NPA 2022-06, supra note 12, at 39, point 2.3.4.5; at 44, point 2.3.6.3.

\(^{57}\) Id. at 164, Proposed Amendments to Commission Regulation (EU) No 965/2012, point 3.6.2., annex I, no (144).

\(^{58}\) Id. at 190.


\(^{60}\) NPA 2022-06, supra note 12, at 254, 255, point 4.1.3.2.3.1.1.

\(^{61}\) Id. at 266.
IV. Bilateral Agreements

The website of the EASA provides a list of all bilateral agreements (Bilateral Aviation Safety Agreements, BASAs) that the EU has concluded with non-EU countries on aviation.62 There is a total of six bilateral agreements in place, including one with the United States.63 The EASA also provides a consolidated version of the EU-USA bilateral agreement that incorporates amendments to the BASA annexes adopted until 2020 by the Bilateral Oversight Board.64 The purpose of the EU-USA BASA is to enable the reciprocal acceptance of findings of compliance and approvals issued by the FAA and EASA and EU aviation authorities, among other purposes.65 In particular, it covers airworthiness approvals and monitoring of civil aeronautical products; environmental testing and approvals of civil aeronautical products; approvals and monitoring of maintenance facilities; personnel licensing and training; operation of aircraft; and air-traffic services and air-traffic management.66

EASA itself concludes working arrangements (WAs) with the respective authorities of a non-EU country or a regional or international organization that cover matters of technical nature. There are two WAs with the U.S. Federal Aviation Administration (FAA), one on the Airbus A320 aircraft family final assembly line and delivery center in Mobile, Alabama and one on the joint type certification and continued airworthiness of the CFM International SA.67

In addition, the EASA concludes Memoranda of Understanding (MOUs) on certain topics. For example, on October 18, 2022, the EASA and the Civil Aviation Authority of Singapore (CAAM) signed an MOU (CAAS-EASA MOU) to “collaborate on urban air mobility to support the development, deployment and safe operation of vertical take-off and landing (VTOL) aircraft.”68 They will collaborate to develop regulatory standards and strategies for outreach on UAM, analyze public attitudes towards UAM and VTOL as a mode of transport in an urban environment, and organize conferences and other activities.


64 Consolidated Version of the Agreement between the USA and the EU on Cooperation in the Regulation of Civil Aviation Safety (BASA), Nov. 2020, https://perma.cc/A7D4-FFDB.

65 EU - USA Bilateral Agreement, art. 2, point A.

66 Id. art.2, point B.


V. Certification of Urban Mobility Companies

Several companies have started the certification process with the EASA, in particular Lilium N.V., a company headquartered in Munich, Germany, and Volocopter GmbH, a company headquartered in Bruchsal, Germany. The SC-VTOL states that the EASA “has received a number of requests for the type certification of vertical take-off and landing (VTOL) aircraft.”

A. Lilium N.V.

In 2017, Lilium applied for type certification of its Lilium jet, an all-electric vertical take-off and landing (eVTOL) jet, with the EASA under SC-VTOL-01. In 2020, it received its EASA certification basis (CRI-A01) for the Lilium jet. On April 12, 2022, it submitted a full set of Means of Compliance proposals to the EASA for the type certification of the eVTOL Lilium jet to show how it conforms with airworthiness requirements prescribed in the certification basis CRI-A01. According to the press release, Lilium is seeking concurrent type certification validation with the U.S. FAA under the provisions of the EU-U.S. Bilateral Agreement. Type certification from the EASA is expected by 2025.

In addition, on April 27, 2022, Lilium announced that it had completed the second Design Organization Approval (DOA) audit by the EASA. The third DOA was completed on December 15, 2022, and the fourth and final audit is slated for the first half of 2023. Receiving the DOA is a prerequisite for the type approval. Furthermore, in May 2020, Lilium applied for Production Organisation Approval (POA), meaning approval for producing type-certificated aircraft, with the German Federal Aviation Office (Luftfahrt-Bundesamt, LBA), which is planning audits in 2022.

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69 SC-VTOL-01, supra note 23, at i.
71 Lilium Press Release, supra note 70.
72 Id.
73 SEC, supra note 70, at 42.
76 Basic Regulation, article 77, para. 2(b).
77 SEC, supra note 70, at 59.
B. Volocopter GmbH

On December 9, 2019, Volocopter received DOA from the EASA. In July 2021, it received POA from the EASA. Volocopter is seeking certification under SC-VTOL-01. Full type certification is expected for 2024. In addition, it is applying simultaneously for both an air operator’s certificate and an operating license to conduct commercial operations.


80 Volocopter Press Release, supra note 78.


82 Volocopter, How One Volocopter Aircraft Is Being Prepped to Soar, supra note 81; Volocopter, How Air Taxi Certification Will Enable Commercial Ops, supra note 81.
The United Kingdom (UK) aims to be a leader in Advanced Air Mobility (AAM). The Civil Aviation Authority (CAA) regulates many areas covered under AAM, which is currently being governed by the existing regulatory framework that applies to all aircraft. The CAA has adopted a “by case approach” to determine whether new regulations should be introduced for AAM aircraft, and the Law Commission is currently reviewing the legislative framework for aircraft, including AAM. The CAA encourages manufacturers of AAM to work closely with it to determine the applicable regulations and help them navigate the UK’s system.

The CAA has a regulatory sandbox in operation to encourage innovation, as well as funding for projects that meet certain requirements. A consortium of manufacturers was recently granted over $11 million to demonstrate the feasibility of AAM in the UK.

I. Introduction

The Civil Aviation Authority (CAA), which has a statutory responsibility for the regulation of aviation safety, air traffic management and airspace in the United Kingdom (UK), is responsible for regulating a number of aspects of emerging innovations in the context of novel aviation. The CAA has adopted the term Advanced Air Mobility (AAM), replacing the term Future Air Mobility, with regard to revolutionary novel aircraft. The CAA stated that the adoption of this term was due to its use by many stakeholders. The CAA notes this term was initially used by the United States National Aeronautics and Space Administration to refer to “[a]ir transportation services for people and/or cargo between places . . . . Local, regional, intraregional, urban – using revolutionary new aircraft.” There is currently no universal definition of AAM, and multiple definitions are being recognized for AAM concepts. The CAA considers that “[i]t is important that terms are harmonised to establish recognised definitions on a global scale. This will help the continued development of use cases and will ensure regulation is clear.”

The CAA has stated that AAM has the following four meanings:

- New and novel ways of transporting people, goods and services by air commercially.
- Business models and operational solutions that result in new experiences with air-travel and transportation.

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3 Id. at 3.
Aircraft or aviation systems with significant modifications to their design and operation.

Novelty as a result of advanced technology-driven systems.4

II. Regulation

The UK left the European Union (EU) on December 30, 2020, and consequently is no longer part of EU aviation institutions, such as the European Union Aviation Safety Agency (EASA). The CAA has taken over the role of EASA in the UK and, while significant references are made to EU law in documents published by the CAA, these are to retained EU legislation, which can be amended by UK domestic law.5 Upon the UK’s exit from the EU, the CAA adopted EASA’s Acceptable Means of Compliance, Guidance Material, and Certification Specifications (CS) as they stood on December 31, 2020, but has made a number of amendments to these documents since this time.6

There is currently no bespoke regulatory regime for AAM in the UK. The CAA has stated:

Overall, the existing aviation regulation framework established in primary legislation already contains many powers to allow new and novel aircraft into the UK aviation system, where it is safe to do so. Nevertheless, some specific changes may be required, and much detail and reform in secondary legislation and associated guidance will be needed.7

As noted, the CAA anticipates that new laws will be needed for AAM but, when considering the regulatory framework for AAM, these “need to be flexible enough to enable future innovation, whilst maintaining or enhancing existing safety levels and mitigation of risks.”8 In 2021, the Department for Transport stated:

To bring this new technology to market in an integrated, safe, secure and sustainable way we need to ensure our regulatory framework is ready and that it is also flexible enough to keep pace as technology develops. We will put in place legislation and regulation that allows us to respond to new developments and innovations in aviation, and realise the benefits offered by this technology while empowering regulating bodies to operate effectively.9

The CAA has stated it intends to bring new methods of control, operating models, and regulation to the UK’s aviation sector for these products to be able to fly lawfully in UK airspace. The agency has said that these new regulations are important to “allow the UK to be at the forefront of the

4 Id. at 3.
6 Information on Aviation Law in the UK, UK CAA, https://perma.cc/YSP9-7RNW.
8 Id. at 9.
next aviation revolution.”

The CAA has accepted that the current framework for commercial air transport “is likely to be challenged by new or novel aircraft solutions” and that novel aircraft do not yet have empirical reliability data to demonstrate safety due to being in the development stage. The CAA has noted that introducing new safety rules for new aircraft will require the introduction of new policies and standards that could potentially limit market access.

In response to this, the CAA has stated that “the target level of safety associated with current airworthiness requirements may not necessarily be achieved given the maturity of the technology, and a risk-based approach might be considered when taking into account the end use.”

The CAA currently uses airworthiness certification, type certificate, and type approval for piloted aircraft. It can also approve the testing and trialing of novel aviation technology that does not fall within UK Regulation (EU) 2018/1139 (commonly referred to as the UK Basic Regulation), or its national approval system, known as the British Civil Airworthiness Requirements (BCAR), which are issued under the Air Navigation Order, through “E conditions,” discussed in Part II(B)(5), below, and permits to fly without certification.

Two exceptions to AAM that are not currently covered within the UK’s regulatory framework are innovative personal flight and wing-in-ground craft. These do not fall within the definition of aircraft contained in UK Regulation (EU) No. 2018/1139, which adopted the definition of aircraft contained in Annexes 7 and 8 of the Convention on International Civil Aviation.

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12 Id. ¶ 37.

13 Id. ¶ 29.


16 “Wing-in-ground (WIG) craft are supported in their main operational mode solely by aerodynamic forces which enable them to operate at low altitude above the sea surface but out of direct contact with that surface.” Wing-in-Ground (WIG) Craft, Int’l. Mar. Org., https://perma.cc/TT4R-6W48.


The UK’s Acceptable Levels of Safety Performance standards apply to new and novel aviation.\textsuperscript{19} The CAA advises individuals to engage with it before starting any project so it can advise on potential routes of certification.\textsuperscript{20}

A. Law Commission Review of the Law Surrounding Autonomous Flight

In July 2022, the CAA and the Department for Transport requested that the Law Commission review the law surrounding autonomous flight.\textsuperscript{21} The commission is reviewing the current legislative regime applicable to automation in the aviation sector and is examining the operation of drones as well as the use of “[AAM] vehicles, such as electric vertical take-off and landing (eVTOL) aircraft.”\textsuperscript{22} This review started in September 2022 and is expected to take two years.\textsuperscript{23}

B. AAM Aircraft Certification

There is not yet a specific certification for AAM aircraft, and the current regulatory regime applies for these aircraft.\textsuperscript{24} All aircraft on the UK register must comply with the applicable airworthiness directives, issued by the CAA, EASA, or the national aviation authority of the country in which the aircraft was designed.\textsuperscript{25} Part 4 of the Air Navigation Order provides that all aircraft operating over the UK must have a valid certificate of airworthiness, but aircraft registered in the UK that cannot satisfy the requirements for a certificate of airworthiness may be issued a permit to fly, or experimental \((e)\) conditions, which contain additional restrictions and do not satisfy the requirements for international flight.\textsuperscript{26}


\textsuperscript{21} New Project to Examine the Legal Implications of Increased Autonomy in Aviation, UK CAA (July 21, 2022), https://perma.cc/FA2V-UDFD.

\textsuperscript{22} Id.

\textsuperscript{23} Aviation Autonomy, Law Comm’n, https://perma.cc/5SCU-7B49.


\textsuperscript{26} Air Navigation Order, Part 4; see also UK CAA Safety Reg. Grp., Permit to Fly Aircraft (CAP 733) vi (June 28, 2004), https://perma.cc/U4PP-4V5G.
1. Type Certificates

The CAA issues type certificates (TC) and restricted type certificates (RTC)\textsuperscript{27} to approve products for applicants in the UK, such as aircraft, engines or propellers.\textsuperscript{28} The term type “equates to a make or model of the aircraft”\textsuperscript{29} and the certificate establishes that the “generic type design meets applicable design and safety requirements.”\textsuperscript{30} In order to be eligible for a TC or RTC the applicant must hold an appropriate design organization approval, such as

- Design Organization Approval (DOA) in accordance with Part 21 Subpart J, or
- Alternative Procedures to DOA (ADOA)\textsuperscript{31} as per 21.A.14(b) for ELA2 aircraft, piston engines or propellers, or
- in the case of non-Part 21 aircraft (Annex 1) or engine/propeller, a design organization approval in accordance with BCAR A8-21.\textsuperscript{32}

For those applying for certification for a European Light Aircraft (ELA1),\textsuperscript{33} or an engine or propeller for an ELA1 that does not have an organizational approval, “the applicant’s capability may be shown through the Certification Programme.”\textsuperscript{34} In cases where the CAA requires a DOA or ADOA, the “scope of the type certification project must be within the approved scope and terms of approval of the DOA/ADOA.”\textsuperscript{35}

The CAA has provided a simplified overview of the approval process for a TC and RTC.

- The applicant must submit the application on CAA form SRG1726NR,\textsuperscript{36} and the applicant must provide the initial Certification Program.
- The CAA must check the applicant’s eligibility to ensure that the project is within the DOA scope.

\textsuperscript{27} Approval of Part 21 Aeroplanes List of Aeroplanes UK Type Certificate Data Sheets, Including TCDS for Noise, UK CAA, https://perma.cc/5S5V-ETWQ.

\textsuperscript{28} Type Certificates and Restricted Type Certificates, UK CAA, https://perma.cc/Z5GC-PJJ3.

\textsuperscript{29} UK Research & Innovation & UK CAA, Innovation Hub Guide for Innovators: On the Path to Certification – An Introduction to Initial Airworthiness (CAP2289) 6 (Nov. 2021), https://perma.cc/F29X-592N.

\textsuperscript{30} Id.

\textsuperscript{31} Design Organisation Approvals, UK CAA, https://perma.cc/KAR4-P4MA.

\textsuperscript{32} Certificates of Airworthiness, UK CAA, https://perma.cc/UPH3-W6AL.


\textsuperscript{34} Type Certificates and Restricted Type Certificates, UK CAA, supra note 28.

\textsuperscript{35} Id.

\textsuperscript{36} Application for Certification or Validation Approval, UK CAA, https://perma.cc/774R-J7LF.
• The applicant must provide the CAA with technical details of the project and the initial Certification Program.

• The applicant and CAA must review the Certification Program and agree upon the certification basis, means of compliance, and level of involvement (LOI).

• The applicant must demonstrate compliance with airworthiness and environmental requirements.

• The CAA must determine compliance as per the agreed LOI and confirm this with the applicant.

• The applicant must provide a Declaration of Compliance.

• The CAA must compile the Type Certificate Data Sheet (TCDS) and TCDS Noise (TCDSN) and then issue the TC/RTC and publish the TCDS/TCDSN.\(^{37}\)

2. \textit{Certificates of Airworthiness}

The CAA issues certificates of airworthiness to aircraft that meet design standards,\(^{38}\) provided they “are in a condition for safe operation.”\(^{39}\) There are two categories of aircraft that may receive a certificate of airworthiness: Part 21 aircraft, which are those within the scope of Regulation (EU) 2018/1139, and non-Part 21 aircraft, which are either operated for state or public service purposes listed in article 2 of Regulation (EU) 2018/1139 or are included in the categories in Annex I of this regulation.

The UK has a number of design approvals for Part 21 aircraft, engines, propellers and equipment.\(^{40}\) In order to apply for a certification, the aircraft must be registered in the UK and have a design organization approval from the CAA under part 21, sub-part J of UK Regulation (EU) No. 748/2012 that must be maintained for the life of the aircraft or product type.\(^{41}\) To show the product conforms with the applicable design data, a product organization approval must be obtained. This is required to produce a certified product or part of a certified product.\(^{42}\) The CAA has published guidance that includes a flow chart to help individuals locate the mandatory requirements for obtaining a certificate of airworthiness for both Part 21 and non-Part 21 aircraft.\(^{43}\)

\(^{37}\) Type Certificates and Restricted Type Certificates, UK CAA, supra note 28.

\(^{38}\) UK CAA Safety & Airspace Reg. Grp., Mandatory Requirements for Airworthiness, supra note 25.

\(^{39}\) Certificates of Airworthiness, UK CAA, supra note 32.


\(^{41}\) Commission Regulation (EU) No 748/2012 of 3 August 2012.


\(^{43}\) UK CAA Safety & Airspace Reg. Grp., Mandatory Requirements for Airworthiness, supra note 25, § 1, pt. 1, at 3.
Non-Part 21 aircraft are subject to the provisions of the Air Navigation Order.\textsuperscript{44} They must also meet the BCAR.\textsuperscript{45} To be categorized as a non-Part 21 aircraft, the aircraft must meet a number of criteria, some of which are listed below. The aircraft must be a manned or unmanned aircraft set out in annex 1 of the UK basic regulation and must meet the following criteria:

- a historic aircraft, or a replica of such a craft,
- “an aircraft specifically designed or modified for research, experimental or scientific purposes, and likely produced in very limited numbers,”\textsuperscript{46}
- an aircraft provided in a kit, with at least 51\% of the assembly being conducted by an amateur with no commercial objective,
- a military aircraft that has been in service, or a replica of such a craft,
- a government service aircraft,
- an aircraft whose minimum flight speed in landing configuration does not exceed 35 knots of calibrated air speed,
- a helicopter, powered parachute, or sailplane, powered or otherwise, which must not have more than two seats and have a limited maximum take-off mass,
- a gyroplane with no more than two seats and a maximum takeoff mass of 600kg,
- a balloon or airship that has a maximum of double occupancy and a hot air volume of not more than 1,200 m\textsuperscript{3} or 400 m\textsuperscript{3} of gas, or
- any other manned aircraft that has an empty mass no greater than 70kg.\textsuperscript{47}

The certification requirements for these aircraft are contained in the BCAR, CAP 553,\textsuperscript{48} and CAP 554.\textsuperscript{49}


\textsuperscript{45} UK CAA Safety & Airspace Reg. Grp., BCAR Section A: Airworthiness Procedures Where the CAA Has Primary Responsibility for Type Approval of the Product, CAP 553 (Dec. 2017), https://perma.cc/RGA2-FR4V.


\textsuperscript{47} Id. Annex 1.

\textsuperscript{48} UK CAA Safety & Airspace Reg. Grp., BCAR Section A: Airworthiness Procedures Where the CAA Has Primary Responsibility for Type Approval of the Product, supra note 45.

\textsuperscript{49} CAA & Safety & Airspace Reg. Grp., BCAR Section B Airworthiness Procedures Where the CAA Does Not Have Primary Responsibility for Type Approval of the Product (CAP 554), https://perma.cc/7BTC-B88B.
3. Special Conditions

Products are assessed against the design and safety criteria in the certification specifications. For aircraft, products are assessed against certification specification CS-25,\(^\text{50}\) for large aircraft, and CS-27, for small rotorcraft.\(^\text{51}\) In cases where technology has advanced to a point that there is nothing in the certification specification to cover it, a special condition may be used. Specialist conditions are flexible tool[s] within the airworthiness process to fill a gap when there is a new design received for which there is no existing CS. Creating a new Special Condition enables the regulator to work with industry when it receives a design that is new and unknown. Special Conditions may be included in an existing CS over time, or become a new CS.\(^\text{52}\)

A Special Condition was created for VTOL aircraft in 2019 due to the lack of “certification specifications for this product.”\(^\text{53}\) This Special Condition set out the required flight requirements; structural design, loads, and performance; construction; lift/thrust system installation; and equipment, among other items.\(^\text{34}\)

To harmonize standards and avoid duplication, Special Conditions created outside the UK, such as by EASA, are reviewed by the CAA to determine whether they should be adopted, ignored or if a parallel rule should be made.\(^\text{55}\) Any CAA decisions on these matters are published. In cases where an applicant has obtained a type certificate from another national aviation authority that is not compliant with the International Civil Aviation Organization (ICAO) requirements, the applicant may apply to the CAA for a certificate of validation in order to fly in UK airspace.\(^\text{56}\) If the UK has a bilateral aviation safety agreement with the country of issuance, the applicant may be eligible to have the existing certificate validated for use in the UK.\(^\text{57}\) Some imported aircraft types may need to meet additional requirements for importation before the CAA will issue a certificate of airworthiness.\(^\text{58}\)

\(^{50}\) UK CAA, *Initial Airworthiness Large Aeroplanes*, CS-25—Amendment 26, https://perma.cc/Q4NC-RACL.


\(^{54}\) Id.

\(^{55}\) Id. at 7.

\(^{56}\) UK CAA, *Permit to Fly Aircraft*, supra note 26, at vi.


4. Permit to Fly Without Certification

The CAA may also provide approval for test flights when a certificate of airworthiness cannot be issued, such as for a prototype, under Part 21 or under the BCAR, depending upon the type of aircraft. A permit to fly is often used to test an aircraft in its development stages, and an application for this permit is considered on its merits. A permit to fly “usually include[s] specifically defined conditions (flight test conditions), which will define any limitations and the types of flying that can be undertaken. For this reason, several PtFs may be needed over the course of a product’s development.” The CAA has stated that a “permit to fly without certification will not be issued to an aircraft that is eligible for the issue of a certificate of airworthiness.”

A permit to fly without certification may also be issued for aircraft that do not meet the requirements of Annex 8 of the ICAO or “are excluded from regulation by EASA, by Annex II to EU Regulation (EC) No. 1592/2002” but have been “established as being airworthy and capable of safe operations under defined operating conditions and for defined purposes.”

The CAA considers permits to fly without certification issued by other national civil aviation authorities on a case-by-case basis, and it “make[s] its own assessments on the aircraft and applicant, [and] will seek assurances and evidence from its overseas counterparts.”

5. E Conditions

The CAA has a process of simplified requirements to allow an experimental prototype or modified aircraft to have a test flight without a permit to fly or certificate of airworthiness. These are known as “E conditions,” and they

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59 Approval of Flight Conditions for Permits to Fly Guidance Relating to Aircraft on the UK Register Without a Valid Certificate of Airworthiness or Restricted Certificate of Airworthiness, UK CAA, https://perma.cc/6M78-MKKD.


61 UK CAA, Permit to Fly Aircraft, supra note 26, at 1.


63 UK CAA Safety Reg. Grp., Permit to Fly Aircraft, supra note 26, at 1.

64 Id. at vi.

65 UK CAA Gen. Aviation Unit, Operation of Experimental Aircraft Under E Conditions, supra note 20, at 9.


67 UK CAA Safety & Airspace Reg. Grp., BCAR Section A: Airworthiness Procedures Where the CAA Has Primary Responsibility for Type Approval of the Product, supra note 45; UK Research & Innovation & UK CAA, Innovation Hub Guide for Innovators: Getting Your Prototype off the Ground – An Introduction to Experimental Flying, supra note 24, at 5.
allow aircraft designers to try out a new concept aircraft ... in the air without going through the costly and time consuming procedures that currently exist to get a new design past the initial stage of proof-of-concept prototype. E conditions can also be used to test aircraft modifications or if the aircraft is being operated in a manner or role that is previously unproven.68

The CAA has stated E conditions allow the experimenting, testing, or demonstrating of a flight,69 and they meet the government’s aim of “reducing the burden of regulation, particularly where this is seen as disadvantageous to UK industry.”70 The E conditions are “intended to allow innovative experimental flight testing of a new idea or design within a clearly defined period.”71

In order to obtain an E condition to operate an aircraft, a person (who is competent under the E condition requirements)72 must file a declaration with the CAA that they will “take sole responsibility for the safe conduct of the entire experimental test programme.”73 The declaration must state that the competent person has undertaken a risk assessment and is satisfied that the requirements of CAP 1220 are met along with a brief description of the project and its start and end dates.74 A dossier of information must also be filed with the CAA about the following:

- the type of aircraft,
- the aircraft’s design and build, including the type of engine, propulsion, operating controls, construction, and any experimental features,
- the design codes, and
- an airworthiness justification statement describing how the airworthiness of the aircraft has been assessed and the details of the test program.

The purpose and aims of the flight must be included in the dossier and can be to experiment, test, or demonstrate the flight.75

E conditions are intended to have limited use and have restrictions, which include the requirements that the aircraft be registered in the UK, the test area for the flights be fully identified and detailed and not include congested areas, the aircraft have a maximum take-off weight of 2,000kg, and the aircraft not carry passengers, cargo or conduct commercial

68 UK CAA Gen. Aviation Unit, Operation of Experimental Aircraft Under E Conditions, supra note 20, at 7.
69 Id. at 14-15.
70 Id. at 7.
71 Id. at 8.
72 Id. ch. 6.
73 Id.
74 UK CAA Gen. Aviation Unit, Operation of Experimental Aircraft Under E Conditions, supra note 20.
75 Id. at 14-15.
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operations.76 The aircraft must also carry third party insurance coverage.77 The CAA has specifically stated E conditions are not the same as the United States (US) “Experimental Category” of operation, which is more closely aligned with the UK’s permit to fly without certification category.78

C. CAA Use Case Approach

The CAA has stated that it is adopting an innovative approach to the development of regulations for AAM by “[t]aking a use case approach . . . to identify specific regulatory challenges, while not trying to solve the whole of AAM in one go.”79 Using this approach, the CAA analyses how AAM concepts interact with the existing regulatory framework with the aim of using “existing UK regulations where possible”80 and identifying any gaps and considering any risks arising from these gaps.81 The CAA has stated “[t]he aim of the use case regulatory approach is not to enable all proposals unquestioningly, but to allow AAM concepts to be fully explored so that safe proposals can be developed iteratively in partnership with the Regulator.”82 It has stated “[t]he nature of each operation will necessitate a different regulatory approach, depending upon the quantum of risk to both those involved in the operation and the public.”83

Those interested in developing new technologies should contact the CAA either by applying to the Safety and Airspace Regulation Group or via the Innovation Hub. Once notified, the CAA will identify the existing applicable frameworks, if any, as well as consider those rules in process of being developed. Based on the preceding analysis, as well as on interactions with stakeholder and other evidence-gathering activities, the CAA might identify regulatory gaps or blockers. Those gaps and blockers might be potentially solved in the short, mid or long terms by producing guidance, interacting with other regulators, engaging in rulemaking or recommending that the DfT [Department for Transport] consider whether secondary or primary legislation may be required. On occasion, the lack of maturity of the technology, solution or the use case, might mean that an application is rejected or that the non-regulatory teams within the CAA decide to help the innovator by

76 UK Research & Innovation & UK CAA, Innovation Hub Guide for Innovators: Getting Your Prototype off the Ground – An Introduction to Experimental Flying, supra note 24, at 5.


78 UK CAA Gen. Aviation Unit, Operation of Experimental Aircraft Under E Conditions, supra note 20, at 8.

79 Id. at 7.

80 Advanced Air Mobility Challenge, UK CAA, https://perma.cc/R7F3-9MFE.


82 Id. at 7.

pointing out what specific aspects of their innovation need amendment to fit within the existing regulatory arrangements.\textsuperscript{84}

To date, the CAA has seen use cases for the regional transport of passengers using large eVTOL aircraft and pop-up airports for VTOL aircraft.\textsuperscript{85}

**D. Innovation Gateway**

The CAA is actively working with innovators to help develop AAM in the UK. It has provided an innovation gateway to provide a single point of contact from the CAA to help innovators in AAM navigate the regulatory requirements for their aircraft. The CAA has also established a “regulatory lab” to “accelerate the development of new policies and regulations by anticipating regulatory challenges in areas of innovation, then defining the requirements for new policies and regulations.”\textsuperscript{86}

The CAA has established a regulatory sandbox for organizations and groups who work on AAM to join in helping the CAA develop a regulatory framework. It believes that “the quickest way to learn is to run tests in a safe environment that poses no threat to public and airspace users.”\textsuperscript{87} Some of the questions the CAA has posed in the regulatory sandbox are what requirements should be in place for the design, maintenance, and repair of aircraft; and what should the ground infrastructure for airports and vertiports include to allow for safe operations.\textsuperscript{88} The CAA provides those who join the regulatory sandbox with a dedicated case officer who can, among other things, identify the regulations that will apply to real world trials and the regulatory challenges presented that do not fit within the current regulations.\textsuperscript{89} The CAA states that its aim in creating the regulatory sandbox is to identify and provide answers to regulatory challenges and that

\begin{quote}
[the findings from this call will help inform our decision making and on current and future CAA regulatory sandbox trials. We will share the combined learnings from this work with the public, industry and other regulators. This will accelerate the establishment of regulatory frameworks for future commercial air mobility operations and facilitate discussions across the aviation sector on best practice.\textsuperscript{90}
\end{quote}

\textsuperscript{84} Id. ¶ 16.

\textsuperscript{85} Id. ¶ 107.

\textsuperscript{86} About the Innovation Team, UK CAA, https://perma.cc/J3VN-MHWV.


\textsuperscript{88} Id at 4.

\textsuperscript{89} Id.

\textsuperscript{90} Id at 1.
E. Vertiport and Infrastructure Guidance

The Special Condition for VTOL aircraft defines vertiport as “an area of land, water or structure used or intended to be used for the landing and take-off of VTOL aircraft.”91 The UK opened its first airport dedicated for flying taxis and cargo drones in April 2022. The site, known as Air One, is located in Coventry and allows for the landing and take-off of eVTOL aircraft.92

The CAA has stated that existing regulations permit the development of infrastructure to support AAM,93 “provided the right procedures and other aspects—such as operational and environmental risk assessments—support this.”94 The CAA notes it is monitoring the performance of this infrastructure to determine whether new approaches or other regulations are necessary. The CAA has not yet published specific guidance for vertiports and other infrastructure for AAM. In November 2022 it announced that it was reviewing publications from the Federal Aviation Administration, ICAO, EASA and others “in preparation for determining UK design requirements and operating standards for eVTOL facilities.”95

III. Bilateral Agreements

The UK has a number of bilateral agreements that permit the shared recognition of airworthiness certification of civil aeronautical products between two countries. The UK currently has bilateral agreements to “ensure the continuity of arrangements with the European Union, USA, Canada, Japan, Brazil, Singapore, Switzerland, Iceland, China and Norway.”96 These agreements include:

- Bilateral Aviation Safety Agreement (BASA), Memorandum of Understanding (MoU) or Working Arrangement (WA) and their associated implementing procedures provide for technical cooperation between national civil aviation authorities. They help reduce duplication of activity and aim for mutual acceptance of certificates.97

The CAA and the US Federal Aviation Authority “are engaged in a range of bilateral and multilateral discussions focused on facilitating certification and validating new eVTOL aircraft, production, continued airworthiness, operations and personnel licensing.”98

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91 UK CAA, Initial Airworthiness Special Conditions: Special Condition Vertical Take-Off and Landing (VTOL) Aircraft, supra note 53, subpart A.
92 Kevin Rozario, Startup Urban-Air Port First with a Retail Offer in New World of Flying Taxis, Forbes (Mar. 30, 2022), https://perma.cc/R9TV-TNWR.
96 International Co-operation, UK CAA, https://perma.cc/3ZHC-2DEY.
97 Id.
IV. AAM Manufacturers and Status

The CAA established the Future Flight Challenge, funded with 300 million pounds from the Industrial Strategy Challenge Fund, to “assure the UK’s position in the third aviation revolution.”99 In 2022, the establishment of the Advanced Mobility Ecosystem Consortium was announced. This consortium includes Vertical Aerospace, Virgin Atlantic, Atkins, Skyports, NATS, Connected Places Catapult as well as academic institutions such as Cranfield University, WMG, and the University of Warwick.100 This consortium has been provided with a £9.5 million (approximately US$11.6 million) grant from the Future Flight Challenge to:

develop the essential building blocks of a viable AAM ecosystem that has the potential to be progressed into full commercial operations. This . . . will accelerate AAM in the UK by creating and testing technological developments in aircraft electrification, airspace management, ground infrastructure, operational procedures and the systems and supporting business cases required to implement a new model of aerial passenger transport in the UK.101

The project funded by the grant aims to “demonstrate the feasibility of a UK AAM ecosystem using Vertical Aerospace’s emission-free VX4 eVTOL aircraft, operated by Virgin Atlantic.”102

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100 Michael Tyrrell, Advanced Air Mobility Ecosystem Launched in the UK, Aerospace Mfg. (July 18, 2022), https://perma.cc/6XM4-EXWV.
101 Id.
102 Id.