

Regulatory Sandbox Final Report: Kestrix Ltd

A summary of Kestrix's participation in the ICO's Regulatory Sandbox

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Information Commissioner's Office

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1. Introduction

- 1.1 The Regulatory Sandbox ('the Sandbox') is a service the ICO provides to support organisations that are developing products or services which use personal information in innovative and safe ways, and will deliver a potential public benefit.
- 1.2 The Sandbox is a free, professional service that is available to organisations of all sizes who meet our entry criteria and specified areas of focus, and are operating within challenging areas of data protection. During 2023 - 2024, the Sandbox considered applications from organisations developing products or services which involved the emerging technologies listed within [our current areas of focus](#). Proposals were also welcomed which displayed an exceptional level of innovation likely to be transformative for an organisation, the sector it works within, and/or society.
- 1.3 In its second addition of the [Tech Horizons Report](#), published in 2024, the ICO outlined eight technologies which it believed may have a particularly significant impact on our societies, economies and information rights in the next two to seven years. One of the technologies covered was the commercial use of drones and the possible data protection implications of this emerging technology. Challenges discussed in the report included surveillance, public perception, and the inadvertent and mass capture of data including personal information. As a result of this work, the ICO was interested in receiving applications to the Sandbox from organisations innovating in this field.
- 1.4 [Kestrix Ltd](#) ('Kestrix') entered the Regulatory Sandbox for support in navigating privacy and data protection compliance, as well as addressing public concerns about drone use. Kestrix describes itself as "a technology SME that analyses thermal images of buildings, captured via drones, to assess heat loss and generate energy efficiency retrofit plans". It intends to support social housing providers, local and city authorities, energy/utility providers

and mortgage providers, as well as end customers/residents to plan and price retrofits faster, ultimately accelerating decarbonisation, with the aim of helping the UK achieve its Net Zero goals.

- 1.5 Kestrix's AI platform transforms the imagery collected from its drone providers into comprehensive assessments of build geometry, material and building thermal performance. Due to the altitude of the drone flights, areas between buildings such as public spaces and private gardens will also be captured within the field of view of the camera. Although Kestrix's focus is to analyse the buildings, rather than people, the collection and processing of human activity and therefore personal information is incidental to its core business, and compliance with the UK GDPR is in scope. Kestrix therefore requested assistance in considering how much personal information would be captured by its processing, identifying risks, navigating data minimisation safeguards, and understanding how transparency should be operationalised within the project.
- 1.6 Kestrix was accepted into the Sandbox on 28 March 2024. A bespoke plan was developed and signed off on 25 June 2024. The objectives agreed as part of the plan were as follows:
 - **Objective One** – Kestrix, with the support of the ICO, will explore the scope, identifiability and sensitivity of the data that could be captured in its processing. It will explore how to embed compliance with the principle of article 5(1)(c) 'data minimisation', within the lifecycle of relevant personal information in each of the specified processing activities (data sharing between Kestrix and the drone providers/customers and internal processing by Kestrix).
 - **Objective Two** - With steers from the ICO, Kestrix will consider the different roles and responsibilities of the organisations involved in the processing.
 - **Objective Three** - The ICO and Kestrix will work together to explore how Kestrix will comply with UK GDPR principles of article 5(1)(a) 'lawfulness, fairness and transparency' and (b) 'purpose limitation' in its processing.

- **Objective Four** - With iterative support from the ICO, Kestrix will identify and work to mitigate emerging risks which may impact people in its processing. Kestrix will mitigate any risks to an acceptable level, and evidence this within a data protection impact assessment ('DPIA') ahead of pilot testing.

2. Product description

Drone technology

- 2.1 Drones are unmanned airborne vehicles (UAVs) which are most often remotely controlled by human pilots, usually on the ground. Drones may have rotary wings which allow for vertical take-off and landing. Many drones are fitted with cameras with recording capability, offering a bird's eye perspective. Drones can vary in size from small (under 250 grammes) to much larger vehicles with a likeness to small aircraft which can carry cargo. In the future, drone flight may become partly or entirely automated as regulations relating to flying beyond the visual line of sight ('BVLOS') of the remote pilots (the drone operator on the ground) mature. These regulations will be led by the Civil Aviation Authority ('CAA').

Kestrix's use case

- 2.2 Kestrix is a technology startup focused on analysing thermal images of buildings to assess heat loss and generate efficiency retrofit plans. This data is intended to support stakeholders working on decarbonisation in the built environment. These stakeholders could be social housing providers, local and city authorities, energy/utility providers and mortgage providers. The data provided by Kestrix may allow these organisations to make better decisions about how to retrofit buildings to make them more energy efficient, reduce carbon emissions and address other systematic issues such as fuel poverty.

- 2.3 Kestrix states that current methods of assessing building efficiency are out of date, inaccurate, unscalable and impractical. For example, an Energy Performance Certificate ('EPC') is based on a manual survey of a property which is often significantly out of date and inaccurate. Kestrix proposes that its solution offers a much improved and scalable method of assessing home efficiency.
- 2.4 Kestrix will achieve this by outsourcing drone image capture from third party providers to collect both visual and thermal images of neighbourhoods. Drone providers are licensed to fly commercial drones by the CAA and authorisation is required for each flight mission. These providers are likely to be considered data processors on behalf of Kestrix as the controller of the information.
- 2.5 Kestrix supplies drone providers with geographic target areas and buildings, including polygons of areas of interest and building footprints expressed as coordinates and tagged with street addresses. The drone provider is responsible for generating a flight plan based on this information.
- 2.6 Visual images taken during the day provide Kestrix with data about the materials and structure of the building, for example type of windows. One pixel within a visual image represents a 2cm x 2cm area on the ground. Thermal images are taken at night, three hours after sunset and one hour before sunrise. Thermal images show the surface temperature of objects in view of the camera. Thermal imaging cannot see through walls or roofs, and windows present as entirely opaque within images. One pixel within a thermal image represents a 10cm x 10cm area on the ground. Both visual and thermal images are taken from a 45 degree angle.
- 2.7 Drone providers upload the images in JPEG format to a segregated part of Kestrix's cloud infrastructure. Kestrix then carries out initial processing within its platform to 'de-personalise': obfuscate/redact any personal information or evidence of human activity, eg blurring people and car license plates. Kestrix currently uses an off-the-shelf object recognition model to identify people, license plates and so on. These are then blurred or obfuscated within the image. People and car license plates will be the highest frequently occurring objects in

images and over time the object recognition model will be refined to identify more object types. N.B: 'De-personalise' is not a word defined in the UK GDPR, but has been used by Kestrix to describe the initial processing step it undertakes. De-personalisation is likely to mean pseudonymisation in the context of Kestrix's processing but may also be anonymisation in limited circumstances. This is because there is still potential for people to be re-identified from the data in the hands of a third party such as a customer which holds additional information. This means that information which is blurred and/or obfuscated in this way will still be subject to the UK GDPR.

- 2.8 Following the process of 'de-personalisation' and redaction, a bi-modal (visual and thermal) 3D model of a building is generated to be further analysed for thermal efficiency. A manual quality check is also carried out. The 3D heat loss models identify thermal anomalies and areas for improvement to limit heat loss.
- 2.9 Kestrix intends to operate a business to business model, supplying the models and reports to customers who have interests in planning and verifying energy efficiency. Examples of these customers include:
- building owners such as social housing providers who could obtain the means to develop roadmaps and raise financing for decarbonisation of their property portfolios;
 - energy/utility providers and mortgage lenders who wish to provide actionable insight, help and services to their customers to improve the efficiency of their homes; and
 - local and national governments who want to build more granular incentives and track progress towards Net Zero across districts and counties.
- 2.10 Before Sandbox participation, Kestrix undertook scan missions at the request of a property owner and the scale of the operation and processing was limited. From 2025, Kestrix proposed a significant scale up of its processing beginning with a scan of a small city. The [Strategic Energy Partnership](#) with E.ON and Coventry City Council was

launched to thermal map two areas of Coventry covering 1.9km², including 6250 homes, over 2 years, of which 4,020 were to be mapped in 2025 for its first pilot. Drones captured images at an altitude of 60 metres high, equipped with visual and thermal imaging cameras, taking a bird's eye view of buildings before Kestrix used the data to quantify how and where heat escapes. The initiative is intended to provide a clear blueprint of which homes are performing poorly, and provide insights to drive energy efficiency plans targeted at the properties that need the most improvement. The Strategic Energy Partnership has indicated that households may be entitled to funding streams to support home improvements and the scan will help inform targeting of these measures .

3. Key data protection considerations

- 3.1 A number of key data protection themes involved in Kestrix's processing were considered within the Sandbox participation.
- 3.2 N.B: As part of Objective two of the Sandbox plan, the ICO agreed to provide a steer to Kestrix on roles and responsibilities within the context of the city scan. Kestrix was advised to consider whether its 'collaborators,' eg E.ON and Coventry City Council, could be considered as joint controllers under article 26(1) of the UK GDPR. This recommendation was also reiterated in the ICO's feedback on the DPIA in January 2025. These considerations will not be covered within this report.
- 3.3 Some of the key areas of work are outlined below:

Data minimisation

- 3.4 Kestrix's model focuses on the collection of data about buildings. However, evidence of human activity and images containing information that may be considered to be personal information is likely to be captured. An important

objective of the Sandbox plan was to assist Kestrix with ensuring that any processing of personal information within the scope of the city scan complied with the [data minimisation requirements](#) of article 5(1)(c).

- 3.5 Early in the engagement, the ICO asked Kestrix to produce a data map. Kestrix shared a visual representation of the data journey, illustrating both data that is captured deliberately and which could be collected inadvertently as part of the project. This data map detailed the collection of data by drone providers from the image capture stage, to model generation by Kestrix to sharing with customers. This document also included proposed retention periods for different categories of data.
- 3.6 Kestrix and the ICO attended a workshop in June 2024 to explore the scope, identifiability and sensitivity of the personal information which could be processed as part of the project. Within this workshop, Kestrix and the ICO considered a number of options relating to how Kestrix could reduce the amount of personal information that it processed within the city scan. One of these deliberations centred around the altitude of drone flights when taking images of properties and their surroundings. The ICO asked whether Kestrix could increase its altitude of flight and whether this would result in a smaller amount of detail and personal information being captured in the images and processes and/or a lower perception of intrusion of into people's private lives. By the end of Kestrix's Sandbox participation, as a result of discussions with the ICO, Kestrix decided to increase the height of altitude of drone flights and image capture from 30 metres to 60 metres. Kestrix considered this height to be adequate for offering the detail it and its customers require for high quality model generation, whilst also reducing the resolution and therefore identifiability of people and activity relating to residents. The ICO has not verified whether this is the case.
- 3.7 Other safeguards were discussed in the workshop, such as technical security of the drones used for image capture, specifically on-drone encryption of data, in the event of a drone malfunctioning and falling into third party hands.

- 3.8 During the workshop discussions, Kestrix expressed its intention to develop a model which would work to 'depersonalise' its visual and thermal images prior to the development of 3D thermal performance models. This 'de-personalisation model' would use algorithms to identify evidence of human activity and personal information within images such as faces and car license plates, and work to obfuscate, blur and pixelate these aspects. Kestrix will use an off-the-shelf product and build a labelled dataset over time in order to train a custom model to identify personal information, allowing it to continuously develop and learn. As noted in 2.7, Kestrix's process of de-personalisation will not fully anonymise personal information.
- 3.9 As part of the June workshop and throughout the Sandbox participation, discussions centred around whether any personal information processed by Kestrix and its processors could be considered as [special category data](#) under the UK GDPR. Such images could include evidence of accessibility ramps and aids, eg a wheelchair, or posters of a political nature within windows or presented outside of properties, and private human activity viewable through windows and in private gardens.
- 3.10 Although not considered as special category data, evidence of fuel poverty was also a factor explored within discussions. For example, if drones captured low thermal activity within a home but high thermal activity outside of the home, eg warm car parked outside, this could indicate a household/resident is home but has chosen not to put the heating on. As Kestrix is scanning properties through the winter months where the chances of lower temperatures are much more likely, the evidence of fuel poverty would be higher.
- 3.11 A discussion also centred around the intrusive nature of image capture via drones and how fair and within residents' reasonable expectations this would be. These considerations continued through the Sandbox participation and are discussed in the transparency section below.
- 3.12 As Kestrix's business model is based upon it sharing thermal performance assessments with its customers, the workshop highlighted the importance of setting parameters around Kestrix's customer base to ensure that

customers receiving data from Kestrix were focused on decarbonisation rather than other priorities. The ICO advised that the sharing of data with organisations such as insurance companies should be prohibited as this could result in people being unfairly denied access to services or premiums being increased unexpectedly. The implementation of licensing conditions and terms of use with Kestrix's customers would be vital to ensure that any data shared with customers, even when obfuscated, is protected by terms of permitted use. This consideration was essential in order to comply with the [purpose limitation principle](#).

- 3.13 Granularity of access should also be an important consideration before the commencement of any data sharing. Kestrix and the ICO discussed that different kinds of organisations would require different degrees of data for their own purposes, and Kestrix should consider this, especially where the intention is to provide access to data via a platform that would be hosted by Kestrix. Kestrix has outlined a tiered access approach where some customers would have access to more detailed model data, including access to 3D models of each building surveyed and full quantitative and qualitative analysis, and others would have access to higher level information consisting of summaries and aggregated data exported on a spreadsheet.
- 3.14 An important issue relating to data minimisation is compliance with the ['storage limitation'](#) principle under article 5(1)(e) of the UK GDPR. This should include consideration of appropriate retention periods of personal information. It was agreed in the workshop that different levels of risks were associated with different images (and different kinds of data) throughout the lifecycle of the processing. For example, raw images captured at the first phase of processing would entail higher risks compared to the blurred/obfuscated images and models produced by Kestrix and shared with customers. As a result of the Sandbox engagement, Kestrix chose to implement a tiered retention model, where it will only retain raw images for a short period necessary for the 'depersonalisation' process to be carried out. This retention period will be further reduced as Kestrix's model becomes more efficient and it is assured of quality outputs.

Lawful bases and special category processing

- 3.15 As Kestrix is likely to capture evidence of human activity and personal information in the raw images taken by drone, it is likely to be processing personal information at each stage of the project. It therefore requires an article 6 [lawful basis for processing under the UK GDPR](#). Kestrix submitted a lawful basis analysis to the ICO in September 2024, which included a breakdown of each of the six lawful bases suitability for its processing and [a legitimate interests assessment](#) ('LIA'). Kestrix also requested a steer from the Sandbox on whether it requires an article 9 condition for processing of special category data and which would be appropriate.
- 3.16 Kestrix outlined in its lawful basis analysis that it considered the lawful basis under [article 6\(1\)\(f\)](#) that the *'processing is necessary for the purposes of the legitimate interests pursued by the controller or by a third party, except where such interests are overridden by the interests or fundamental rights and freedoms of the data subject which require protection of personal information, in particular where the data subject is a child'* to be most appropriate for its aims. This was based on its focus of extracting insight about the buildings and any processing of personal information being for the purposes of removing it prior to the production of heat loss models. It outlined its legitimate interests to be enabling society to achieve Net Zero carbon emissions by 2050, increasing the healthiness of homes and reducing fuel poverty. Given the potential impacts of climate change without undertaking these kinds of decarbonisation activities, Kestrix considers its own, third parties' and society's legitimate interests to outweigh the potential impacts on people as a result of the processing.
- 3.17 The LIA followed the ICO's recommended structure of three parts: a purpose test, a necessity test and a balancing test. A LIA is carried out in order to understand whether an organisation's and/or a third party's interests are genuinely legitimate, that the processing is truly necessary for the purposes of those interests and whether such interests are well balanced against, or can be overridden by those interests of people who may be impacted by the processing.

3.18 The LIA outlined the interests of the stakeholders involved, which include:

- enabling property owners (eg social housing landlords) to see clearly and accurately how much heat is escaping from buildings, why and from where. This insight will help determine what improvements are required to the buildings in their portfolios;
- providing energy/utility providers with actionable insights to offer services to their customers to make their homes more efficient;
- providing mortgage lenders with actionable insights to offer financing to their customers for retrofit purposes; and
- providing local and national governments with insights to build more granular incentives and track progress towards Net Zero goals across their districts.

3.19 Wider and indirect benefits included enabling society to achieve Net Zero carbon emissions in the targeted time frame of 2050, increasing the healthiness of homes, reducing fuel poverty and combatting the effects of climate change.

3.20 Kestrix also set out an argument for why the processing is strictly necessary and proportionate, outlining that the processing of personal information is intrinsic to the purposes of the city scan and the inefficiency of existing methods of achieving the same aims. People's reasonable expectations in relation to the processing were also considered.

3.21 Based on the information that Kestrix shared with the ICO in these documents and in meetings and workshops, the ICO agreed that the selection of article 6(1)(f) legitimate interests could be an appropriate lawful basis to rely on for the collection and 'depersonalisation' of images ahead of the generation of heat loss models. The ICO also fed back that where organisations intend to rely on this lawful basis, they take on additional responsibilities for

considering and protecting those people who may be impacted by the processing. The ICO provided feedback on two iterations of the LIA in November 2024 and in January 2025.

- 3.22 The ICO outlined additional work that Kestrix must undertake to improve the LIA and the valid application of legitimate interests. For example, it must gather and record evidence to support the statements outlined in the document. It must also consider potential ethical issues related to the nature of the data collection via drones outside private residences that may be considered intrusive. Kestrix was directed to the resources provided by the [Open Data Institute](#) to further consider the application of data ethics. Another reference which would support Kestrix's reliance on legitimate interests could be including any specific laws, regulations or other obligations on its customers, eg local authorities and social housing providers, relating to decarbonisation.
- 3.23 The ICO fed back that further work must be carried out to ensure the validity of the balancing test, specifically Kestrix must consider the impacts on people as a result of the processing. Impacts could include insufficient security of images by drone providers resulting in inappropriate disclosure of private information; and/or data is shared with Kestrix's customers, eg mortgage lenders, that could be used to make significant or legal decisions impacting residents, particularly in the context of special category and criminal offence data.
- 3.24 Kestrix was also advised to consider the likelihood of it collecting data relating to vulnerable people and children. As a large customer segment of the intended business model is social housing landlords this likelihood is increased and data concerning health could also be collected which would fall within the scope of article 9 UK GDPR. Examples of data concerning health could be images of a person using or evidence of accessibility aids such as a wheelchair or ramp outside of a property. The collection of this kind of data risks possible discrimination and other harms if not protected.
- 3.25 Kestrix could also risk collecting data that may fall within the definition of 'data relating to criminal convictions and offences or related security measures', often referred to as 'criminal offence data'. This category of personal

information could refer to evidence of a person's criminal behaviour. In the context of Kestrix's processing, an example of this could be images indicating higher thermal activity coming from a loft, which could be evidence of marijuana farming.

- 3.26 When processing data on the basis of legitimate interests, people must be offered the right to object under article 21. A request of this nature means that a controller must stop or not begin the processing of that person's personal information. A request can only be rejected where the controller has compelling legitimate grounds which override the specific objection raised by a person. Such grounds must go beyond the legitimate interests on which the processing is based as set out in the LIA. Where a person is objecting to the processing due to it causing them damage or distress, their objection will have more weight.
- 3.27 At the beginning of its participation, Kestrix stated that it would be unable to provide an opt out for people ahead of any processing taking place, ie before a drone mission, but that it would delete images following their capture on the request of a resident. The ICO explained that Kestrix would have to go further to offer the right to object ahead of image capture where it was reasonably possible to remove a property from a flight plan. Although the ICO understood that it might be impossible to avoid the image capturing of all traces of a requester's property, especially at 60 metres altitude in built up residential areas, Kestrix should revise its flight plan to avoid capturing any direct images of a property where a resident has exercised a right to object request. The facilitation of individual rights under the UK GDPR should be a human process and a controller must consider all requests on a case by case basis, being transparent with an individual to the extent it is able to fulfil a request.
- 3.28 An important consideration within the engagement related to whether Kestrix may inadvertently capture images that could reveal special category data under Article 9 of the UK GDPR. Examples of this kind of data could be accessibility aids, sexual activity within a garden, or presence of political posters within a window or garden. This kind of information is afforded special protection as it has the potential to create significant risks to an person's

fundamental rights and freedoms. Where data is captured which has been deliberately and actively displayed by a resident, for example a political poster in a front garden or in a window viewable by a passerby on the street, Kestrix may rely on the article 9(2)(e) condition of '*manifestly made public by the data subject*'. However, the ICO considered that outside of this it is difficult to assess the risk of inadvertent collection of special category data without fully understanding the scale of the pilot and the impact its collection could have on a person. Due to this, the ICO has been unable to provide Kestrix with regulatory certainty on whether it requires an Article 9 condition for processing. The ICO has advised that Kestrix must make all reasonable efforts to reduce the likelihood of special category data capture to a minimum, and document the identification and mitigation of risks within a data protection impact assessment. It should also seek independent legal advice if uncertain of the risk. The same considerations should also be made in relation to the capture of criminal offence data. Kestrix provided the ICO with two iterations of a data protection impact assessment during its Sandbox participation, these are discussed below under 'Identification and Mitigation of Risk'.

Transparency

- 3.29 As part of the Sandbox plan, Kestrix and the ICO attended a workshop focused on transparency, and explored how Kestrix should operationalise its responsibilities during the city scan pilot.
- 3.30 Kestrix outlined its intention to provide a resident notification via post to all households involved in the city scan two weeks prior to the planned missions. The intention behind these notifications is to ensure the drone activity and image capture does not come as a surprise to people, to build trust in the processing and to support drone pilots on the ground with fielding of any questions or concerns during live missions. The notifications would include privacy information about the processing and its purposes, and contact details for people to get in touch with any questions or concerns about the activity.

- 3.31 In addition to the postal notifications, Kestrix set out its intention to run a 'public transparency campaign' on the lead up to the city scan. Within the workshop with the ICO, various methods of communicating with people who may be impacted by the processing were considered. For example, an updated privacy notice must be available on Kestrix's website to make sure it is compliant with article 14 of the UK GDPR. Messages could be posted on social media community groups in the locality of the city scan and virtual town halls could be offered where residents could air their concerns and ask any questions about the intended processing. The ICO also recommended that privacy information could be tested out with focus groups to ensure its accessibility and that it is comprehensible to people. Kestrix should also utilise the drone pilots on the ground, making sure they are fully briefed and able to answer and refer any concerns raised by residents. Data processing agreements should outline the processors' ('drone providers') obligations in supporting Kestrix in its transparency obligations. The use of air-space reporting tools were also discussed as a means to show when drone activity is taking place.
- 3.32 As part of its 'public transparency campaign', Kestrix ran two community engagement events, one online and one in London. There was also a pre-emptive 'letter drop' to residents in Coventry covering 4000 homes inviting residents to offer feedback on Kestrix's approach to data privacy. As a result of these actions, only two residents made inquiries requesting access to the data following the city scan to understand how they could retrofit their homes to reduce heat loss and no concerns about the processing have been raised. In addition, Kestrix conducted an online survey to collect feedback about its approach. In the survey, Kestrix's draft privacy notice was presented to 24 respondents. Respondents varied in terms of age, gender, racial and education backgrounds, with the highest share of respondents being white female and in the age band 35-44.
- 3.33 Respondents were asked questions about their understanding of Kestrix's processes, their rights as data subjects, and the processes for contacting Kestrix to exercise their rights. Respondents reported feeling most confident in the process for contacting Kestrix with 4.2% expressing discomfort about contacting Kestrix to exercise their rights. The majority of respondents felt clear about their rights with 83% feeling 'very clear' or 'mostly clear'. The

results uncovered an area of improvement for Kestrix in clarifying what Kestrix does with the data, with a split of 25% being 'completely confident' and 45% being 'mostly confident'. Kestrix plans to research and refine its policies in line with the feedback.

Identification and mitigation of risk

- 3.34 Kestrix's pilot represents a significant scale-up from its current operations and includes a novel application of technologies and potentially invisible processing. This processing is therefore likely to result in a high risk to people's rights and freedoms and so Kestrix was required to carry out a data protection impact assessment ('DPIA') in accordance with article 35(1) of the UK GDPR. Two iterations of this document were shared with the ICO during Sandbox participation. The ICO provided full feedback on the second iteration in January 2025.
- 3.35 The second iteration of the DPIA included a greater level of detail, increased understanding of the risks associated with the processing, and a number of proposed safeguards to reduce the likelihood and impact of risks inherent in the processing. Some examples of developments included:
- a reconsideration of the retention of raw images and 'depersonalised' models;
 - plans to exclude certain public and commercial buildings from mission target areas such as schools, parks and playgrounds; and
 - further consideration of the risk of data linkage and work on data processing contracts with drone providers.
- 3.36 The ICO concluded that the DPIA required some further work. This should include a more detailed and granular consideration of the target area of the city scan ahead of the flight missions, and understanding and mitigating the likelihood of inadvertently capturing more sensitive information or information that would be considered

private. As well as schools and places of play, it was also advised that hospitals, family planning clinics, places of worship and GP surgeries be excluded from the city scan.

- 3.37 Although Kestrix aims to 'depersonalise' the raw images used in heat loss models prior to sharing these with its customers, this process will not fully anonymise all personal information. For example, there are likely to be instances where customers have access to additional information which they could link to the information supplied resulting in re-identification of people. This could lead to data being used to make significant or legal decisions about a person. These issues are more likely to arise where a customer has a direct relationship with a resident, for example a social housing landlord. Although Kestrix has outlined certain mitigations such as contract terms including licence conditions and purpose limitation clauses, the ICO recommended that Kestrix also documents the risks associated with each category of customer. Such risks should be mitigated.
- 3.38 In addition to the above, the ICO recommended a number of additional safeguards that Kestrix should consider implementing and documenting within its DPIA. These included:
- Inclusion of contract audit rights within drone provider and customer contracts, including outlining the triggers for audits;
 - Identification and documentation of each organisation's responsibilities, including all suppliers (eg drone providers), collaborators and customers involved to ensure effective facilitation of and accountability in relation to individual rights;
 - Extending the time period between resident notification and the commencement of drone missions to ensure people have enough time to get in touch with Kestrix and exercise their rights, eg to opt out of the processing; and

- Documenting the results of its public transparency campaign and any emerging risks and mitigations.

3.39 The ICO has also advised that risks must be revisited over time, eg as a result of complaints received during the pilot, and in the event of emerging risks such as collaboration with new customers and where new technological solutions are adopted within the project.

4. Ending statement

- 4.1 Kestrix's participation in the Regulatory Sandbox has enabled the ICO to explore and forensically examine the application of the UK GDPR requirements to a real-life use-case of commercial drone technology. This has expanded the ICO's thinking beyond the data protection themes outlined in the 'Commercial use of drones' chapter in the ICO's Tech Horizons Report 2024. The ICO and Kestrix have maintained a collaborative and productive dialogue throughout the engagement, which has enabled the positive exploration of challenging aspects of the legislation and how Kestrix's legal obligations, such as transparency and lawful basis must be operationalised within the city scan pilot.
- 4.2 During the Sandbox, Kestrix has gained insights into the risks and mitigations of using drones to capture imagery of the built environment. As a result, Kestrix has updated its documentation and has developed improved mitigation plans. The Sandbox process has enabled Kestrix to accelerate its maturity on data protection and elaborate both risks and mitigations well beyond what is easily discoverable in public guidance. Furthermore, Kestrix has used the knowledge and steers it has gained during the Sandbox to identify a roadmap of future improvements in order to continuously improve its data protection posture as it scales.
- 4.3 Kestrix has now completed image capture of 4,250 homes in Coventry, with a further 2000 planned for winter 2025/2026. Kestrix has started the data validation and analysis, and collation of any feedback from drone pilots

working in the field and directly from residents. It aims for a full retrospective of this first stage to be completed during May-June 2025 before the second stage of the pilot commences later this year.

- 4.4 Since the onboarding of Kestrix into the Sandbox, the CAA has published [its roadmap for the development and use of drones beyond the visual line of sight](#). This roadmap sets out the CAA's ambition for the UK to establish routine BVLOS operations by 2027. Possible use cases for these operations could include deliveries to consumers, and couriers for medical settings, and infrastructure inspection without a need for a pilot on the ground. The considerations undertaken within Kestrix's Sandbox participation and summarised in this report should be explored by all innovators in this space.